

# JPC

8



# HUMIDISTATS

and  
Electronic humidity controls

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department

Edition 31/05/2013

**JPC**

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# General Terms of Sales

**GENERAL:** our sales are made under the here below terms of sales. Any contrary conditions provided by the buyer shall not be binding and shall not have any legal effect.

The execution and delivery of any purchase order is made in conformity with the present general terms of sales and it is noted that the buyer first has full knowledge of these terms.

In case of dispute on any of the herein below terms, we will consider ourselves as completely free from any contract related to the execution of any pending order. If some specific conditions are stated by the buyer, these conditions will be considered by us as a formal acceptance only after our written consent.

**ORDER:** we will commit only on orders for which an order acknowledgement has been issued. The sale is regarded executed at the date of order acceptance by JPC. Any cessation or cancellation of pending orders, for whatever reasons, cannot be accepted by JPC without a compensation equal to the ordered goods value.

Any manufactured product being subjected of a prototype or a pre-serie accepted by the customer will be regarded as in compliance with the customer's specifications.

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**PRICES:** our price offers are remitted under the existing conditions at the date of offer, for mentioned quantities. They can be revised after the call period has expired. Orders for lower quantities than quoted: our offers are subjected to price revisions.

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For orders less than € 75 Excl. tax exclusive of fees, administrative costs amounting to € 7.62 Excl. tax will be charged to customer.

**DELIVERY TIME:** our delivery times are estimated bona fide. They are purely informative and cannot be considered as commitments. Unless our prior express consent, no overrun will be regarded as a justification of order cancellation or set rights to any compensation or deduction.

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The buyer must ensure of the good conditions of the delivered goods and he must make, within the legal terms, all necessary reserves and legal actions in order to preserve his rights against the carrier.

Regarding the conformity and visible quality of delivered goods related to an order, the buyer must send his eventual written claim within an 8 days legal notice from the collection date. Claims will be taken into account only if the goods are kept in the consignment conditions.

For manufacturing reasons, we reserve the right of delivering plus or minus 10 percent of the ordered quantities.

**PAYMENT TERMS:** unless other arrangements expressly provided by special conditions at the bottom of our order acknowledgment, our invoice is resolvable by draft accepted at 30 days end of month .

The invoices less than € 150 Excl. tax, the first order and the files not accepted by our factoring company are resolvable cash on order.

No discount for pre-payment is accepted.

Whatever the mean of payment, we reserve the ability of cancelling or postponing any blanket or purchase order, invoicing any related charges and to ask for an immediate payment of all pending invoices and all implemented collection charges until total settlement has been completed.

In no way, payments due to JPC can be postponed or be subjected to either deduction nor compensation unless JPC's express written consent.

We reserve the right to require an agreed guarantee of the customer's execution of commitments, even during the execution of a blanket or purchase order.

Any refuse from the customer will open JPC's right to partial or total order cancellation.

Any payment to JPC will apply to due amounts whatever the cause, starting with the oldest due amounts.

**RETENTION OF PROPERTY:** our goods are sold with a retention of property.: according to the terms of the 1980/05/12 Law and the 1985/01/25 Law (amended 1994/06/10), the Seller shall keep the ownership of the Products until the full payment of the agreed price is made including any other payments outstanding, if any, from the Purchaser to the Seller. However, the Purchaser shall bear the risk of the loss, damages, harms, deterioration or destruction of the sold Products since such Products are at the disposal of the Purchaser and he must have subscribed any related insurance.

In the event of payment delayed by the Purchaser and 8 days after receipt of a registered reminder letter remained unfruitful, the contract shall be regarded as executed. In such an event, JPC will reserve the right to take back the goods and all related settlements by the Purchaser will not be refunded and regarded as damages, without any restitution or compensation claim from the Purchaser related to an eventual resell.

To prevail over the aforesaid clause and in the event of collective judicial proceedings, JPC will notify its such express will to the Purchaser or to its official representative, by registered letter, to have the goods returned.

**PROPERTY OF TOOLS:** the tools that have been fully settled to JPC are the customer's property. They remain at his entire disposal at JPC's facility if the end product is made by JPC, or in the sub-contractor's French or Foreign facility if the product is sub-contracted or imported.

Unless otherwise written consent from the Purchaser, all tools unused for more than 2 years will be considered as abandoned and will be destroyed. Storage charges can be invoiced if the customer wishes to keep unused tools.

Tools for which a partial amount has been invoiced to the Purchaser remain the property of JPC. The tools are made to fit the manufacturing equipment, Norms or Standards in force at JPC's or at its sub-contractors. Unless otherwise specified, their lifetimes are equal to 3 years life according to the annual quantities provided by the Purchaser during original negotiation or on the original order. In the meantime, all maintenance and repairs charges shall be borne by JPC. For additional quantities than provided, all maintenance and repairs charges shall be borne by the Purchaser.

**WARRANTY:** goods manufactured by JPC are covered by a 1 year warranty coming into force at the delivery date.

For all imported good, our warranty period is limited to the manufacturer's warranty. We cannot be held as responsible for any manufacturing ascertained default on goods re-sold as are. We forward the claims on delivered goods and apply the eventual warranty clauses after agreement receipt from our constituents.

To benefit the warranty, The Purchaser must send a written claim to JPC, providing all ascertained defaults and give JPC all means to ascertain and bring corrective actions.

Packing, freight, return, carriage, un-assembly and re-assembly charges shall be borne by the Purchaser.

**LIABILITY LIMITATIONS:** the buyer must ensure that the use of the purchased products complies with Norms and Rules into force, whatever the advices or recommendations shown in the seller's documents. De facto, he resigns all claims against the Seller. No request for compensations for direct or indirect damages or loss is receivable. JPC's liability is strictly limited to the aforesaid obligations.

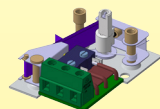
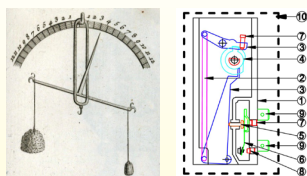
**APPROPRIATE COURT – APPLICABLE LAWS:** all sales by JPC are subjected to French Laws including the 1980 Vienna Convention on International Sales. Any controversy, dispute or claim arising out of or related to this contract or breach thereof shall be settled by arbitration of The Tribunal de Commerce Court held in Meaux, 77, France.

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RCS Meaux 302 236 641 00049 – APE 2651B - FR10 302 236 641



# Summary

Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice



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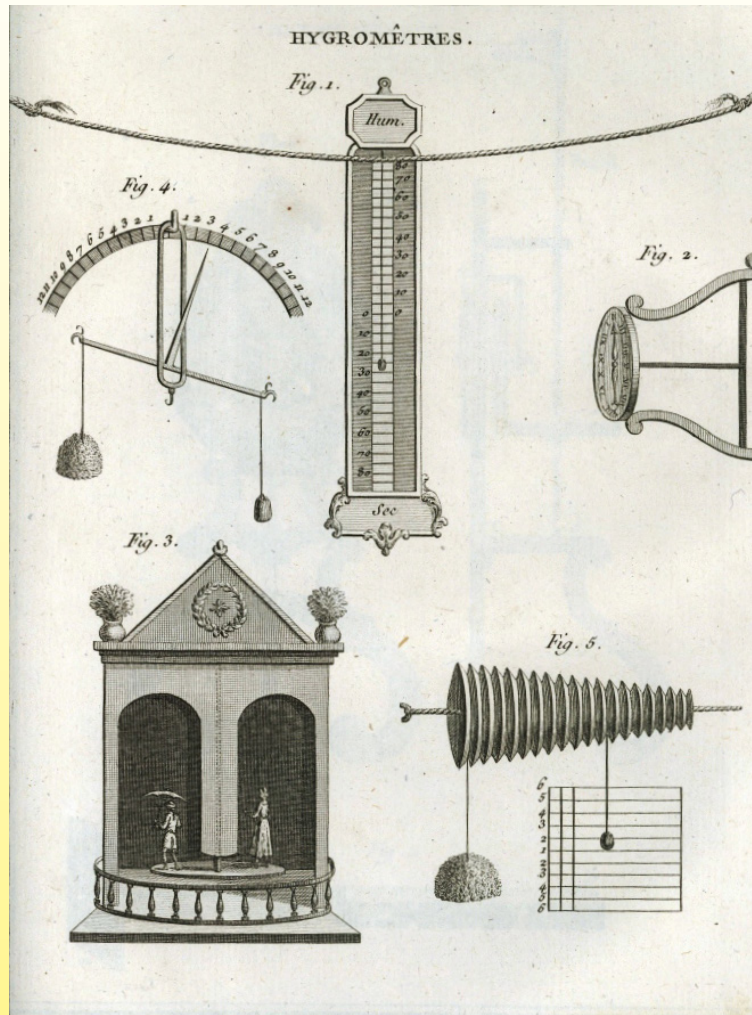
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**Some humidity measurement devices, 18eme Century (Ultimheat collection)**

Relative humidity control is relatively new, and the first mechanical devices that were used for this purpose dating from the early 20th century, and were related to the development of central heating and air conditioning, and the concept of environmental comfort.

One of the sticking points which blocked the development of these devices was to find a measuring element providing a deformation or elongation function of relative humidity.

