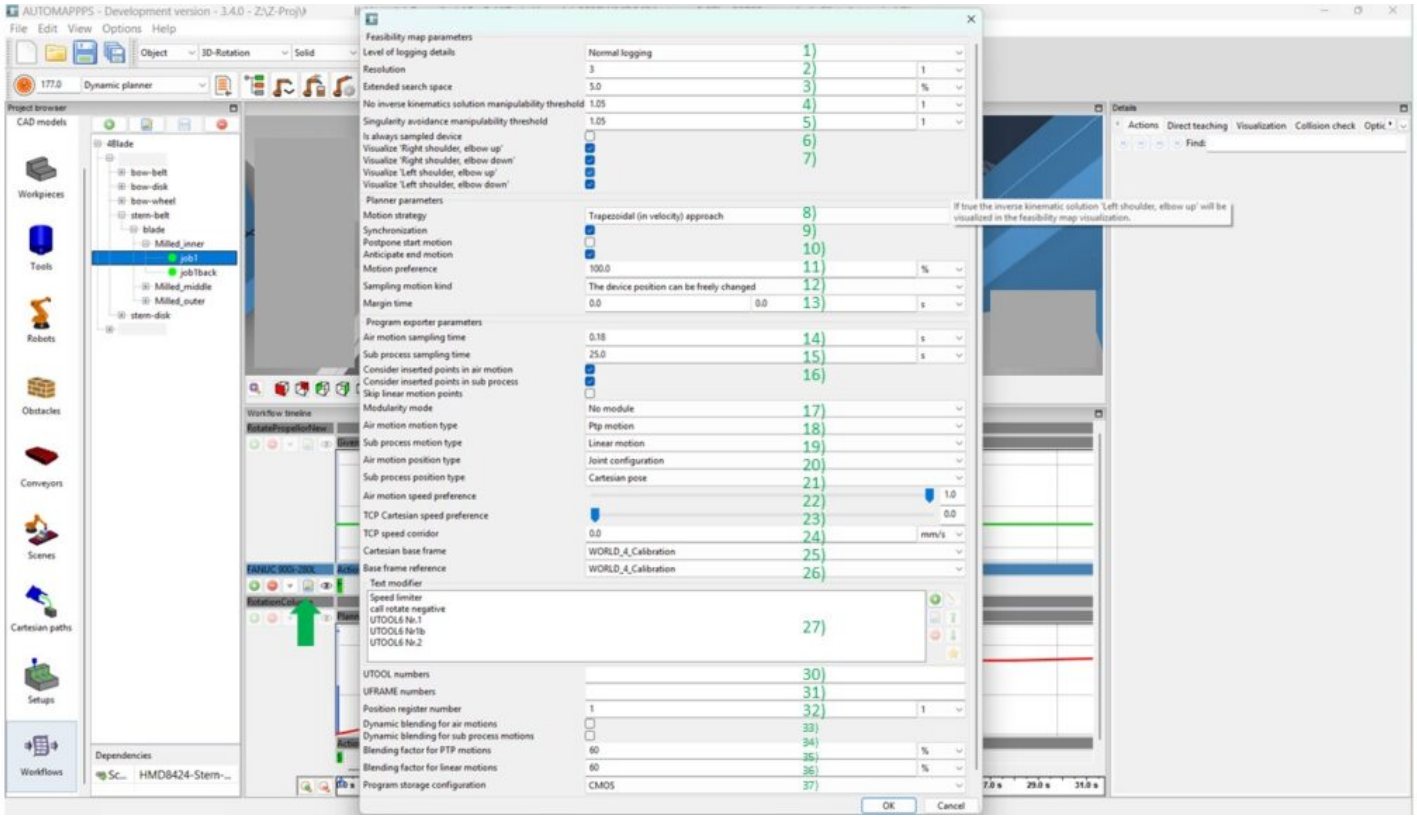
OLP – Device Parameters and Exporter Parameters

Settings and Parameters for Robot Offline Programming · https://convergent-it.com/tutorial/robot-olp-parameters-settings/olp-exporter-parameters/

Robot Parameters

Robot manufacturers do have different parameters, and requirements e.g. for blending, or moving-line and others. The majority of the paramerters however is common.



