

**OPERATION MANUAL  
FOR DISPLAYS SERIES  
DN-109TH, DN-119TH,  
DN-129TH AND DN-189TH**

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## 1. INTRODUCTION

The numerical visual display units of the DN-109TH, DN-119TH, DN-129TH and DN-189TH series, are industrial devices for setting the temperature and/or humidity. The selection of the magnitude is carried out by means of a couple of buttons with an easily programmed code scheme.

One of the main characteristics is the large size of the characters.

DN-109TH of 57mm with reading from 30m.

DN-119TH of 100 mm with reading from 50m.

DN-129TH of 250 mm with reading from 120m.

DN-189TH of 180 mm with reading from 90m.

Just like other series of visual display units, the DN-109TH, DN-119TH, DN-129TH and DN-189TH series, is also available in versions with one or two faces, which provides for multiple solutions and installation options.

Installation is on a surface, fixed to the wall or partition wall, or suspended from lateral anchor points. The temperature and humidity sensor is located on a base that provides IP67 protection and facilitates installation in any position.

The field of application of these screens is very wide in all kinds of industrial applications, functioning as a thermometer, hygrometer or both magnitudes.

## 2. GENERAL CHARACTERISTICS.

### 2.1. Electrical characteristics

#### 2.1.1. Electrical characteristics of the DN-109 displays.

<b>Supply Voltage</b> .....	100 to 240 VAC 50 to 60Hz.
<b>Consumption</b> .....	See "Display weight and power consumption."
<b>Display</b> .....	7 segments, 57mm high + decimal point.
.....	Red Led colour. Viewing distance: max 30 meters.
<b>Text (LED)</b> .....	Formed by LEDs of 5mm diameter, 50mm character height.
<b>Text (Vinyl)</b> .....	White vinyl. 50mm character height.
<b>Parameter memory</b> .....	Eeprom.
<b>Environmental Conditions</b> .....	Operation Temperature: -20 to 60°C.
.....	Storage temperature: -30°C to 70°C.
.....	Humidity: 5-95% RH non condensing.
.....	Maximum environmental illumination: 1000 lux.
.....	Sealing: IP41 or IP65.
<b>Temperature sensor</b>	
Resolution .....	0.1°C
Precision .....	±0,5°C typ ±2,5 MAX
Response time .....	20s
Working range .....	-20°C to 80°C
<b>Humidity sensor</b>	
Resolution .....	1%
Precision .....	±4.5% between 20% and 80%
Response time .....	4 s

#### 2.1.2. Electrical characteristics of the DN-119 displays.

<b>Supply Voltage</b> .....	100 to 240 VAC 50 to 60Hz.
<b>Consumption</b> .....	See "Display weight and power consumption."
<b>Display</b> .....	7 segments, 100mm high + decimal point.
.....	Red Led colour. Viewing distance: max 50 meters.
<b>Text (LED)</b> .....	Formed by LEDs of 5mm diameter, 65mm character height.
<b>Text (Vinyl)</b> .....	White vinyl. 65mm character height.
<b>Parameter memory</b> .....	Eeprom.
<b>Environmental Conditions</b> .....	Operation Temperature: -20 to 60°C.
.....	Storage temperature: -30°C to 70°C.
.....	Humidity: 5-95% RH non condensing.
.....	Maximum environmental illumination: 1000 lux.
.....	Sealing: IP41 or IP65.
<b>Temperature sensor</b>	
Resolution .....	0.1°C
Precision .....	±0,5°C typ ±2,5 MAX
Response time .....	20s
Working range .....	-20°C to 80°C
<b>Humidity sensor</b>	
Resolution .....	1%
Precision .....	±4.5% between 20% and 80%
Response time .....	4 s

### 2.1.3. Electrical characteristics of the DN-189 displays.

<b>Supply Voltage</b> .....	100 to 240 VAC 50 to 60Hz.
<b>Consumption</b> .....	See "Display weight and power consumption."
<b>Display</b> .....	7 segments, 180mm high + decimal point.
.....	Red Led colour. Viewing distance: max 90 meters.
<b>Text (Vinyl)</b> .....	White vinyl.
<b>Parameter memory</b> .....	Eeprom.
<b>Environmental Conditions</b> .....	Operation Temperature: -20 to 60°C.
.....	Storage temperature: -30°C to 70°C.
.....	Humidity: 5-95% RH non condensing.
.....	Maximum environmental illumination: 1000 lux.
.....	Sealing: IP41 or IP65.
<b>Temperature sensor</b>	
<b>Resolution</b> .....	0.1°C
<b>Precision</b> .....	±0,5°C typ ±2,5 MAX
<b>Response time</b> .....	20s
<b>Working range</b> .....	-20°C to 80°C
<b>Humidity sensor</b>	
<b>Resolution</b> .....	1%
<b>Precision</b> .....	±4.5% between 20% and 80%
<b>Response time</b> .....	4 s