Since antiquity, it had been noticed that the wool weight increases depending on the humidity. In 1450, the German Bishop Nicolas of Cusa, experimenting on this variation concluded that the atmospheric humidity could be measured.

Over the following centuries many materials and methods were used with more or less efficiency: cat intestine extension, (ca 1600, Santorio Santorio), paper strips extension (Folli Francisco, 1660) hygroscopic salts, bending of a beard of wild oat (1665 Hooke), human hair extension (Horace Benedict de Saussure, 1783)

The instrument invented by the latter laid the foundation for a comparative and reproducible measure of relative humidity.

The non-linear connection between the elongation of the hair and the humidity in the air were scientifically established in 1815 by the French scientist Joseph Louis Gay-Lussac.

In 1882, Richard company in Paris develops a humidity recorder that uses the bending of an ox horn strip. The first device controlling humidity in air conditioning was invented in 1900 by Warren Johnson in the U.S. He used the bending of a maple leaf, and coined the word "Humidostat". He fitted one of the first installations of air conditioning made by Willis Carrier in the USA in 1903.

Since that time Humidistats and Humidostats are used in English for these controls, and Hygrostat is used in French.

Hygrometers and humidistats using hairs and other organic materials for humidity sensing were used during more than 60 years in the 20th century. One of their main disadvantages was a gradual change in their deformation characteristics because of measuring element aging.

The technological breakout that led to the development of modern humidistats is the invention of nylon in 1938.

Nylon is the plastic material of which the rate of elongation according to the relative humidity is the most important and this was quickly identified as being useful for the humidity measurement.

In 1952, the first efficient electromechanical humidistat using hair as a measurement was invented by Honeywell, USA.

In 1965, the same company replaced hairs with a nylon ribbon

Therefore, either in the form of fine fibers or extra thin ribbon, and processed to achieve fast response times, nylon became the standard in humidistat sensing element

Humidistats made by JPC use specially processed nylon ribbons, with a few microns thickness.

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## Introduction to nylon ribbon humidistats technology

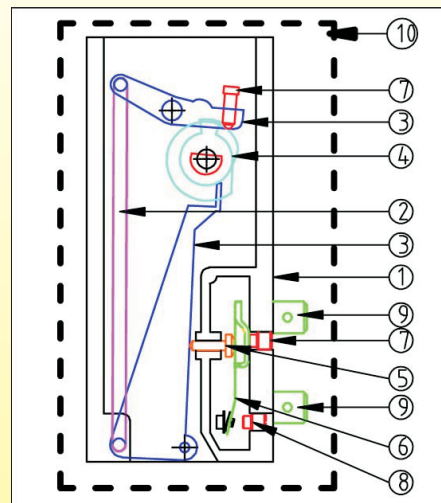
(other names : Humidostats, hygrostats, humidity switches)

### A/ Operation principle

JPC humidistats are constructed according to the hygroscopic nylon film technology. Nylon is a particularly hygroscopic material, which has the property of expanding in the presence of moisture.

Nylon ribbons humidistats use this property by measuring the elongation of a strip of nylon as a function of relative humidity. This extension is then transmitted through a lever system to an electrical contact.

A set point adjustment shaft allows to change the actuator lever position and thus set the threshold that will trigger the humidistat



Schematic diagram

### A humidistat is composed of 10 main components

- |                       |                                  |
|-----------------------|----------------------------------|
| 1: Frame              | 6: Micro-switch                  |
| 2: Hygroscopic ribbon | 7: Calibration screw             |
| 3: Lever mechanism    | 8: Differential adjustment screw |
| 4: Adjustment shaft   | 9: Electrical terminals          |
| 5: Plunger            | 10: Wall mounting box (optional) |

### B/ Main components description

#### 1: The frame

It maintains mechanical parts together. Humidistat is inherently used in wet and humid area, and plastic body is preferable to metal to avoid the risk of corrosion. It also provides better electrical insulation, which is particularly important for applications in humid conditions.

It allows to mount the switch with two screws, and mounting design allows adjustment shaft to be located in front or lateral position. Frame is widely open around the nylon film to allow good air circulation.

#### 2: The hygroscopic ribbon

The relative humidity of the air is the percentage of water vapor contained in the air before compared to the amount where it condenses. If this rate reaches 100%, the water vapor condenses into liquid water. The amount of water vapor that the air can contain increases with the temperature of the air. The term *relative* humidity is thus well suited, since a relative humidity at a given ambient temperature will not correspond to the same number of grams of water per cubic meter of air at a different temperature

**Grams of water by cubic meter of air related to relative humidity and air temperature**

°C	20%	40%	80%	100%
10	2	3.8	7.5	9.4
20	3.5	7	13.8	17.4
30	6	17.1	24.3	30.5
35	7	14	29	38

It is made of nylon because of its two specific hygroscopic characteristics.

- The rate of elongation according to the change of relative humidity. This rate is about 0.2% at 50% relative humidity and is the largest of all plastics. This is the same magnitude order than human hair, which were once used to measure the relative humidity.

- The permeability of the nylon to water vapor, and specially the speed at which it exchanges water vapor with the environment. This parameter is characterized by testing according to ASTM (measure of "moisture vapor transmission rate, MVTR" also known as "water vapor transmission rate," WVTR)

The water molecules in the air have a diameter of about 0.05 microns. They produce polar bonds with amide groups of the molecules of nylon and insert themselves between them, causing the expansion of these molecules. Some varieties of nylon can absorb up to 2.7% by weight of water at 50% relative humidity and up to 9.5% at saturation (at room temperature). The result is an elongation of the molecular matrix of nylon. This process is completely reversible. According to the method of manufacture of nylon film and its subsequent treatment, the water vapor molecules will penetrate more or less quickly in the film, and the reaction time of the latter to changes in relative humidity in the air will be modified.

The reaction time of the nylon film to reduced relative humidity becomes excessively long for values below 20%. This is why hygrostats settings begin at this value.

The selection of the ribbon raw material film is essential. Obviously, then, the exchange surface of the film must be optimized, and in particular its thickness must be as small as possible, while maintaining the tensile strength mechanical properties needed to actuate the micro-switch.

This is the difficult optimization of all these parameters that provides an efficient humidistat, without drift in time

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## 3 : The 2 levers transmission mechanism.

These two levers will maintain the nylon ribbon and transmit its elongation to the electrical contact device. Their relative position is determined by the adjustment shaft.

## 4 : Adjustment shaft

This adjustment shaft can be located on the front or on the side of the humidistat. It comprises a cam which ensures the movement of the levers above depending on the relative humidity to achieve. It also includes stops that will ensure the mechanical locking of the contact (open or closed depending on the position) at minimum and maximum angulation. This is the shape of the cam which provides the humidity setting range. It is therefore possible to make specific setting ranges, but it requires to make a specific plastic injection mold for each range. The adjustment shaft length, size and position of its flat can be made on request with the same constraints.

## 5 : Plunger

This plunger provides the interface between the levers holding the nylon ribbon and the electrical part of the micro-switch. It transmits the movement to a snap action contact blade.

**6: The micro-switch** (For more information on the electrical contacts, see the technical introduction of the “Thermostats for incorporation” catalogue)

The force developed by the nylon film for actuating the electrical contact device is very small (a few grams). Applications of this product (humidifiers and dehumidifiers) require relatively high breaking capacity in 230/240V, so it is necessary to use a snap-action mechanism for this. Therefore, the electrical contact mechanism is a critical point in the humidistat.

The nature of the contacts, their shapes must be optimized to reach the rating requested by the application.

In addition, these humidistats are used in critical environmental conditions, close to the dew point, which means that condensation may occur.

For this reason, humidistats should not be used on voltages higher than 24V in conditions specifications above 90% relative humidity. We also recommend the use of gold-plated silver contacts to prevent the contacts oxidation, at least during the storage period before use, if storage relative humidity is high.

## 7 : Calibration screw

Hygrostats are calibrated with this screw under conditions of constant temperature and humidity (42% relative humidity and 22°C). This screw, which is not intended by a user setting, sets the correct adjusting shaft position at the humidity calibration value.

## 8 : Differential adjustment screw

The humidistat differential is the relative humidity difference between the value at which the contact will open and at which it will close. This is a factory parameter set with this screw. This screw is sealed, without user access and must not be tampered.

The value of the humidistat differential is given at the calibration point (see above calibration). Because of the mechanical properties of the nylon film, the differential value is not the same over the entire adjustment range, and increases with the relative humidity value.

## 9 : Electrical connection

Electrical connection for humidistat for incorporation are made by two or 3 tabs 6.3 x 0.8 mm. On models with protection housings, or on demand of incorporation devices, they are equipped with screw terminals.

## 10: The protection housing (optional)

- Humidistats for incorporation (without protection housing) are rated IP00 and are intended for integration by professional customers, usually the OEM of the machine or equipment in which it is used. So this is the machine or equipment that must provide protection against water, dust, shock and other contaminants.

- Wall mounting humidistats and Din Rail mounting humidistats for electrical cabinets

The protection housing of these devices is intended for in-door application. To ensure proper control of the relative humidity, it should be placed appropriately in an area where the air circulates naturally.