The parameters above have the following use:

Feasibilty map parameters:

Parameters are:

- 1) Level of logging details: Choose between the amount of information about the status/progress between "minimal logging" and "full logging"
- 2) Resolution: This parameter describes how devices such as robots and axes are sampled. For a regular robot chose 3 (min, max, middle)
- 3) Extended search space: This parameter is more usefull for external axes. Keep the value 5 (%)
- 4) "No inverse kinematics solution manipulability threshold". This parameter keeps the robot away from configurations where it has "problems to move" (e.g. very strechted or folded configurations, or where the Joint2 and Joint3 configuration makes problems with parallelograms). Commonly use the same value as for the singularity avoidance (5).
- 5) "Singularity avoidance manipulabilty threshold": This parameter keeps the robot away from singularities. The higher the value, the more far away. The manipulabilty of a large robot is commonly higher than of a small robot, a robot with external axes higher than without external axes. Values can range from 0.01 for very small robots to around 1 for large robots with auxilary axes. How to define the value: open the "Direct teaching", set the axis 5 e.g. to plus and/or minus 6 degree away from the stretched wrist (commonly a value most robots can pass a singularity) and read the manipulabilty index shown and insert this value for this parameter.
- 6) "Is always sampled device": This parameter is on usall cases for external axes. Keep it unselected (unless a very special case is chosen and we advise you to check the box explicitely)
- 7) The check boxes "Vizualize right-shoulder, elbow up" and the other 3 include specific robot configurations in the plotting of the feasibilty map. If all boxes are checked, it may appear that there is a path connecting all control-points, but if you start unselecting, you can immediately identify if it is possible with one consistent configuration - i.e. without a (unwanted or forbidden) configuration change.
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Planner Parameters

- 8) Motion strategy: Keep "Trapezoidal (in velocity) approach - unless you are a real robot (motor) control expert and know what you are doing
- 9) Synchronization: If checked, the robot axes are more strictly synchronized, leading to even smoother motion. This is not needed e.g. in air.motion processes, but supports delecate processes sucha s seeling or welding.

- 10) Postpone start motion: the planner tries to move the actions (of this robot) towards the end of the cycle. The robot waits in HOME until the last moment before moving to the first point.
- 10) Anticipate end motion: the planner shifts all actions (of this robot) towards the start of the cycle and let the robot return to its HOME as fast as possible, and let it wait until the end of the cycle time is reached.
- 11) Motion preference: set to 100% to avoid reconfiguration, set to 0% to allow configurations. The preferenc describes "how bad" a reconfiguration is. 100% means it is as bad as failing the entire path.
- 12) Sampling motion kind: for a robot always chose "The device position can freely be changed". Other devices such as conveyors it can make sense to demand standing still while the processes is executed or to not accelerate (keep konstant speed). This is described for the cases of external axes
- 13) Margin Time: A time interval before and after the action

