

**Galltec Mess- und Regeltechnik GmbH**

D-71145 Bondorf · Germany  
 Tel. +49 (0)7457-9453-0 · Fax +49 (0)7457-3758  
 E-Mail: sensoren@galltec.de · Internet: www.galltec-mela.de

**MELA Sensortechnik GmbH**

D-07987 Mohlsdorf (Thüringen) · Germany  
 Tel. +49(0)3661-62704-0 · Fax +49(0)3661-62704-20  
 E-mail: mela@melasensor.de · Internet: www.galltec-mela



**Digital**  
**Dual Function Controller EDJ\_MIC**  
**for humidity and temperature**  
**Input: 2 x 0 ... 20mA**  
**with integrated sensor power supply**

**Description**

The controller EDJ\_MIC for humidity and temperature consists of two integrated, digital microprocessor controllers and also an integrated 15-VDC power supply for the sensors.

The humidity temperature sensor type TFG80J, TFK80J or TFK120J (refer to page 2) with output signals 0 ... 20 mA is used as the readings recorder. The humidity and temperature values are displayed digitally on the EDJ\_MIC controller as actual values.

The EDJ\_MIC controller can be used as a two or three point controller. The output states are shown by LEDs.

The user-friendly EDJ\_MIC controller is really very easy to use. It has been pre-programmed in the factory so that no particular previous knowledge of control engineering is required to be able to solve simple control tasks. After successfully connecting up and entering the target values, it is ready for immediate use to control humidifying or dehumidifying as well as heating and cooling.

Apart from that, the controller also allows you to solve complex control tasks. By using the keyboard to enter the parameters, you can set the PID characteristics of the controller and also the switching time, the switching hysteresis, the working point and also the output limiting.

The filters on the controller inputs filter out changes in the input signal which are too fast. The filter time constant can be set to between 0.0 ... 100.0 sec by pressing a button. Thus the control is no longer affected by distortions and transients.

A special feature of the EDJ\_MIC is the self-optimisation. This means that the controller independently determines the optimal control parameters for a PID or PI controller in the given control environment.

The humidity and temperature controller type EDJ\_MIC provides you with a control unit which can be used to solve a wide range of problems. The EDJ\_MIC controller simultaneously acquires and controls the humidity and temperature and is thus suitable for controlling e.g. computer rooms, air conditioning and maturing chambers, monitoring and regulating the ambient conditions at print shops, in the textile industry, the film industry, in hothouses, in warehouses and many other places.

**Technical Data****Power supply**

..... 230VAC, 11VA (incl. sensors), 45...55Hz  
 Controller type ..... two or three point controller  
 controller structures ..... PD/PI/PID  
 A/D-transducer ..... resolution > 15 Bit  
 Data storage ..... EEPROM  
 sampling time ..... 210ms  
 measurement accuracy ..... ≤ 0,1% / 100ppm/K  
 outputs ..... Relay  
 Make contact (NO contact)  
 ..... 3A at 250 VAC resistive load  
 ..... 150,000 switches at rated load  
 Output sensor supply ..... 15 VDC max. 60 mA  
 Target value display ..... 4-digit can be retrieved using keys  
 Actual value display ..... 4-digit  
 housing  
 ..... panel housing to IEC 61554 black  
 housing dimensions (HxBxT mm) ..... 144 x 72 x 135  
 Contacts ..... on the back using pluggable screw terminals  
 electromagnetic compatibility ..... EN 61 326  
 ambient temperature ..... +10...+50°C  
 protective system, front ..... IP50  
 rear ..... IP20

**Technical Data for Humidity**

Input ..... 0...20mA  
 Control range ..... 0...100 %rh  
 Display range ..... 00,0 ... 100,0 %rh  
 output ..... 2 x NO contacts