Given the needs of air circulation around the measuring element, it provides limited protection against penetrating objects (IP20) and shock (IK02). These devices must be installed by a qualified electrician and in accordance with electrical regulations and safety standards.

- Protection against explosive atmospheres, gas and dust: these humidistats are not designed for use in these environments and do not meet the standards in this application.

## C/ Use and installation of humidistats

### 1- Absolute humidity, relative humidity and dew point.

The amount of water that may contain air, vapor invisible, is limited and linked to the temperature.

Beyond a given limit, one sees fog and condensation. This is the dew point (or saturation value).

The saturation value in g/m<sup>3</sup> is the maximum quantity of water that air may contain in the form of invisible vapor, before the appearance of fog or condensation. This saturation value is a function of temperature. For more information about these values, see the Mollier diagram at the end of volume. Absolute humidity is represented by the number of grams of water per cubic meter of air.

But the feeling of moisture and visible phenomena related to moisture are not only due to the amount of water contained in the air.

example:

- Air with a 6 g/m<sup>3</sup> absolute humidity and a temperature of 5 ° C seems humid, fog is present, a sheet of paper tends to soften, the laundry does not dry, the salt in the kitchen gets wet.

- Air having the same absolute humidity of 6g/m<sup>3</sup> but at a temperature of 30 ° C.

feels dry, it is clear, the paper is rigid, laundry dries quickly, the salt is dry.

The absolute humidity (defined by the weight of water per M<sup>3</sup> of air) is not sufficient to describe the concept of humidity, it is necessary to take into account the ambient temperature.

The relative humidity (RH) is the combination of these two factors.

Hygrostats provide control depending on the relative humidity.

### 2- Humidistats applications

The main uses of humidistats are:

- Limit or avoid condensation in rooms or enclosures.

- Maintain a humidity level in a zone called "comfort zone," neither too dry nor too wet. The comfort zone is generally defined as being between 20 and 25 ° C and 40 to 60% relative humidity.

- Avoid desiccation of products sensitive to low humidity, such as wood (furniture, barrels) bottles corks in wine cellars.

### 3- Impact of the outdoor temperature and its dew point

When the temperature outdoor is less than -1 °C, the windows and improperly insulated walls temperature can reach the dew point, and this will cause the formation of condensation on the windows (vapor) and walls.

The diagram below provides guidance on the setting of maximum humidity depending on the outdoor temperature.

If condensation appears at suggested set points, then lower the setting by successive steps of 5%. After each setting, wait 6 hours to achieve stabilization before changing the setting.

Outdoor temperature	-20	-10	-5	0	+20
Set point adjustment	25 %	30 %	35 %	40 %	50/55%

### 4- Dehumidification

Dehumidification control can be used to keep the relative humidity constant during unoccupied periods, whatever the ambient temperature, to maintain the humidity in the comfort zone if this rate is too high due to external climatic conditions (Humid tropical islands and zones nearby sea or lakes) or in areas of the home where high humidity may occur because of the activity that is performed or equipment installed therein (kitchen, bathroom, laundry room, gym, swimming pool). This method maintains the relative humidity constant avoiding high moisture levels associated with the formation of mold.

In this system the humidistat controls a dehumidifier, or a ventilation system (if the outdoor humidity is lower than the relative humidity of the house area).

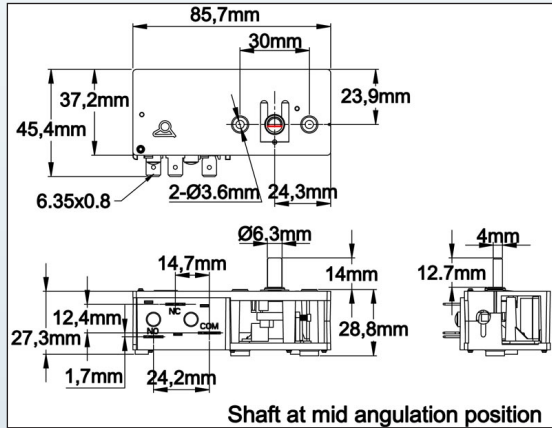
### 5- Humidification

In winter, when the air is too dry, and / or when the heating system or air conditioning dries the air, the humidistat will allow, by starting a humidification system, the rise the relative humidity, thus providing comfort to the breath. This also prevents the furniture and wood to cracks because they shrink. Used in a wine cellar, it prevents corks and wood barrels to shrink.



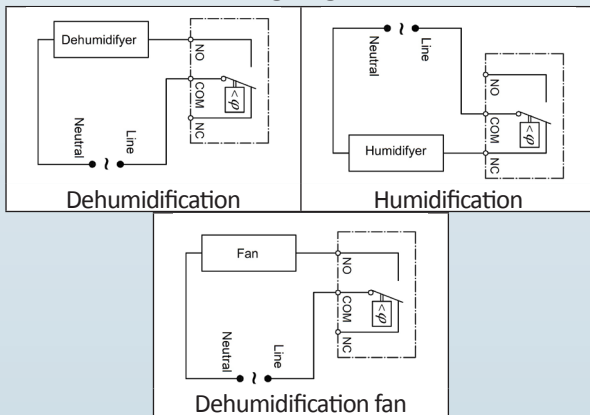
# Mechanical humidistats for incorporation, front shaft adjustment Type : Q88F

## DIMENSIONS



Shaft at mid angulation position

## Wiring diagrams



## MAIN FEATURES

**SENSING ELEMENT:** hygroscopic polymer film with special treatment, guaranteeing a fast response, long lifetime and high stability

**HOUSING:** Fiber glassfilled Makrolon, high humidity resistance, very high electrical insulation properties. Do not use in places with risk of condensation.

**MOUNTING:** front fixing by two screws, 30 mm distance. The same fixing is also available at the backside.

**SETTING:** with 6.4 mm diameter shaft, 14 mm long, with 4 mm flat, front located.

**SHAFT ROTATION:** Standard mechanical rotation 295°.

**ADJUSTMENT RANGE:**

Range 20-80%: on 235° angular.

Range 10-60%: on 224° angular.

**CALIBRATION:** at mid position at 42% RH and 22 ° C. Calibration tolerance at mid-point: + / -5% relative humidity. Minimum and maximum positions have positive contact actuation

**CONTACT STYLE:**

- SPDT, the NC opens when the relative humidity goes above the set-point (humidification applications), the NO contact closes when the relative humidity goes above the set-point (ventilation or dehumidification applications)

- NC: NC opens when the relative humidity goes above the set-point (humidification applications)

- NO: NO contact closes when the relative humidity goes above the set-point ( ventilation or dehumidification applications)

**CONTACT MATERIAL:**

- **Gold plated silver:** recommended when storage at high humidity conditions may occur, or when the product is used in low voltage application (electronic control boards)

- **Silver:** recommended for standard resistive load application or low inductive loads

**ELECTRICAL CONNECTIONS:** 6.3 x 0.8 mm tabs

**AMBIENT CONDITIONS :**

Humidity: 5 to 95% without condensation

Ambient temperature: 5 to 40°C

**RATING:**

- UL and CSA: 6A resistive, 20A LRA, FLA 3.7A, 240V

- EC: 6A resistive, (3.7A inductive) 250V

**OPTIONS:** Change in angular position, reverse rotation, flat and shaft length and orientation change (with MOQ and/or tooling cost)

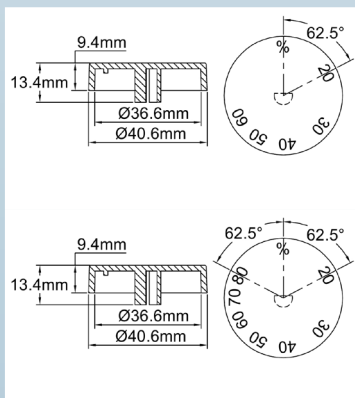
## REFERENCES :

(mechanical knob rotation 295 °, 14 mm long shat, flat horizontal position topside at mid adjustment range)

Contact style	Gold plated contact	Silver contact	Adjustment range	Rotation to increase set-point
NC	Q88F1G14H1060900	Q88F1S14H1060900	10-60%	Clockwise
NO	Q88F2G14C2080900	Q88F2S14C2080900	20-80%	Counter-clockwise
SPDT	Q88F3G14C2080900	Q88F3S14C2080900	20-80%	Counter-clockwise

## Accessories

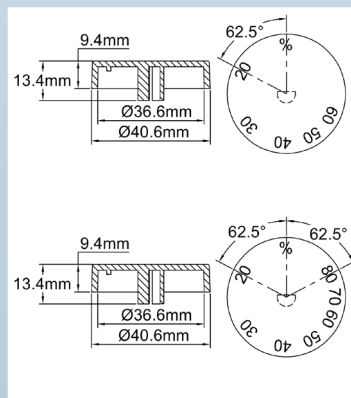
Knobs for humidistats with 6.3mm dia. shaft



20-60% RH printed knob, **counterclockwise** set point increase, for 6.35 mm shafts with 4mm flat.

Reference

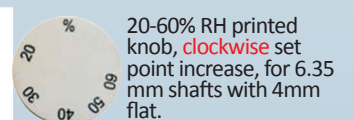
66MRW640200602AB



20-80% RH printed knob, **counterclockwise** set point increase, for 6.35 mm shafts with 4mm flat.