### 2.1.4. Electrical characteristics of the DN-129 displays.

<b>Supply Voltage</b> .....	100 to 240 VAC 50 to 60Hz.
<b>Consumption</b> .....	See "Display weight and power consumption."
<b>Display</b> .....	7 segments, 250mm high + decimal point.
.....	Red Led colour. Viewing distance: max 120 meters.
<b>Text (Vinyl)</b> .....	White vinyl.
<b>Parameter memory</b> .....	Eeprom.
<b>Environmental Conditions</b> .....	Operation Temperature: -20 to 60°C.
.....	Storage temperature: -30°C to 70°C.
.....	Humidity: 5-95% RH non condensing.
.....	Maximum environmental illumination: 1000 lux.
.....	Sealing: IP41 or IP54.
<b>Temperature sensor</b>	
<b>Resolution</b> .....	0.1°C
<b>Precision</b> .....	±0,5°C typ ±2,5 MAX
<b>Response time</b> .....	20s
<b>Working range</b> .....	-20°C to 80°C
<b>Humidity sensor</b>	
<b>Resolution</b> .....	1%
<b>Precision</b> .....	±4.5% between 20% and 80%
<b>Response time</b> .....	4 s

## 2.2. Display weight and power consumption.

### 2.2.1. DN-109 weight and power consumption.

Reference	Display Weight (kg)	Power (W)
DN-109/STH	3,0	9,2
DN-109/DTH	3,5	18

### 2.2.2. DN-119 weight and power consumption.

Reference	Display Weight (kg)	Power (W)
DN-119/STH	5,0	17
DN-119/DTH	5,5	32,9

### 2.2.3. DN-189 weight and power consumption.

Reference	Display Weight (kg)	Power (W)
DN-189/STH	7,0	31,8
DN-189/DTH	8,5	63,2

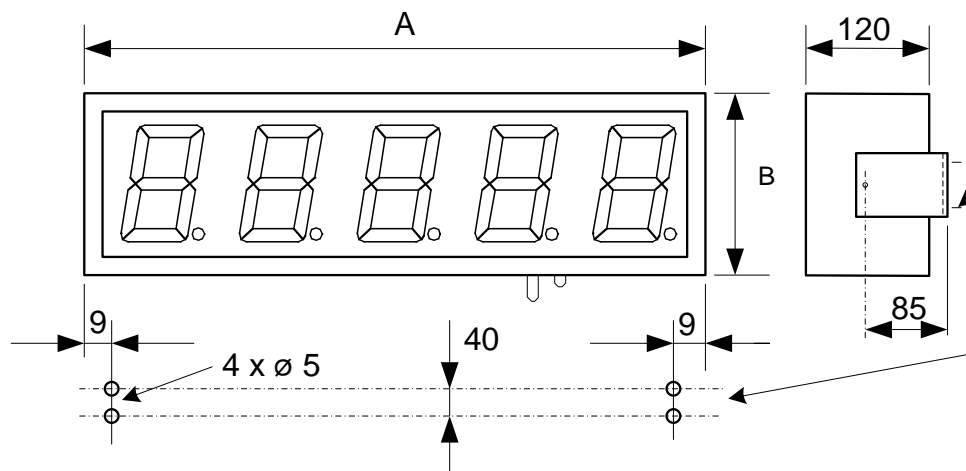
### 2.2.4. DN-129 weight and power consumption.

