Software

Requirements Specification

For

4 x Gen4L-block Tester software

Version 01

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1. **Overview**

The Gen4L tester program will allow a comprehensive testing of the Gen4L-based print-block.. The hardware configuration of the tester will be based on the electronics designed for the printer, namely, OHDB 2 + GEN4L Head driver Board. Some changes to the OHDB firmware may be needed in order to support the tester functionality.

The tester program can be based on the existing Eden Tester software which will undergo changes emanating from the requirements presented in this document.

1. **Tester functions**
   1. **Temperature control**
      1. Set temperature for 4 ptintheads, each containing ODD and EVEN heaters (8 heaters altogether).
      2. Set temperature for 4 channel block heaters (pre-heater1/2, block front/rear).
      3. Actual printheads and block temperature reading display (8+4 channels)
      4. Set error margin
      5. Heater ON/OFF control (global)
      6. Individual Enable / Disable control for each heater.
      7. Temperature-in-range / Temperature-out-of-range indication.
      8. Temperature ramp-up control.
   2. **Data setting**
      1. Individul nozzle setting for each of the 4 printheads (4 x 384 nozzles).
      2. Set ALL/Clear ALL control for all printheads.
      3. Set/Clear data for a group of nozzles (GUI dependent)
      4. Load/Save pattern capability.
      5. Cyclic data generation (cyclic ON/OFF pattern).
   3. **Strobe LED control**
      1. Setting strobe pulse width
      2. Setting strobe pulse delay -static
      3. Setting strobe pulse delay – dynamic (start delay, stop delay, increment, rate)
      4. LED ON/OFF control
   4. **Fire control**
      1. Fire frequency setting
      2. Pulse width setting
      3. Fire Mode setting
         1. Continuous
         2. Duty cycle (# of fires ON, # of fires OFF, # of cycles)
         3. Single burst (# of fires)
         4. Firing for a set time duration
   5. **Head voltage control**
      1. Calibration of head voltage (4 x 2 channels)
      2. Actual voltage reading
      3. Error indication
      4. Heads PS voltage reading
   6. **Resin-fill control**
      1. Setting threshold values for all 4 sensors or for all 6 sensors in case where a “flooding“ reservoir is being used.
      2. Setting hysteresis value
      3. Enable/disable control
      4. Setting timeout period
      5. Timeout error indicator
      6. Pump Active indicator for every one of the materials
      7. Setting of operating mode. Select between “flood“ mode and 4-material mode. In case of a“flood“ mode – selection of material source (pump assignment).
   7. **Vacuum and purge control**
      1. Vacuum valve actuator
      2. Setting purge duration
      3. Purge On/Off control
      4. Air Valve actuator
      5. Actual vacuum sensor readout
   8. **Actuators** 
      1. Material pumps
      2. LED illumination
   9. **Communication setup**