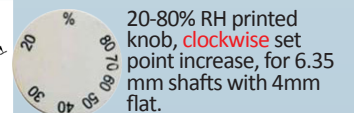
Reference

66MRW640200802AB



Reference

66MRW64020060BAB



Reference

66MRW64020080BAB

# Mechanical humidistats for incorporation, side shaft adjustment

## Type : Q88S

### DIMENSIONS



### MAIN FEATURES

**SENSING ELEMENT:** hygroscopic polymer film with special treatment, guaranteeing a fast response, long lifetime and high stability

**HOUSING:** Fiber glass Makrolon, high humidity resistance, very high electrical insulation properties. Do not use in places with risk of condensation.

**MOUNTING:** front side mounting by two screws, 30 mm distance. The same mounting is also available at the backside.

**SETTING:** with 6.4 mm diameter shaft, 14 mm long, with 4 mm flat, located on the small lateral side

**SHAFT ROTATION:** Standard mechanical rotation 295°.

**ADJUSTMENT RANGE:**

Range 20-80%: on 235° angular.

Range 10-60%: on 224° angular.

**CALIBRATION:** at mid position at 42% RH and 22 °C. Calibration tolerance at mid point: + / -5% relative humidity. Minimum and maximum positions have positive contact actuation

**CONTACT STYLE:**

- SPDT, the NC opens when the relative humidity goes above the set-point (humidification applications), the NO contact closes when the relative humidity goes above the set-point (ventilation or dehumidification applications)

- NC: NC opens when the relative humidity goes above the set-point (humidification applications)

- NO: NO contact closes when the relative humidity goes above the set-point ( ventilation or dehumidification applications)

**CONTACT MATERIAL:**

- **Gold plated silver:** recommended when storage at high humidity conditions may occur, or when the product is used in low voltage application (electronic control boards)

- **Silver:** recommended for standard resistive load application or low inductive loads

**ELECTRICAL CONNECTIONS:** 6.3 x 0.8 mm tabs

**AMBIENT CONDITIONS :**

Humidity: 5 to 95% without condensation

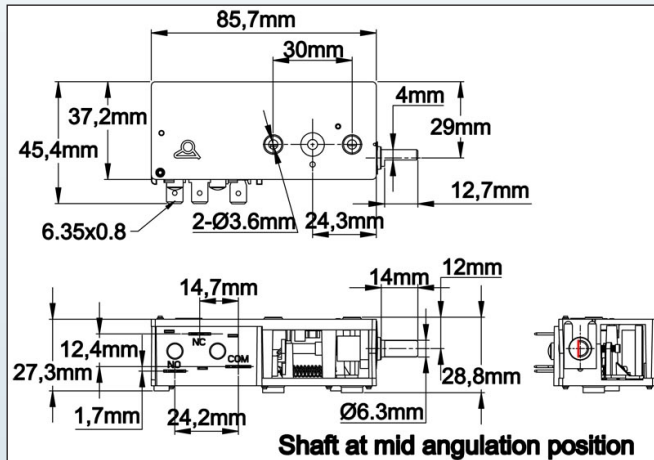
Ambient temperature: 5 to 40°C

**RATING :**

- UL and CSA: 6A resistive, 20A LRA, FLA 3.7A, 240V

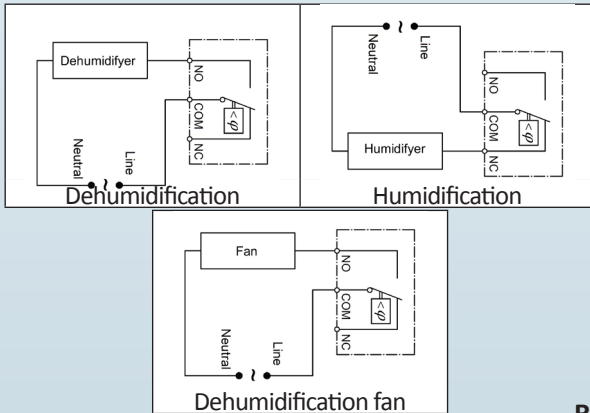
- EC: 6A resistive, (3.7A inductive) 250V

**OPTIONS:** Change in angular position, reverse rotation, flat and shaft length and orientation change (with MOQ and/or tooling cost)



Shaft at mid angulation position

### Wiring diagrams



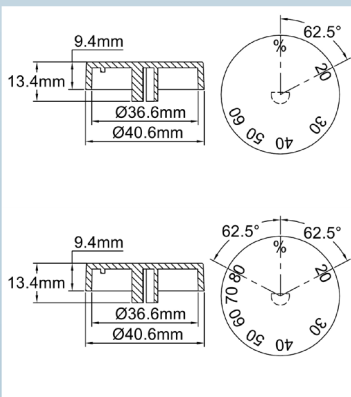
### REFERENCES :

(Mechanical knob rotation 295°, 14 mm long shaft, flat horizontal position topside at mid adjustment range)

Contact style	Gold plated contact	Silver contact	Adjustment range	Rotation to increase set-point
NC	Q88S1G14H1060900	Q88S1S14H1060900	10-60%	Clockwise
NO	Q88S2G14C2080900	Q88S2S14C2080900	20-80%	Counter-clockwise
SPDT	Q88S3G14C2080900	Q88S3S14C2080900	20-80%	Counter-clockwise

### Accessories

Knobs for humidistats with 6.3mm dia. shaft



20-60% RH printed knob, **counterclockwise** set point increase, for 6.35 mm shafts with 4mm flat.

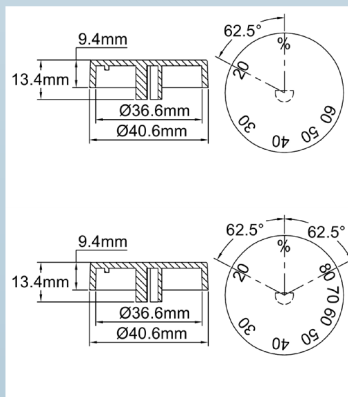
#### Reference

66MRW640200602AB

20-80% RH printed knob, **counterclockwise** set point increase, for 6.35 mm shafts with 4mm flat.

#### Reference

66MRW640200802AB



20-60% RH printed knob, **clockwise** set point increase, for 6.35 mm shafts with 4mm flat.

#### Reference

66MRW64020060BAB

20-80% RH printed knob, **clockwise** set point increase, for 6.35 mm shafts with 4mm flat.

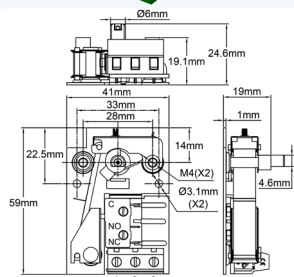
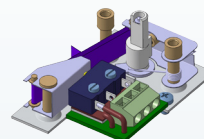
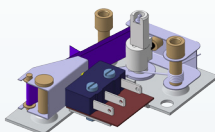
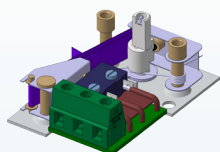
#### Reference

66MRW64020080BAB

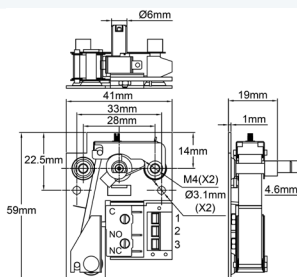
Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice

# Miniature mechanical humidistat module, for incorporation. 30-100% relative humidity range

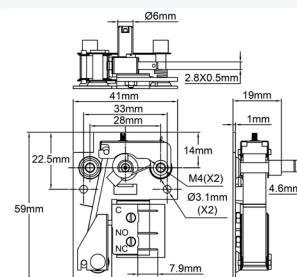
## Type Q7A



Bottom side connection block



Right side connection block



Without connection block

### MAIN FEATURES

**APPLICATION:** module for installation inside wall mounting housings, cabinet humidity housings, or mounting board of controls, to control fans, humidifier or dehumidifier. The incorporation and ingress protection must be made by the integrator

**MEASURING ELEMENT:** hygroscopic polymer film with special treatment, produced by Ultimheat, ensuring a fast response, long life and high stability

**FRAME:** stainless steel.

**MOUNTING:** two M4 screws, 28 mm distance (European standard). The steel frame has also 2 holes dia 3 mm allowing rear mounting

**SETTING:** dia. 6 mm shaft with a 4.6 flat, allowing the use of European standard knobs.

**SHAFT ROTATION:** 270 ° mechanical rotation

**ADJUSTMENT RANGE:** 30 to 100%, clockwise set point increase

**CALIBRATION:** at mid angulation, at 42% relative humidity and 22 °C ambience. Calibration point accuracy: + / -5% relative humidity.

**CONTACT:** SPDT, silver contacts. Can be used in humidification, dehumidification or ventilation

**ELECTRICAL RATING:** 5A 250VAC, res.

**ELECTRICAL CONNECTION:**

- Connection block for wires up to 2.5 mm<sup>2</sup>
- Simplified version with micro-switch connection tabs 2.8 x 0.5 (MOQ apply)

**AMBIENT:**

- Ambient temperature: 5 to 85 ° C
- Humidity: 5 to 95% (non condensing)
- Air velocity: 15m /s max

**PRECAUTIONS FOR USE:** This product is not intended for applications with voltages above 48V when there is a risk of condensation.