**Technical Data for Temperature**

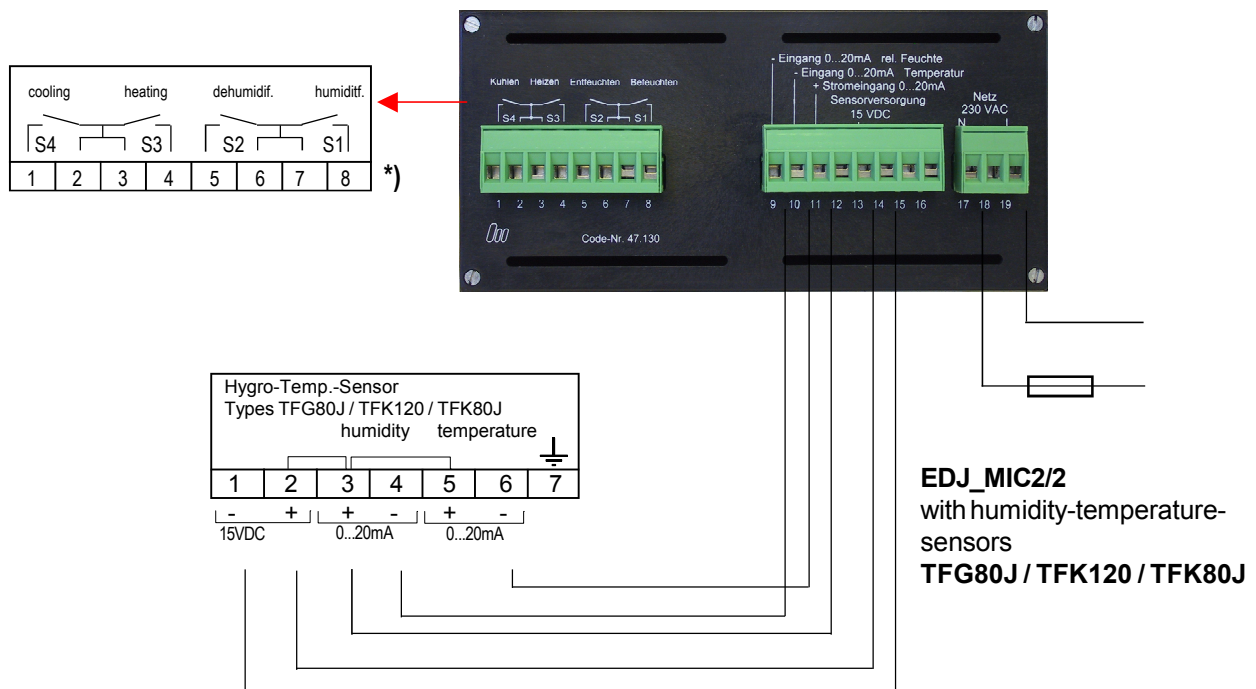
input ..... 0...20mA  
 Control range ..... -10...+90°C  
 Display range ..... -10,0...90,0°C  
 Output ..... 2 x NO contacts

"subject to technical modifications"

**For more complex control tasks and a wide range of sensors, our type EDR\_MIC is available.**

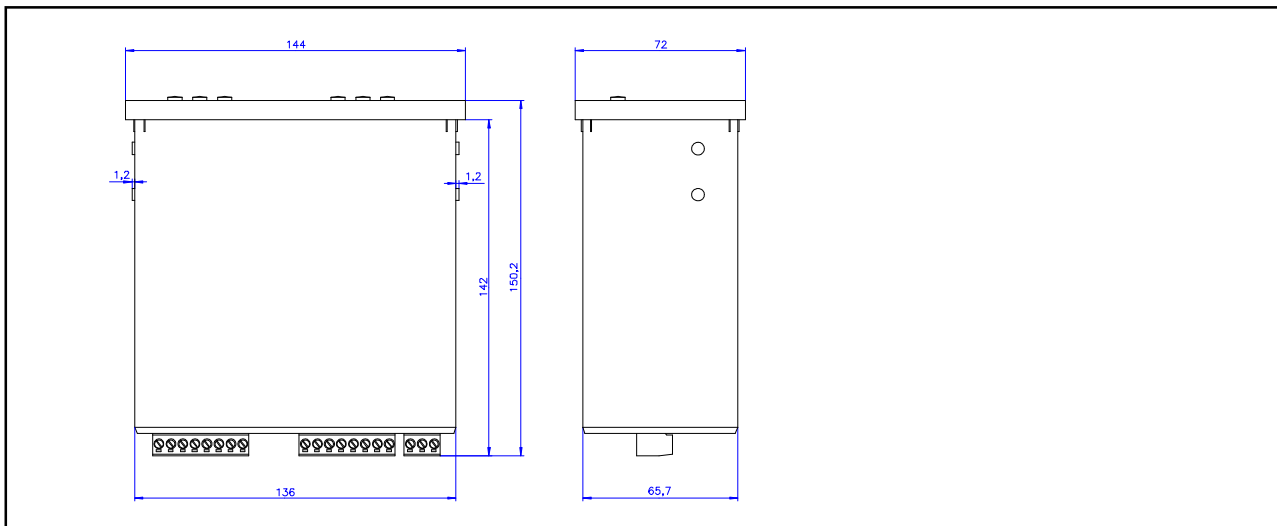
**Please ask for the detailed data sheet.**

## Connecting Diagram



\*) **Caution! If you have been using a EDJ2/2 controller until now:** Please note that on the EDJ\_MIC at the relay output, clamp 2 is connected to clamp 3 and clamp 6 to clamp 7.

## Dimensions



## Sensor Data

Sensor Type	Measured Variable	Structural Shape	Order No.	for Controllers
TFG80J	Humidity and temperature	duct version	44623030	EDJ_MIC2/2
TFK80J	Humidity and temperature	duct version	58623030	EDJ_MIC2/2
TFK120J	Humidity and temperature	room version	59623030	EDJ_MIC2/2

**Please refer to the respective data sheets for the technical data on the sensors!**

## Operation of the Controller

There are three buttons on the front of each of the two controllers: **P ▲ ▼**

Use the **P** button to select the required parameter. The display changes between the description of the parameter and the value. You use the **▲** or the **▼** button to respectively increase or decrease the value for the parameter. The new value will be automatically saved after 2 sec. approx.

