Crystal EX documentation

# Errors

There are three different errors

1. DI error
2. Polishing error
3. Filter error;

DI error gets checked after unit has been in “Running” stage for 5 minutes. If resistivity is < 2 MOhm (conductivity > 0.5 us/cm) DI error flag gets set and “DI Err” message appears on the display.

Polishing error gets checked after unit has been in “Recirculation” stage for 5 minutes. If resistivity is < 2 MOhm (conductivity > 0.5 us/cm) Polishing error flag gets set and “Polishing” appears on the display.

Both these errors are resettable by restarting the unit.

Polishing error gets set after unit has been in “Running” stage for 200 hours and filter timer has not been reset. “Filter” message appears on the display. To reset filter error, exchange prefilters and reset filter counter in MENU. This error cannot be reset by restarting the unit.

# Recirculation

There are two variable controlling recirculation stage:

1. Recirculation period – time between two consecutive recirculation stages;
2. Recirculation time – length of the recirculation stage;

Both variables are settable from units MENU. If any of the variables have been set, unit should be put into “OFF” and “On” state for the changes to initiate.

Recirculation stage can be set if the unit has been in “Running” or “Tank Full” stage for the time that is longer the [Recirculation period – Recirculation time].

# Stages

Unit can be in following states:

* + OFF = 0,
  + StandBy = 1,
  + Running = 2,
  + Recirculation = 3,
  + Dispensing = 4,
  + LowPress = 5,
  + TankPump = 6,
  + PostFill = 7

“OFF” is the default state after unit is switched on. Unit can be set to “StandBy” state by pressing RUN button. If, in this state, tank is not full, unit will go into “Running” state automatically. During “Running” state unit performs low pressure, tank full and recirculation timer check. If any of these checks are positive, unit goes to “LowPress”, “PostFill” or “Recirculation” state. “PostFill” state lasts for 30 seconds and then unit is switched to “StandBy” state. “PostFill” overfills the tank so the high-level sensor is submerged in water fully. If TANK PUMP button is pressed, unit enters “Dispensing stage” and dispensing of the Grade I water starts. If unit is equipped with pump in the tank, unit can be set to “TankPump” stage by pressing up button.

# Conductivity

Maximum range for Grade I and Grade II conductivity measurement is 0.055 – 5 us/cm. Range for RO water measurement is 1.0 to 40.0 uS/cm. When conductivity sensor is disconnected or no signal is sent to the microcontroller, display indicates “---”.

If water that flowing through RO sensor has conductivity < 0.08uS/cm, display can fluctuate between “---” and actual reading. This happens because RO water channel has bigger capacitor and signal period for clean water is larger than 2 seconds. This means microcontroller does not receive any signal. This is not a problem, since RO water cannot have lower conductivity than 0.08 uS/cm.

# UART

UART uses 9600 Baud/s baud rate. Currently it is only used to send debug messages.

# Temperature calibration.

To access temperature calibration function, unit should be turned on while pressing “ON/OFF” button on keypad. To cancel calibration “MENU” button can be pressed.

**NB. Calibration should be started with lower temperature.**

After calibration, unit will switch on automatically with updated temperature calibration data.