**OPTIONS:** Special rotation and humidity span, clockwise set point increase, special shaft diameter or length, gold plated contacts (MOQ and / or tooling costs apply)

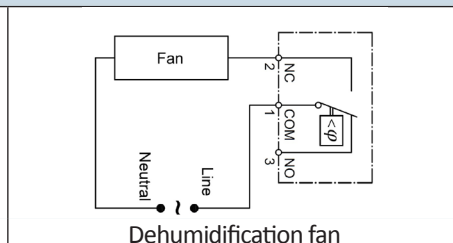
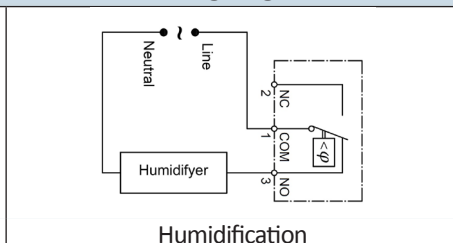
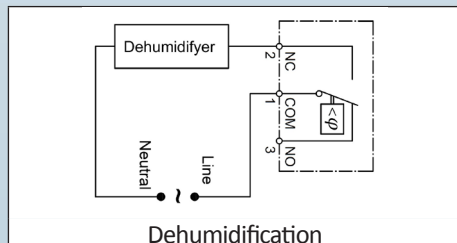
**MAINTENANCE:** No maintenance required in applications in dust free clean air. Solvent vapors, spray, aerosol, fume may contaminate the film and make it insensitive to humidity. Dust deposits increase response time and can be removed by smooth air spray.

### References

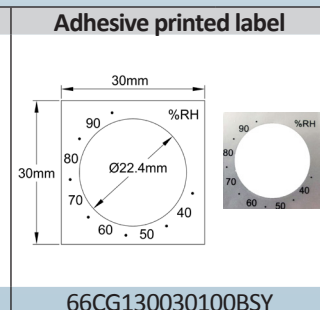
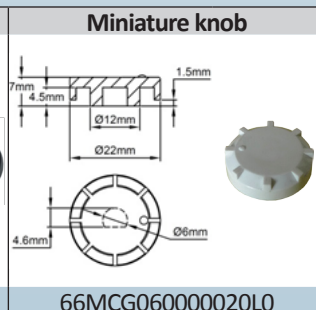
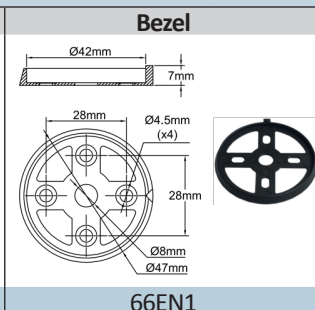
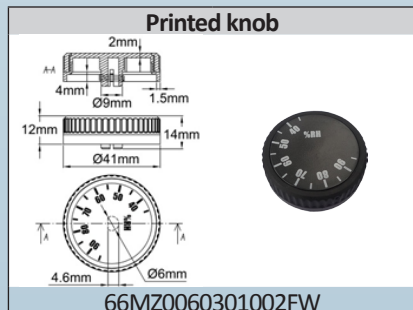
Connection	3 x 2.5 mm <sup>2</sup> connection block, bottom side	3 x 2.5 mm <sup>2</sup> connection block, right side	Microswitch 3 tab terminals 2.8 x 0.5 mm
References	<b>Q7A030100I001B00</b>	<b>Q7A030100I001R00</b>	<b>Q7A030100I001M00*</b>

\*MOQ apply

### Wiring diagram



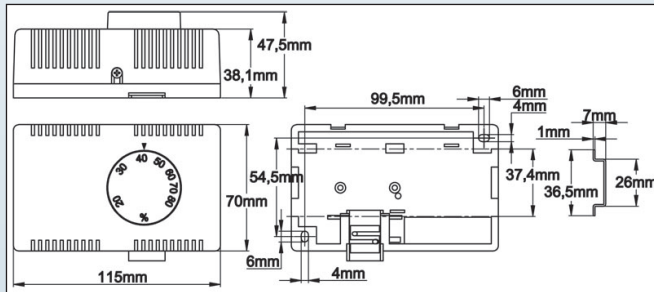
### Accessories



# Wall mounting mechanical room humidistats, Universal use

## Type : Q88F-R

### DIMENSIONS



### MAIN FEATURES

**SENSING ELEMENT:** hygroscopic polymer film with special treatment, guaranteeing a fast response, long lifetime and high stability

**HOUSING:** Wall mounting, with vents. IP30.

Housing must be placed in a naturally ventilated area to ensure a good humidity measurement and be protected against the risk of splashing water. Do not use in rooms with risk of condensation.

**MOUNTING:** wall mounting by two screws accessible after removing the cover. In standard this cabinet also provides a backside clip to snap on symmetrical DIN rail

**ADJUSTMENT:** by knob graduated in % relative humidity, from 20 to 80% on 235 ° angular.

**CALIBRATION:** at mid position at 42% RH and 22 ° C. Calibration tolerance at mid point: + / -5% relative humidity. Minimum and maximum positions have positive contact actuation

**CONTACT STYLE :**

SPDT, the NC opens when the relative humidity goes above the set-point (humidification applications), the NO contact closes when the relative humidity goes above the set-point (ventilation or dehumidification applications)

**CONTACT MATERIAL :**

- **Gold plated silver:** recommended when storage at high humidity conditions may occur, or when the product is used in low voltage application (electronic control boards)

- **Silver:** recommended for standard resistive load application or low inductive loads

**ELECTRICAL CONNECTIONS:** screw terminals

**AMBIENT CONDITIONS :**

Humidity: 5 to 95% without condensation  
Ambient temperature: 5 to 40°C

**RATING:**

- UL and CSA: 6A resistive, 20A LRA, FLA 3.7A, 240V
- EC: 6A resistive, (3.7A inductive) 250V

**OPTIONS:** Customized housing or knob (MOQ Apply)

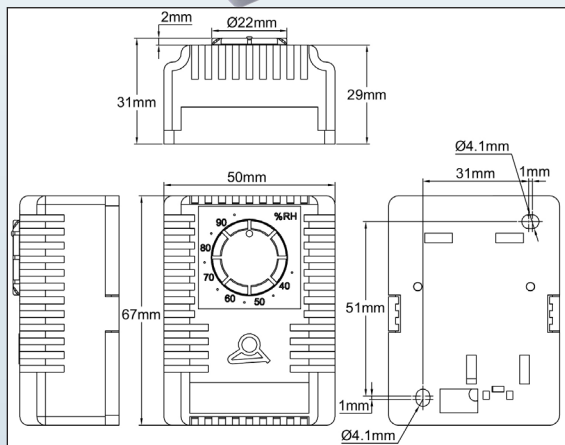
### REFERENCES :

Gold plated contact	Silver contact	Adjustment range	Rotation to increase set-point
Q88F3G14C208090R	Q88F3S14C208090R	20-80%	Counter clockwise

# Wall mounting miniature humidistat

## Type : Q7B

### DIMENSIONS



### MAIN FEATURES

**Main Application:** This humidistat is designed for indoor application to switch on a heater or a ventilating fan. It can also be used to switch on humidifiers, dehumidifiers, or other devices. It must be vertically wall mounted in a ventilated area.

**Humidity sensing element:** hygroscopic polymer film with special treatment, produced by Ultimheat, ensuring a fast response, long life and high stability

**Setting range:** 35 to 95% RH

**Measuring accuracy:**  $\pm 5\%$  RH

**Differential at 50% RH:** 8% RH ( $\pm 3\%$  RH)

**Measuring medium:** air, pressure-less, non-aggressive

**Electrical contact:** silver contacts, SPDT, 5A 250V

**Connection:** 3 screw terminals for 1.5mm<sup>2</sup> wires, max torque 0.5Nm

**Mounting:** wall mounting, with 2 screws dia 4 mm max, distance 31 x 51 mm

**Operating temperature:** 0 to +60°C (+32 to +140F)

**Storage temperature:** -20 to +70°C (-4 to +158F)

**Mounting position:** vertical

**Voltage supply:** the humidistat should be mounted such that there is no buildup of condensate on or in the device. If the voltage supply is higher than 48V there is a risk of voltage arcing in the event of water condensation on the micro-switch or connecting terminals which might destroy the control.