### Switching on, setting the target value

After switching on, first of all a display check is carried out for 3 s. After that, the four-digit, seven segment displays show the actual values for the humidity and the temperature (**Normal display**).

After pressing the **P** button, the first parameter will appear: **SP** the target value (**user interface**). It is set by pressing the **▲** or the **▼** button and the new target value set is accepted after approx. 2 s. The normal display with the actual value is then retrieved by pressing the **P** button again or returns automatically after approx. 30 s.

### Setting additional parameters

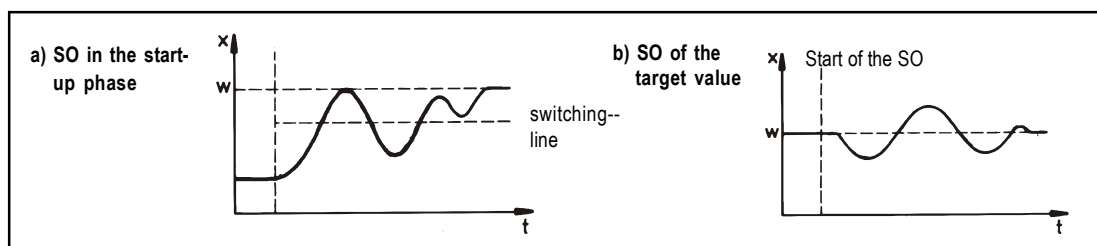
To avoid the parameters being inadvertently changed by people who are not experts, the **Parameter interface**, in which thirteen more parameters can be set, has been protected with a simple locking mechanism: : You can switch to the **Parameter interface** by pressing the **P** button for approx. 3seconds, either directly with the normal display, or on the user interface. The other parameters are also selected by pressing the **P** button and are then set with the **▲** or the **▼** button. Here the new values are also accepted after approx. 2 s, which is confirmed by the display flashing briefly once. After the last parameter, the SP (target value) is shown again at the end before normal display is resumed.

For most applications the EDJ\_MIC controller works correctly with the factory settings. The user only has to set „SP“, „db“, „HYS.1“, „HYS.2“ and possibly „df“. If the target value (SP) is now changed after making this adjustment, the control switching points do not move relatively to each other. The target value is always at half the contact distance (db) (refer to graphics p. 4).

We recommend that you do not change the other parameters without sufficient expertise in control engineering.

### Self-optimization

In many cases, with this function the controller can determine the optimal parameters for a PID or PI controller. The following controller parameters are defined: rt, dt, Pb.1, Pb.2, CY 1, CY 2, df. Depending on the size of the system deviation, the controller chooses between two processes **a** or **b**.



**Caution:** Please make sure you make a note of the parameters set before implementing self-optimization!

To start self-optimization, the **▲ ▼** buttons must be pressed simultaneously for 3 s. On the display „tunE“ and the actual value are shown alternately. Self-optimization is ended automatically or can be cancelled by briefly pressing the **▲ ▼** buttons simultaneously

*Please note that the relative humidity depends on the temperature. For this reason it is necessary to start self-optimization of humidity control at a constant temperature!*

### Alarm messages

The display for the process value flashes **1999**. The cause may be a over/underrange of the process value.

## Parameter

Parameter	Value range	Explanation	Settings	
			factory-set	your setting
<b>SP</b>	<b>20...100%rh bei Feuchte -10...90 °C bei Temperatur</b>	<b>setpoint</b>	<b>40,0%rh 25,0°C</b>	
Pb.1	0,0...999,9	proportional band 1 (controller output 1) P-action	0,0	
Pb.2	0,0...999,9	proportional band 2 (controller output 2) P-action	0,0	
dt	0...9999s	derivative time D-action	80s	
rt	0...9999s	reset time I-action	343s	
CY 1	1,0...999,9s	cycle time 1 (controller output 1)	20,0s	
CY 2	1,0...999,9s	cycle time 2 (controller output 2)	20,0s	
<b>db</b>	<b>0,0...100,0</b>	<b>contact spacing</b>	<b>3,0 [%rh or °C]</b>	
<b>HYS.1</b>	<b>0,0...999,9</b>	<b>differential 1 (controller output 1)</b>	<b>1,0 [%rh or °C]</b>	
<b>HYS.2</b>	<b>0,0...999,9</b>	<b>differential 2 (controller output 2)</b>	<b>1,0 [%rh or °C]</b>	
Y .0	-100...100%	working point (working point)	0%	
Y .1	0...100%	maximum output	100% *	
Y .2	-100...100%	minimum output	-100% *	
<b>dF</b>	<b>0,0...100,0s</b>	<b>Filter time constant</b>	<b>0,6s</b>	

\* For controllers without controller structure (Pb.1 = 0 or Pb.2 = 0) Y.1 = 100% and Y.2 = -100%.