Reference	Display Weight (kg)	Power (W)
DN-129/STH	12,0	32
DN-129/DTH	15,5	64

## 2.3. Dimensions and mounting of the displays

### 2.3.1. Dimensions and mounting of the DN-109 and DN-119

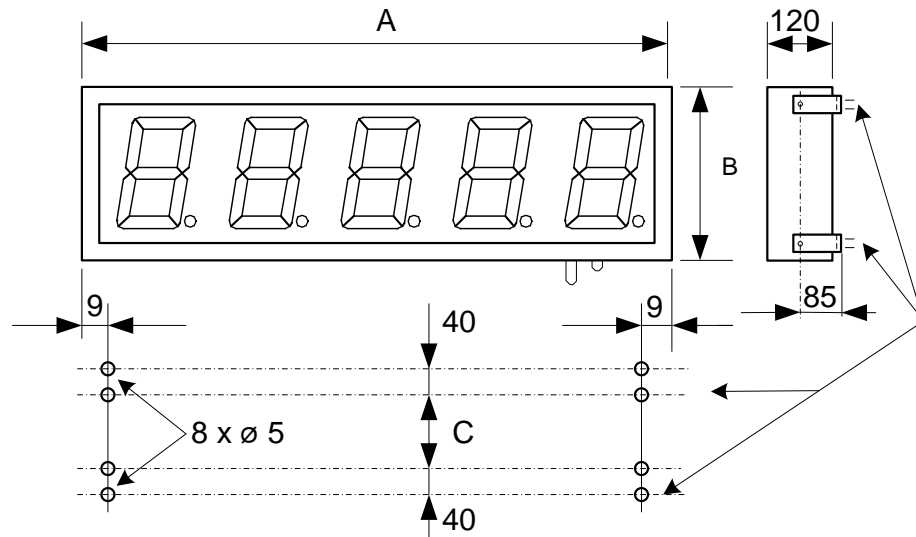
Reference	A	B
DN-109/STH	288	122
DN-119/STH	504	177



Dimensions in millimetres

### 2.3.2. Dimensions and mounting of the DN-129 and DN-189

Reference	A	B	C
DN-189/STH	820	251	67
DN-129/STH	1220	366	186



Dimensions in millimetres



### 3. INSTALLATION

The installation of the DN-109TH, DN-119TH, DN-129TH and DN-189TH is not particularly delicate but some important considerations must be taken into account.

The display must not be anchored to places subject to vibrations, nor should it be installed in places which generally surpass the limits specified in the display characteristics, both in terms of temperature and humidity.

The degree of protection of displays DN-109TH, DN-119TH, DN-129TH and DN-189TH is IP41, meaning that they are protected against penetration by solid foreign objects of a diameter of about 1mm and against the vertical fall of water droplets.

Displays DN-109TH, DN-119TH and DN-189TH should not be installed in places with an illumination level in excess of 1000 lux. Neither should the display be placed in direct sunlight as visibility would be lost.

In the electrical installation, proximity to lines of high intensity circulation and high voltage lines must be avoided, as well as proximity to High Frequency generators and U/F converters for motors.

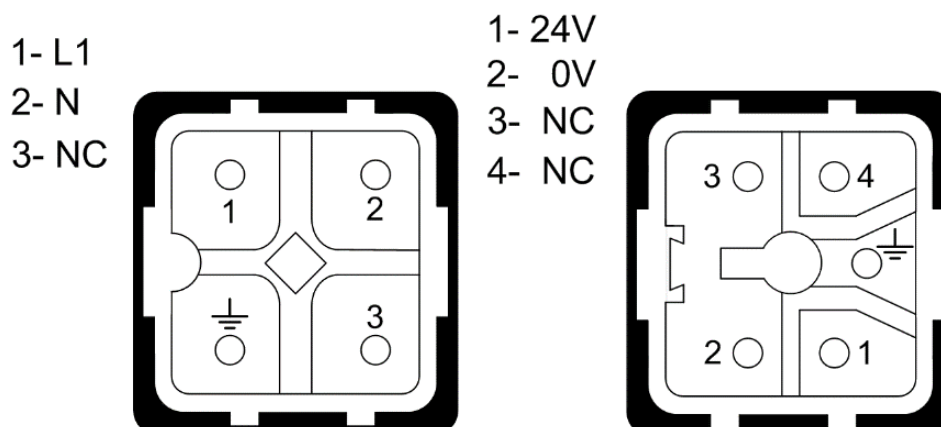
#### 3.1. Power supply.

The power supply must be 100 to 240VAC, 50 to 60 Hz or 24VDC.

The power supply conductor section will be in line with consumption and the ground conductor will be a minimum section of 1.5m².

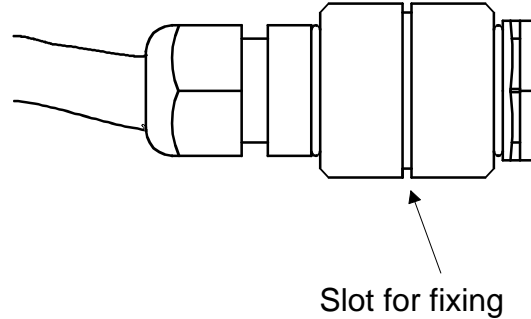
The power supply connector for 220VAC has 4 contacts and is situated in the lower part of the unit. Connect the power wires following the schema below

The power supply connector for 24VDC has 5 contacts and is situated in the lower part of the unit. Connect the power wires following the schema below



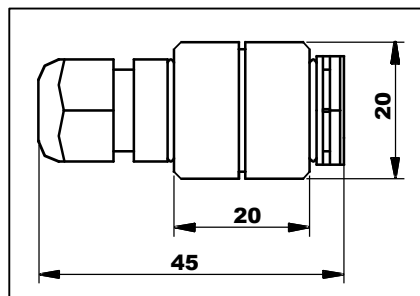
### 3.2. Temperature and humidity sensor

The temperature and humidity sensor is located in a piece of black nylon and protected by a membrane which permits humidity to pass but not water. The connection cable enters by a press stop. The set should not be handled so as to maintain IP67 water tightness.