**Ingress protection class:** IP30

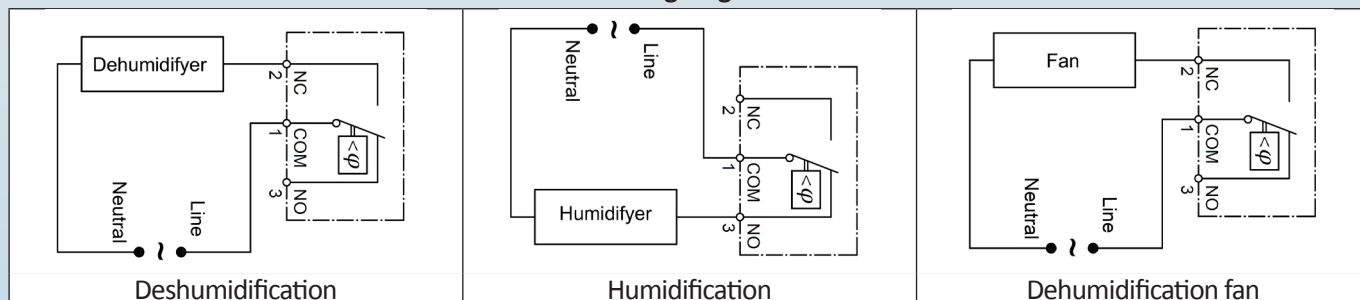
**Dimension:** 67x50x29mm

**Maintenance:** The humidity sensing ribbon is maintenance-free in clean air. Air containing solvent can cause measuring errors and failure, depending on the type and concentration. Deposits such as resin aerosols, lacquer aerosols, smokes, which eventually form a water-repellent film are harmful for the measuring element.

Reference

Q7B030100I001R00

### Wiring diagram

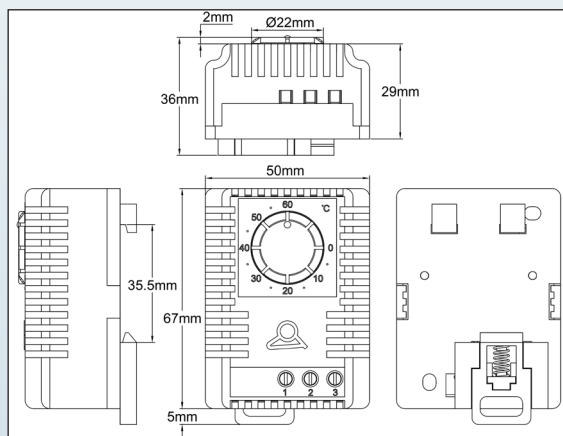


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# Din rail mounting miniature humidistat for electrical cabinets

## Type : Q7C

### DIMENSIONS



### MAIN FEATURES

**Main Application:** condensation in electrical enclosures and cabinets can be critical for electrical components and safety. This humidistat is designed to switch on a heater or a ventilating fan when the relative humidity raises at dangerous levels, when there is a risk to reach the dew point usually around 65%.

It can also be used to switch on humidifiers, dehumidifiers, or other devices.

**Humidity sensing element:** hygroscopic polymer film with special treatment, produced by Ultimheat, ensuring a fast response, long life and high stability

**Setting range:** 35 to 95% RH

**Measuring accuracy:**  $\pm 5\%$  RH

**Differential at 50% RH:** 8% RH ( $\pm 3\%$  RH)

**Measuring medium:** air, pressure-less, non-aggressive

**Electrical contact:** silver contacts, SPDT, 5A 250V

**Connection:** 3 screw terminals for 1.5mm<sup>2</sup> wires, max torque 0.5Nm

**Mounting:** clip for 35mm DIN rail EN50022

**Operating temperature:** 0 to +60°C (+32 to +140F)

**Storage temperature:** -20 to +70°C (-4 to +158F)

**Mounting position:** vertical

**Voltage supply:** the humidistat should be mounted such that there is no buildup of condensate on or in the device. If the voltage supply is higher than 48V there is a risk of voltage arcing in the event of water condensation on the micro-switch or connecting terminals which might destroy the control.

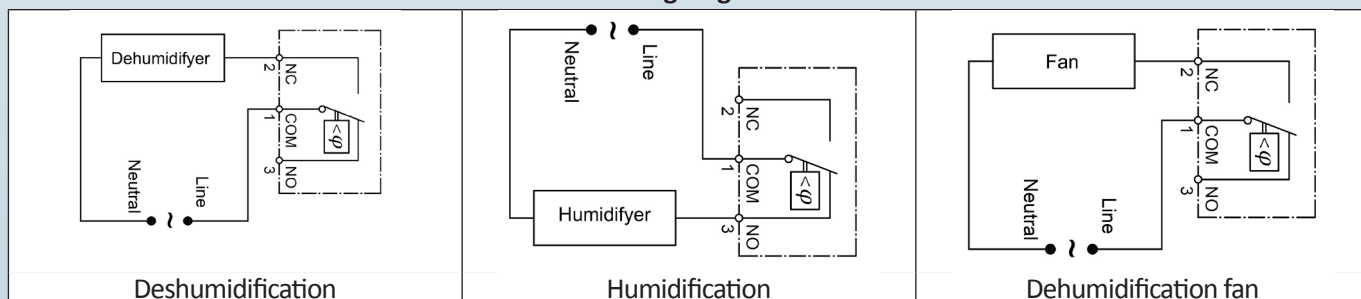
**Ingress protection class:** IP30

**Dimension:** 67x50x 36mm

**Maintenance:** The humidity sensing ribbon is maintenance-free in clean air. Air containing solvent can cause measuring errors and failure, depending on the type and concentration. Deposits such as resin aerosols, lacquer aerosols, smokes, which eventually form a water-repellent film are harmful for the measuring element.

Reference	Q7C030100I001R00
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### Wiring diagram

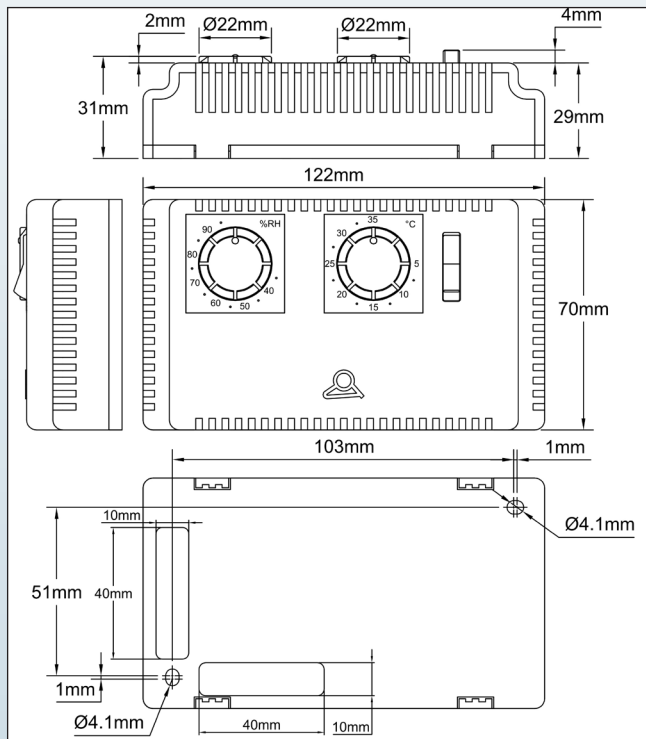


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# Room humidistat and thermostat combination, wall mounting, for swimming pools areas and air conditioning

## Type Q4

### DIMENSIONS



### MAIN FEATURES

**Main Application:** This device is a combination of a humidistat and a room thermostat. It is especially suited for use in air conditioning control of indoor swimming-pool halls. Its aesthetics and small size housing (122x70x31mm) allows mounting in most of these applications, but must be protected from splashing water, and used only in ambient air free of chemical contamination or corrosive ingredients.

It is designed to turn on heating or cooling, ventilation, humidifiers, dehumidifiers, and heat pumps. It must be vertically wall mounted in a naturally ventilated area

**Humidity sensing element:** hygroscopic polymer film with special treatment, produced by Ultimheat, ensuring a fast response, long life and high stability

Humidity setting range: 35 to 95% RH

**Humidity measuring accuracy:** ±5% RH

**Differential at 50% RH:** 8% RH (±3% RH)

**Measuring medium:** air, pressure-less, non-aggressive

**Electrical contact:** silver contacts, SPDT, 5A 250V, res. For use in humidifier, dehumidifier or ventilation control.

**Maintenance:** The humidity sensing ribbon is maintenance-free in clean air. Air containing solvent can cause measuring errors and failure, depending on the type and concentration. Deposits such as resin aerosols, lacquer aerosols, smokes, which eventually form a water-repellent film are harmful for the measuring element.

**Temperature measuring element:** Bimetal strip

**Temperature adjustment range:** 5-35°C

**Differential:** 0.6+/-0.3°C

**Electrical contact:** silver contacts, SPDT, 5A 250V, res. For use in heating or cooling applications

**Options:**

- On Off switch
- Thermal anticipator, that provides thermal differential reduction (Needs Neutral+ Line power supply, 230 or 24V)
- Remote set point reduction (Needs Neutral+ Line power supply, 230 or 24V)
- Temperature printings in °F

**Connection:** screw terminal connection block for 1.5mm<sup>2</sup> wires, max torque 0.5Nm

**Mounting:** wall mounting, with 2 screws dia 4 mm max, distance 100 x 50 mm. These units must be installed by a professional, according to the wiring diagram inside the housing cover. The existing safety regulations and local standards must be observed.

**Operating temperature:** 0 to +60°C (+32 to +140°F)

**Storage temperature:** -20 to +70°C (-4 to +158°F)

**Mounting position:** vertical

**Voltage supply:** the device should be mounted such that there is no buildup of condensate on or in the device. If the voltage supply is higher than 48V there is a risk of voltage arcing in the event of water condensation on the micro-switch or connecting terminals which might destroy the control.

