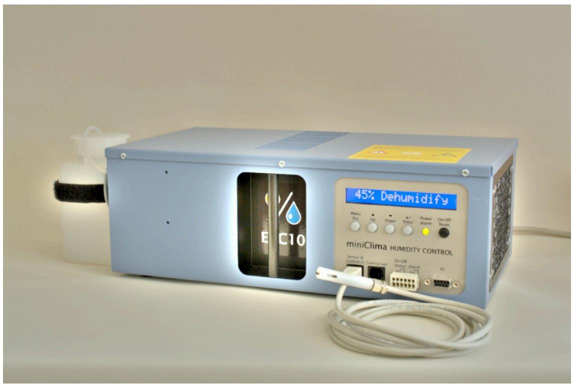
miniClima Schönbauer GmbH

miniClima Constant Humidity Devices EBC

The miniClima Constant Humidity Devices "EBC" serve to keep the relative air-humidity inside a closed case on a constant level without influencing the temperature of the conditioned air. They are used for museum showcases, switchboards, deposit cupboards, containers and similar applications. The essential requirement for efficient operation of the system is that the case should be airtight and manufactured from non-porous materials.

The case must be connected to the EBC with flexible hoses and screw connectors (all part of the delivery), forming together a tight air circulation system. Also, the miniClima sensor for measuring the temperature and relative humidity must be led inside the case. We use digital sensors and deliver them ready-to-use with housing, cable and RJ45 plug. The same kind of plug is used for the control lines, which are delivered for setting up an EBC chain of one master and one or more slave(s) (common network cables can be used for this purpose as well).

Once set into operation, the EBC monitors the air condition inside the case and initiates the appropriate action as soon as it becomes necessary: Dehumidification of the system air by condensation of surplus air-humidity or humidification by evaporation of condensate or distillate. This ensures that the actual humidity level will continuously be brought into line with the setpoint. The changes in the humidity level are more gradual the closer the actual RH level approaches to the setpoint. All the while the EBC continually circulates the air between case and EBC independently from the currently required process. The air is always exhausted from the case, led into the device where it will be conditioned if required, or left untreated and then returned back into the case again. The whole process takes place without intermingling system air and outside air.



The water (actually: distillate and condensate) that is used for the EBC's work is recirculated from the bottle to the inside of the EBC and back again repeatedly on both a regular basis and following the requirements of the current process. Through this continuous movement biological growth is virtually eliminated and EBC-induced problems with bacteria formation have never been reported to us.

Like its predecessor the new series EBC10/11 consists of two models for different air-volumes to be processed, EBC10 (max. $3m^3$) and EBC11 (max. $5m^3$). The new units are no longer classified as masters and slaves. The possibility still exists to add more units to one case for increasing the capacity. Now every model from the series has the potential of becoming both a fully functional master unit or a slave unit as required. The decision for one of the two hierarchic states is selected automatically dependant upon the type of cable connected to the EBC. If it is the cable from the miniClima RH/T sensor, then the EBC becomes a master controller. If it is the control line coming from another EBC then the unit becomes a slave and will duplicate the function of the EBC that is the first in the line.

This new classification will help the user when he wants to rearrange exhibitions, keep a qualified unit in stock, or when he/she needs to provide for at least some humidity control even if the actual master unit fails.

The miniClima devices require electric supply through a standard socket-outlet. No water-pipe installation is required, the unit being completely self contained. All condensate or distillate is stored and taken from the unit's own water bottle. The bottle can be positioned to the front of the EBC as well as to the side, so as to fit more easily into restricted areas. The bottle is secured with a belt and (by default) always monitored against overflowing. In addition to this high water level alarm, all devices of series EBC10/11 can be ordered equipped with a low water level alarm (optional extra). And in those cases where the customer requests it, and where it is also possible with respect to safety considerations, an EBC can be delivered without any sensors for the water

p.t.o.

level in the bottle at all (cost reduction).

Other alarms that are issued by the EBC refer to the humidity level being above or below the customer preset levels, the overall water handling system of the EBC (i.e. torn or blocked silicone pipe), and the presence and quality of the signals coming in from the RH/T sensor or the master unit (i.e. broken cable). If an alarm occurs, the green LED on the front panel turns red and the display informs the user of the alarm status. Each device is equipped with two potential-free switch-over contacts for wiring the EBC with external installations - i.e. in a control room. First, a composite error alarm, and second a signal informing the on/off status of the unit. The user can therefore be ensured of being notified immediately when a non-routine intervention is needed. By popular request series EBC10/11 also brings back the built-in audible composite error alarm, which can be activated from the menu (default setting is "off").

An all new miniClima datalogger hardware is now part of the control system built into the EBC and is provided with every unit. The new software ("miniClima EBC Tool") is supplied free of charge with each order, and allows up to 15,000 values to be stored and read out. The user can check for alarms that occurred or settings that have been changed and the settings for the setpoint and for the two alarm thresholds can be made via the software as well. Finally, the software can be used for a "live" display of the currently present values for RH and T inside the case.

The following accessories/features/options are available for the series EBC 10/11:

- ✓ A 2-litre condensate/distillate bottle replacing the standard 500-millilitre bottle supplied.
- ✓ Upgrade kit to convert to the 2-litre bottle.
- ✓ Low water level alarm (High water level alarm is fitted as standard).
- ✓ LVB air distribution boxes, allows connection of up to six cases to one conditioning unit.
- ✓ Air filter FLT for filtering of the case air supply when required.
- ✓ Larger fans (ULV+ or ULV++) for generating an increased airflow. Used when an unusually high air resistance is expected (i.e. long hose connections, use of FLTs).
- ✓ Serial data cable RS232 for connecting an EBC to a PC.
- ✓ Serial-to-USB adapter cable for connecting the EBC to a PC that is not fitted with an RS232 interface.
- ✓ Upgrading a slave set to a master set or vice versa by using the required cable (a miniClima RH/T sensor with cable and RJ45 plug or a control line coming from a Master).

Maintenance & Care: Depending on the condition of the surrounding air, the cooling air inlets and outlets on the EBC housing should be cleaned regularly with a vacuum cleaner. Importantly, the dust filter protecting the large cooling air inlet needs regular cleaning/washing/replacement. The filter can be dismantled easily from the outside. The water bottle should be checked and cleaned at regular intervals. Also, for devices with just one or no water level sensor fitted, it is necessary to visually check the water level in the bottle from time to time so as to ensure a continued and undisturbed control of the humidity set level. A general service/inspection is recommended after 15,000-20,000 hours of operation, which is about every two years when constantly in use. The hours of operation of any specific EBC can also be seen via the menu on the front panel.

Each device is delivered ready-to-install complete with all required parts including hoses, hose connectors and cables, as well as (once per order) installation and documentation CDs with the miniClima EBC Tool and detailed user guides.

Humidity Control Systems Ltd
The Green, Nettleham, Lincoln, Lincolnshire, LN2 2NR
Phone 01522 753722, Fax 01522 753822, sales@humiditycontrol.co.uk, www.miniclima.co.uk