In order to attach it, a clip-type base is supplied. In order to open it, introduce a flat screwdriver through the slot market «Open» and press slightly outwards and pull upwards. Once you have attached the base, place the sensor on the clip in such a way that the slot of the sensor coincides with the protection of the clip. Close the clip and you will have the sensor in place.

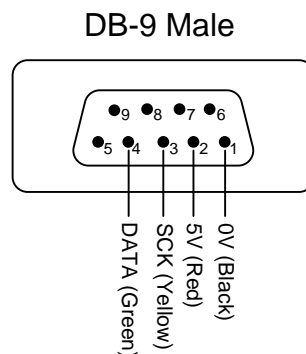
#### 3.2.1. Dimensions of the sensor



#### 3.2.2. Wiring of the sensor

The temperature & humidity probe is delivered with 2m cable and a Sub-D9 connector ready to use.

The wiring of connector probe is shown in the diagram (cable connector).



## 4. OPERATION

### 4.1. Initial reset.

Before connecting the display to the network, we must ensure that all of the connections have been carried out correctly and that the display is firmly in place.

Each time we connect the display to the power supply network, an initial reset occurs which tests all of the segments comprising the display. The test consists of the sequential illumination of all of the digits with the number "8", all of the digits with the value "0", all of the decimal points are lit up and finally the version code. After this point, the programmed magnitude will be seen.

### 4.2. Programming parameters.

Displays DN-109TH, DN-119TH, DN-129TH and DN-189TH can be adapted to the demands of any customer through the parameters programming. The parameters which can be configured are:

- 1- Magnitude to be displayed.
- 2- Exit modify parameters.

The three digits on the right of the display are used to program the parameters. The third digit from the right, which has a decimal point activated, indicates the parameter number. The other two digits indicate the parameter value. The digit in flashing is the one that can be modified.

#### 4.2.1. Enter to modify parameters.

In order to enter the sequence to modify the parameters, the Advance key "\*" must be pressed and held for three seconds. After this, the first parameters will be displayed, showing the most significant digit flashing.

There are then two options:

##### 1- **Modify the parameter value**

By pressing the Advance key "\*", entry is gained to modify the parameter value.

To go back to displaying the parameter number, press "\*" again.

To increase the parameter value, press the "+" key. After parameter 7 it returns to 1.

##### 2- **Select another parameter**

In order to select another parameter, the parameter number must be made to flash using the "\*" key and then the new parameter may be selected using the "+" key.

#### 4.2.2. Exit modify parameters.

In order to exit the sequence for modifying parameters, parameter 2 must be selected. Then press "\*".

#### 4.2.3. Function of each parameter.

##### 4.2.3.1. Parameter 1: Magnitude to be displayed

It permits the magnitude to be displayed to be set according to the following values.

- Code 01: View the temperature.
- Code 02: View the humidity.
- Code 03: View the temperature and the humidity alternately. The change is made every three seconds

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**4.2.3.2. Parameter 2:**

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Exit modify parameters

Push the key “\*” to exit the option modify parameters. Before exiting the parameters are saved.

Push the key “+” until reaching the parameter to be modified to keep on modifying parameters.

## **STATEMENT OF CONFORMITY**



Tetralec Electronica Industrial S.L.  
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08403 Granollers

As the builder of the equipment of the **LARTET** brand:

Model : DN-109TH in all versions.

Model : DN-119TH in all versions.

Model : DN-129TH in all versions.

Model : DN-189TH in all versions.

We declare under our sole responsibility that the aforementioned product complies with the following European directives:

Directive: LVD 2006/95/CEE Low Voltage Directive.

Standard UNE-EN61010-1 Security in electric equipment.

Directive: EMC 2014/30 UE Electromagnetic Compatibility

Standard UNE-EN 61000-6-4 Generic Emission Standard. Industrial environment.

Standard UNE-EN 61000-6-2 Generic Immunity Standard. Industrial environment.

Granollers, 5th February 2013