If there is risks that relative humidity exceeds 95%, or any risk of condensation, do not use this device on voltage higher than 24V

**Housing:** ABS-PC plastic, 122x70x31mm

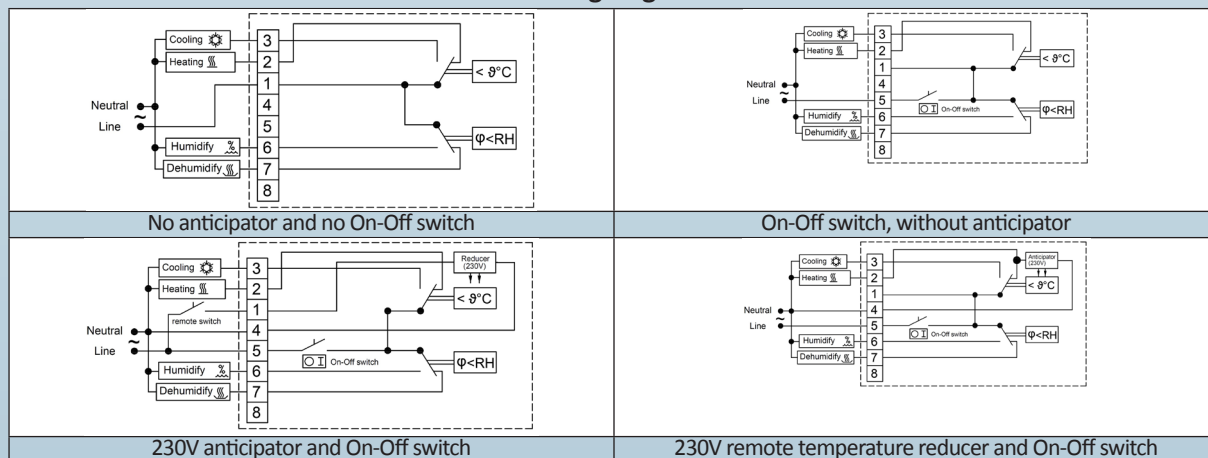
**Ingress protection class:** IP30

Reference	On off switch	Thermal anticipation(230V)**	Remote temperature set point reduction (230V)**
Q4D35C95HI001V00*	No	No	No
Q4E35C95HI001V00*	Yes	No	No
Q4F35C95HI001V23	No	Yes	No
Q4G35C95HI001V23	Yes	Yes	No
Q4H35C95HI001V23	No	No	Yes
Q4J35C95HI001V23	Yes	No	Yes

\*Standard product

\*\*24VAC on request, (replace 23 at end of the references by 02)

### Wiring diagram



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# Electronic humidity / temperature Controllers Type : 273D and 273B

## 77 x 35mm intelligent humidity controller, On/Off action

### DIMENSIONS



### MAIN FEATURES

Mini-sized and integrated intelligent controller, with very simple end-user interface: Change of set point is made without password, with up and down keys.

**Input Humidity:** capacitive sensor

**Input temperature (if T° option exists):** NTC R@25°C: 10Kohms (±1%), B@25/50°C: 3380Koms (±1%)

**Output relays:** 16A 250V res. and (or) 10A 250V res. depending on models.

**Output relay action for temperature (if T° option exists):** customer set to open on temperature rise or close on temperature rise

**Temperature differential (if T° option exists):** adjustable by customers, from 1 to 10 °C

**Output relay action for humidity:** customer set to open by humidity rise or close by humidity rise

**Temperature display:** (if T° option exists) -45°C +120° ±1°C or 0.3% FE ± one digit. Customer setting of display in °C or °F.

**Humidity display:** 1-99% (+/-5%)

**Humidity adjustment range:** 20 to 99%

**Humidity differential adjustment range:** 1 to 70%

**Other settings:** start delay time and offset

**Power supply:** AC 220-230V 50-60Hz

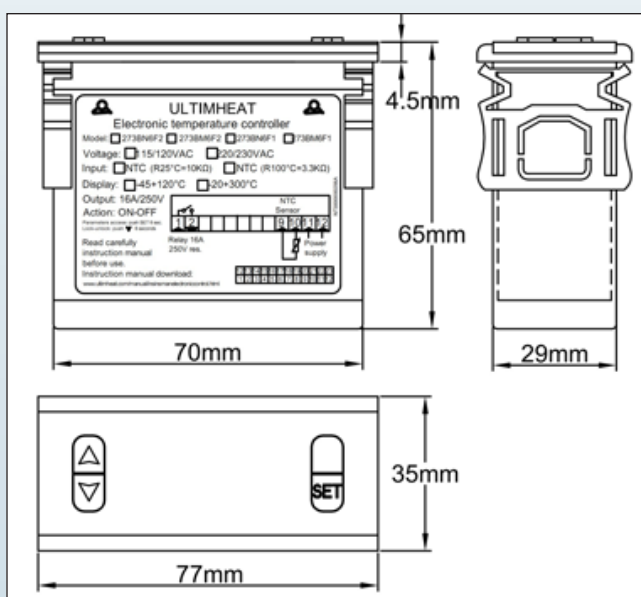
**Self-testing:** Over-scale, under-scale, and open circuit sensor display.

**Dimensions:** 77 x 35 X 60mm. Panel cut-out 71x29mm

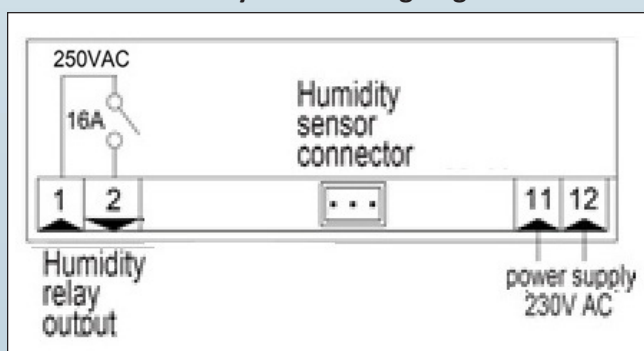
**Ambient temperature:** -10 to 60°C, 20 to 85% relative humidity, non-condensing.

### References

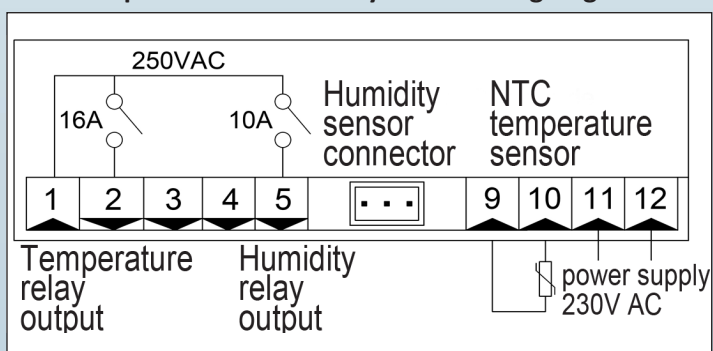
Humidity control	Humidity and temperature control
273BH6F2	273DD2F2



Humidity control wiring diagram



Temperature and humidity control wiring diagram

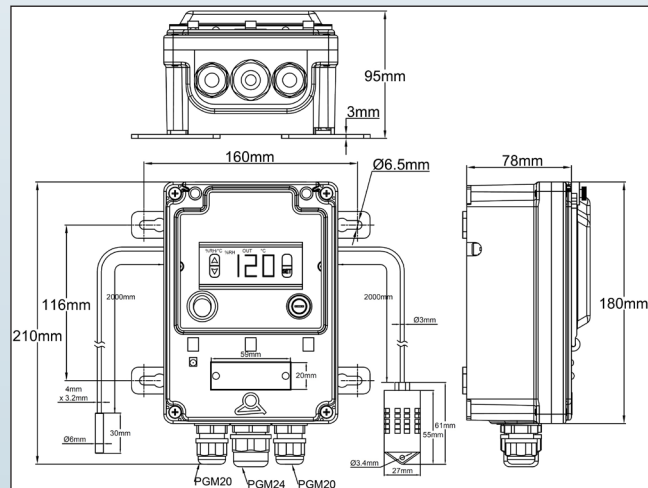


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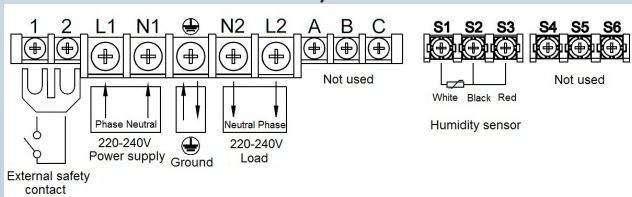
# Electronic on-off relative humidity controllers with IP 65 enclosure, Types: Q8WHH and Q8WHM

## DIMENSIONS

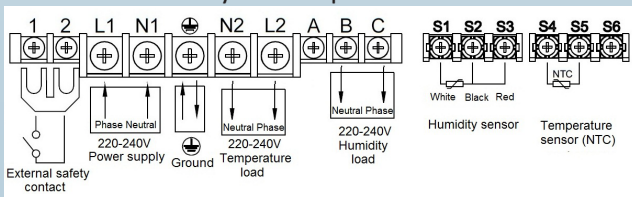


## Wiring diagrams

### Humidity control



### Humidity and temperature control



## MAIN FEATURES

**Applications:** Relative humidity display or control in cold rooms and commercial applications.

**Sensing element:** capacitive sensor, protected by plastic housing, with 2 meter cable.

**Electronic control features:** Miniature intelligent controller (see description P13).

**Main advantages:**

- The simplest and most economical electronic controller with digital display.
- Heavy duty housing for outside use, IP65 and IK10.
- Simple configuration by user
- Adjustable temperature differential and selection of heating or cooling action, adjustable humidity differential and selection of humidifying or dehumidifying action
- If open circuit or missing temperature sensor and if no power supply, output relay will open (Fail safe action)

**Standard equipment:**

- Fuse for internal circuit protection
- Illuminated on-off switch
- 4 wall mounting removable legs
- Connection block with 5 terminals for 6 mm<sup>2</sup> wires and 5 terminals for 2.5 mm<sup>2</sup> wires. The connection block is equipped with a jumper between terminals 1 and 2, it allows connecting a safety device, a timer, or an external wired remote control.

