detected by water droplet sensing circuit **7**. The microcomputer **10** also serves to measure the absolute humidity and relative humidity through computations which utilize the temperature difference ΔT detected by the temperature difference sensing circuit **8** and the ambient temperature T_a which is detected by ambient temperature sensing circuit **9**.

An interface **11** is connected to microcomputer **10**, and serves to send data relating to the dew point temperature, absolute humidity, relative humidity, etc., from the microcomputer **10** to external circuits which are not shown in the drawings.

The operation of the dew point hygrometer described above will now be explained, referring to the flow chart to FIG. **8**. The flow chart shows the operations which are executed by the microcomputer **10**.

Firstly, the microcomputer **10** acts to connect current generating circuit **6** to Peltier cooling means **2** through switching circuit **13**, while controlling current generating circuit **6** to supply the maximum level of current to Peltier cooling means **2** (step **101**). When current then flows through Peltier cooling means **2**, the Peltier effect is produced in the two groups of junctions **26** and **27**, so that heat is absorbed by the first group of junctions **26** and heat is generated by the second group of junctions **27**.

Due to the fact that the first group of junctions **26** is concentrated in the central region of the humidity sensing element **1**, with the front and rear faces of the thin film layer formed in that central region being exposed to the atmosphere, the first group of junctions **26** is thermally insulated. Thus, cooling by the first group of junctions **26** can be accomplished by passing a very low level of current through these junctions.

The junctions in second group **27**, on the other hand, are dispersed around the periphery of humidity sensing element **1**, and are formed of thin film layers which are in close contact with the substrate **20**. Thus, heat which is generated in these junctions will be rapidly transferred to the interior of the substrate **20**. For this reason there is almost no rise in temperature of the regions which are adjacent to this second group of junctions **27**, so that the heat produced thereby has no effect upon the cooling action of the first group of junctions **26**.

In this way, the cooling section which is positioned in the central region of humidity sensing element **1** can be rapidly cooled to a temperature which is lower than the dew point temperature, whereby condensation of water vapor occurs upon that portion of insulating layer **22** which is formed over the water droplet sensing means **3**. Water droplets thereby adhere to that portion of insulating layer **22**.

As mentioned hereinabove, the water droplet sensing means **3** is made up of two electrodes **33***a* and **33***b* which are mutually opposed and separated. When water droplets adhere to insulating layer **22**, an increase occurs in the dielectric constant between the electrodes **33***a*, **33***b*, whereby the impedance between these electrodes is abruptly lowered.

The water droplet sensing circuit **7** detects this abrupt change in impedance of the water droplet sensing means **3**, and notifies the microcomputer **10** of the presence of water droplets by means of an output signal which is applied to the microcomputer **10** (step **102**).

The operation of water droplet sensing means **3** is as follows. The water droplet sensing means **3** is activated during successively occurring time intervals by pulses produced from an oscillator circuit. The value of impedance of water droplet sensing means **3** is converted into a corresponding voltage value by an integrated circuit, and this voltage value is compared with a predetermined voltage level by a comparator, to thereby judge the presence or absence of water droplets.

Due to the fact that the maximum level of current is initially passed through Peltier cooling means **2** to produce cooling of the cooling section thereof, water droplets will adhere to insulating layer **22** within a specific time interval. This condition is sensed by water droplet sensing circuit **7**, and in response to this the microcomputer **10** acts to reduce the cooling current by a factor N % (step **105**). If at this time, (i.e., after the above-mentioned specific time interval has elapsed) no water droplets have formed on substrate **22**, then this signifies that the level of humidity is outside the range of measurement. A display signal to indicate this fact is therefore generated (steps **103**, **104**).

After a predetermined time interval has elapsed following the aforementioned reduction of the cooling current by N %, a determination is once again made as to the presence or absence of water droplets (step **106**). If a signal continues to be output from water droplet sensing circuit **7** indicating the presence of water droplets, microcomputer **10** acts to reduce the cooling current by a further N % (step **105**). In this way, by repetitions of this loop of operations, the cooling capacity of Peltier cooling means **2** is gradually reduced. When the cooling capacity has been reduced to the point at which water droplets cease form on insulating layer **22**, the existing water droplets begin to evaporate. When water droplet sensing circuit **7** detects that the water droplets have been dissipated, the cooling current is increased by M % (where $M<N$). This process of successive detection of the presence of adherent water droplets and increasing the cooling current by M % is repeated until the temperature is reached at which water droplets are once more formed, i.e., until the dew point temperature is reached (step **107**).

When water droplet sensing circuit **7** detects the adherence of water droplets (step **108**), the microcomputer **10** reads out the temperature difference ΔT between the temperature of the cooling section and the ambient temperature, from temperature difference sensing circuit **8**, and also reads out the ambient temperature from ambient temperature sensing circuit **9** (steps **110**, **111**).

Detection of the temperature difference ΔT (step **110**) is performed as follows. When the point in time is reached at which sensing of the temperature difference ΔT is to be carried out, Peltier cooling means **2** is disconnected from the current generating circuit **6** by the switching circuit **13**, and Peltier cooling means **2** is connected to the temperature difference sensing circuit **8**. The temperature difference ΔT is then sensed by temperature difference sensing circuit **8**, whereupon Peltier cooling means **2** is once more connected to current generating circuit **6** by switching circuit **13**.

If the cooling current should reach its maximum value as a result of successive loop repetitions of incrementing the cooling current by steps of M % (steps **107**, **108**, **109**), the ambient atmospheric conditions are outside the range of measurement. A display signal is therefore output to indicate this (step **104**).

As described above, the ambient temperature sensing means **5** is made up of the temperature measurement resistor **32**. The value of ambient temperature is sensed by passing a minute level of current through this resis-