5.5.2   Robot functions

In the Robot menu you can
- adjust the robot
- test the robot
- view the adjustment parameters

Adjust Robot

In this mode the robot parameters can be adjusted and viewed. Beside the full adjustment procedure (Robot) two single adjustments can be run (Sensor height and pan light barrier). Single steps of the full adjustment can be redone by pressing "retry". Follow the instructions on the Terminal to complete the tasks.

Robot

- Starts the complete robot adjustment. To run it you need the "dummy pan" and the "gauge block". The robot does some initial testing and then starts with the turntable position 1 - adjustment. This adjustment is done with a dialog on the SmartSens terminal.
- Adjust turntable to position 1 (horizontally)
  - "Step" moves the sample tray one step to the left
  - Repeat until the gripper is fully centered over sample position 1
  - Press "OK" when satisfied to get to the next adjustment
  - You need to confirm this with "OK" or you can get back to the former adjustment again with the "back" key.
- Adjust lift to turntable (vertically)
  - "5 Steps" or "Step" moves the gripper down.
  - Adjust it so that the gripper just touches the sample tray
  - Confirm with "OK"
- Adjust gauge block to sensor
  - Put the gauge block into position 1
  - The robot catches the gauge block after "OK", and moves down until the gauge block touches the sample holder. This may take a while.
  - It asks to remove the gauge block and to confirm with "OK"
- Adjust gripper to touch pan (close gripper)
  - Put dummy pan on pos. 1
  - "5 Steps" or "Step" closes the gripper
  - "5 Steps" is used to nearly touching the dummy pan
  - "Step" adds 1 step and try to pick up the dummy pan
  - Use "Step" until the dummy pan is picked up
  - Confirm with "OK"
  - The robot catches the pan
  - Confirm this with "OK"
- Adjust pan to light barrier
  - Confirm that the dummy pan is in the gripper
  - The thickness of the dummy pan is checked. It should be in the range of 32 ± 4 units
  - The dummy pan is put onto the sample holder
  - Now check the position of the dummy pan on the sensor

- If it is not centered adjust the position of the sample robot (see section 9)
- If it is centered, go to the next steps to get the dummy pan back to the turntable
- If everything went fine, confirm with "OK" and save the parameters with "OK"

Sensor height

This adjusts the gauge block to the sensor. It is a part of the complete calibration and can be used if e.g. only the sensor was changed.
- Put the gauge block into position 1
- The robot catches the gauge block after "OK", and moves down until the gauge block touches the sample holder; this may take a while
- It asks to remove the gauge block and to confirm with "OK"

Pan light barrier

Gives the number of steps during which the pan is detected by the light barrier. It should be in the range of 32 ± 4. This test can be used to adjust the potentiometer on the sample detection board.
- Put a dummy pan in position 1 and confirm with "OK"
- The sample changer catches the sample, moves it past the light barrier and displays a value for its thickness.
- If the value is too far off, the potentiometer is to be adjusted and the test can be run again until the desired value is reached.
- Quit with "home". The dummy pan is put back. There is no parameter to be stored.

Home

Leaves the sample robot calibration and goes back to the home menu. No adjustment values are stored, but the former ones are kept.

Parameter

There are 5 parameters which are adjusted during a robot adjustment. On the right hand side the total values are shown. These are the values that are stored in the FRAM. On the left hand side the offset values are shown. These are the number of steps from the initial position of each parameter.

Test Robot

In this mode every single function of the robot can be controlled. Every movement can be repeated as many times as required in automatic mode or manually. **Adjustment parameters are NOT changed.**

- The gripper can be moved in single steps (only one direction). If the automatic mode is chosen the gripper closes and opens again. The numbers of steps are counted and if steps were lost, it is indicated on the display.
- Next always brings you to the next test.
- The robot can be moved downwards and upwards in single steps or automatically. In the automatic mode the numbers of steps are counted and if steps were lost, it is indicated.

- The sample robot plate can be moved forth and back in single steps. In the automatic mode it goes from the initial position to position 2 and back. The numbers of steps are counted and if steps were lost, it is indicated.
- The pan recognition test is a go/no go test for the light barrier. It gives the result of the test:
"no pan recognized" or
"pan recognized"
The test can be run empty or with an object in the light barrier to check its function.
After this test this mode can only be left with "home" which exits the service mode.

Home

Home leaves this level and goes back to the home menu.

Parameters

There are 5 parameters which are adjusted during a robot adjustment. On the right hand side the total values are shown. These are the values that are stored in the FRAM. On the left hand side the offset values are shown. These are the number of steps from the initial position of each parameter.

5.5.3   Module setup

There is a set of parameters for each module which can be set via this terminal. They can also be changed with the TAServiceTool from the PC. For more detailed information see section 5.4.4, "system configuration".

The parameters that can be set:

Page 1:   - Identification number (ID)
            - TCP/IP address (this is only information! The effective TCP/IP address on the communication board must be set with the TAServiceTool
            - Furnace type (small, large, high temperature)
            - Sensor type

Page 2:   - Furnace power supply
            - Minimum temperature
            - Maximum temperature
            - Cooling option

Page 3:   - Furnace control parameters (PID): Do not change these parameters from the
              default values unless you have advanced knowledge about the temperature
              regulation
            - Power line frequency