**Cable outputs:**

- Cable gland output board is equipped in standard with two M20 + 1 M24 cable glands (Other cable gland board: 2 x M25)
- The two back side M20 X 1.5 outputs are equipped with cable glands with silicone gasket to seal the temperature sensor (if this option exists) and the humidity sensor outlet.

**Standard Accessories:**

- 10 PA66 red plastic seals, English-French installation manual.
- Temperature sensor with waterproof PVC probe is included in the control box (if this option exists). Other available temperature sensor, see P15 of this catalogue

**Options:**

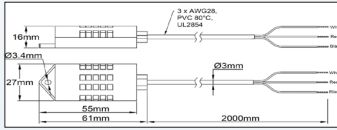
- Infrared remote control
- Enclosure heater
- 115-120V power supply.

**Power relays:** many variations are possible, and are described in the catalogue N°3

## References

Humidity control, remote sensor, relay output 16A 250V	Q8WHHE3000000CF3
Humidity and temperature control, remote sensors, relay output 16A 250V for temperature, 10A 250V for humidity	Q8WHMM3000000CF3

## Ambient relative humidity sensor



These sensors are designed to monitor or control the percentage of relative humidity in atmosphere. They are used to maintain a constant humidity level in a room or a ventilation circuit. They are of the capacitive type.

**Humidity measuring range:** 10 to 95% Relative Humidity

**Temperature range:** -30+80°C

**Storage temperature range:** -40+85°C/ 0-100% RH

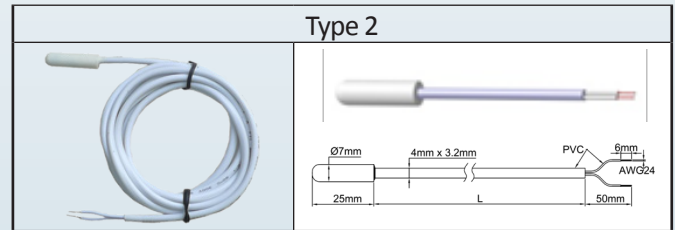
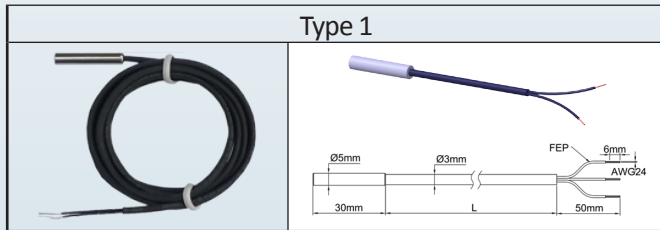
**Accuracy and tolerances:** +/-5% from 20 to 85%

**Connection cable:** 3 x AWG28, PVC80°C, UL 2854 style, external sleeve dia. 3 mm, protected by a metal braid, 2 meter length.

Reference	QC01009501P2000H
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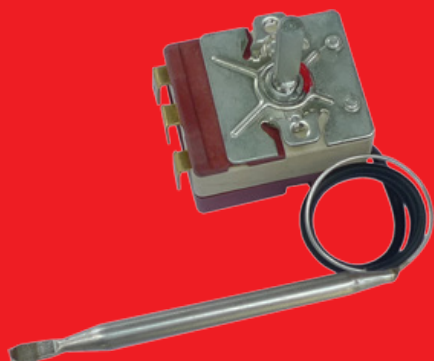
## NTC Thermistors

NTC thermistors (whose resistance decreases with temperature) are cheap and interchangeable. Their high resistance makes them insensitive to the resistance of the measuring line and thus a two-wires connection is allowed. **Polarity:** without polarity

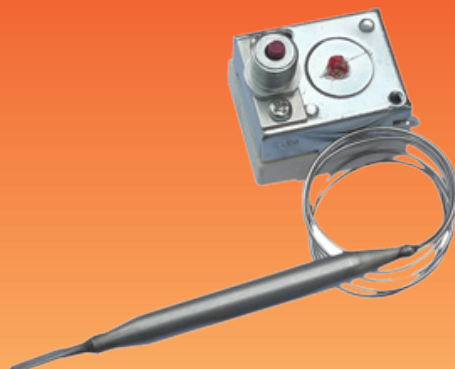


References	Temperature range	R	B	Probe type	Cable (L)	Applications	Type
TLR60030I20001F6	-20+120°C	R@25°C = 10kΩ+/-1%	B25/50°C = 3380+/-1%	Nickel plated copper 6 x 30 mm	FEP, L=2M	Standard applications, ambient and up to 120°C, with 273 type controllers	1
TNR60030I20001F6	-30+50°C	R@25°C = 10kΩ+/-1%	B25/50°C = 3380+/-1%	PVC, water-proof, 7 x 25 mm	PVC 80°C, L=2M	Cold rooms and ambient up to 50°C, with 273 type controllers	2

## Many other Ultimheat components are used in humidity control products and appliances



Bulb and capillary thermostats



Fail safe manual reset thermostats



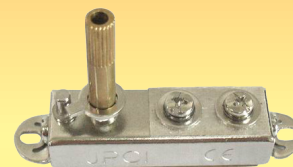
Bimetal disc thermostats



Float level switches



3 pole manual reset disc thermostats



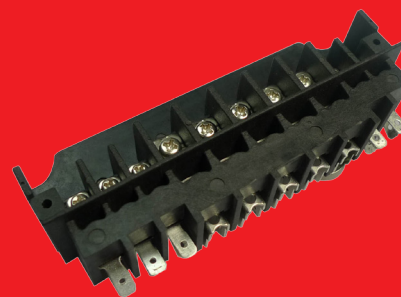
Bimetal thermostats



Electrical cabinet thermostats





Thermal cut out



Connection blocks

# Other catalogues

 **JPC** 1




**ELECTROMECHANICAL AND ELECTRONIC THERMOSTATS RANGE**  
for incorporation


For these thermostats incorporated inside various boxes, housing and cabinets: See catalogues N° 2 and 3  
Explosion proof versions: See catalogue N° 4

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 20/11/2012

JPC sas, 2 voie Gallo Romaine, ZAC de la Bonne Rencontre, 77860 Quincy Voisins, France  
Tel : +33(0)1 60046644 Fax : +33(0)1 60048444 E-Mail : info@jpcfrance.fr Web : www.jpcfrance.fr

 **JPC** 2



**THERMOSTATS WITH INGRESS PROTECTION HOUSINGS**  
and connection boxes for heating elements

The professional solution: an extended, rational, and consistent range of products

Technical catalogue for R&D department  
Edition 02/04/2013

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 **JPC** 3




**INDUSTRIAL ELECTRONIC AND THERMOSTAT CONTROLS**  
electronic controllers, thermostatic control boxes, sub-assemblies and accessories for temperature control in electro-thermal equipment Y6-Y7-Y8 series


For:  
Heat tracing, Immersion heaters, Air heaters, Flexible surface heating elements, HVAC

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Edition 25/01/2013

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 **JPC** 4




**EXPLOSION PROOF THERMOSTATS**  
Types Y9


For industrial and high end applications in non-hazardous area: See our catalogue 3  
For standard applications with ingress protection housing, in non-hazardous area: see our catalogue 2  
For incorporation in non-hazardous area see our catalogue 1

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 **JPC** 5




**PRESSURE SWITCHES**  
Air switches  
Positive Pressure switches  
Vacuum pressure switches  
Differential pressure switches


Elastomer membrane types, medium pressure range (20 to 1500 mbar)

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Edition 15/11/2012

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 **JPC** 6





**FLOW SWITCHES**  
AND COMBINATION CONTROLS

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Technical catalogue for R&D department  
Edition 15/11/2012

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 **JPC** 7



**FLOAT LEVEL SWITCHES**  
Vertical and horizontal models  
For OEM applications

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Edition 15/11/2012

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 **JPC** 9





**FIRE DETECTION FUSIBLE LINKS**  
A fusible link is a mechanical part that breaks at a preset temperature, they are used in fire detection system to open or close door, dampers, vents etc..., if ambient temperature rise upon a certain value.

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Edition 15/11/2012

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 **JPC** 10



**CERAMIC CONNECTION BLOCKS**  
and Special connectors

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Technical catalogue for R&D department  
Edition 15/11/2012

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