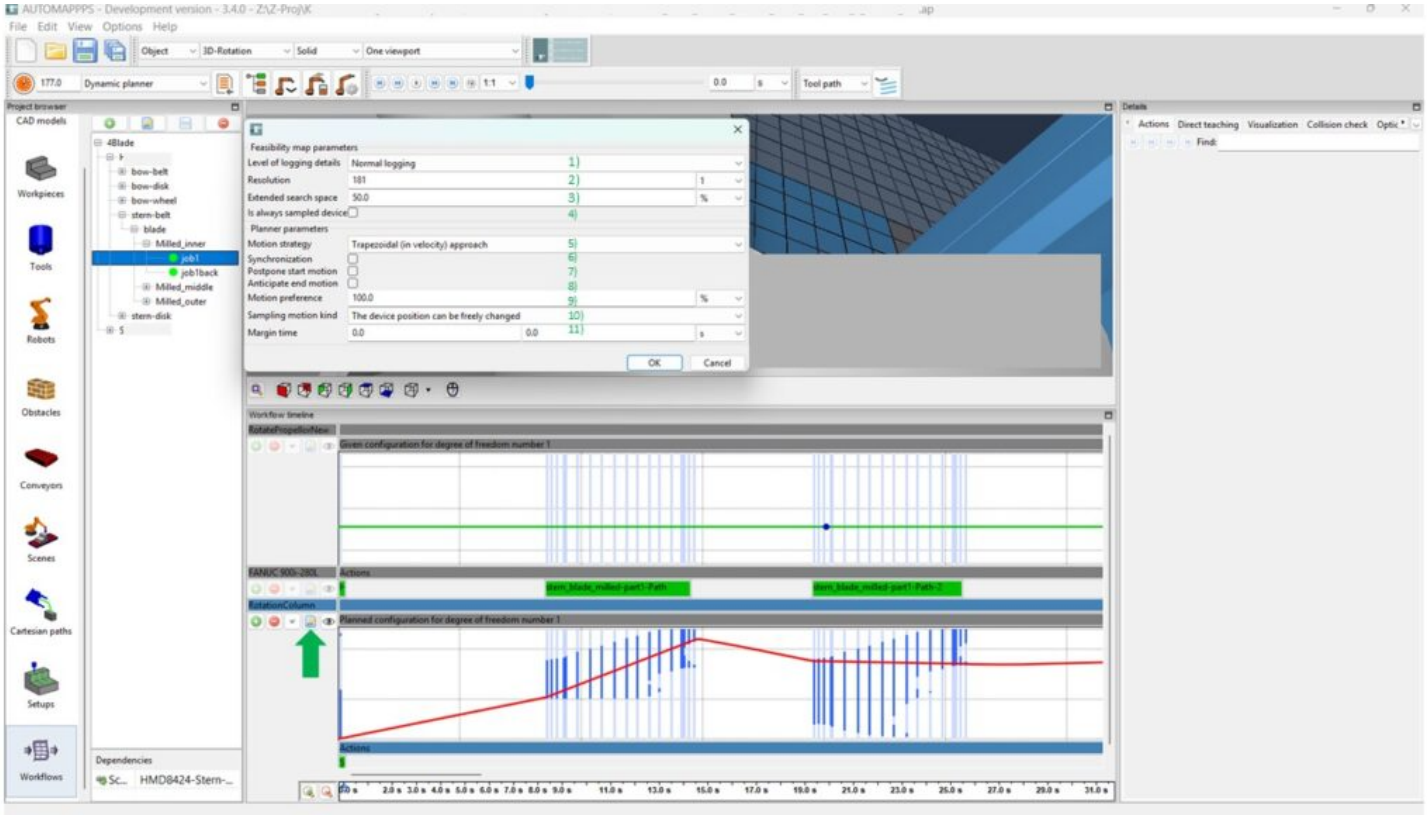
Program Exporter Parameters

The program exporter paramters are those parameters which are depending in the robot brand and controller

- 14) Air motion sampling time. In addition to those waypoint (usually in joint-configuration) which are absolutely necessary to guide the robot around obstacles, additional points are inserted all n seconds. This is done to force the robot on the same paths as planned in presence of common world-model deviations. Regular values are one additiona "attractor" all 0.15 - 0.6 seconds. If the cell and the motions are very complex and close to obstacles or the part, aim for the lower end. If the cell is wide and free, higher values can reduce the cylce time.
- 15) Sub-process sampling time. In addition to those waypoints of a path which have been defined e.g. by the user or by the surface following behavior or path-parameters in the "Setup" or obstacle avoidance behavior of the planner in the workflow, additional points can be inserted all n seconds. If linear motions are chose, this makes "no sense", but if e.g. joint motions are chosen, the robots stays closer to the planned path. If you use linear robot motion commands, set the value larger than the largest distance between 2 waypoints defined in the setup. E.g. simply set to several seconds.

- 16) "Consider inserted points in air-motions/ in sub process motions" Set to true. Both are needed for collision avoidance unless you optimize manually.
- 17) Modularity mode: The robot program can be exported as one program or splitted into subprograms per action (one), or in one program buth with one module per action or per subprocess.
- 18) Air motion motion type: Chose between ptp and linear motion
- 19) Sub process motion type: Chose betwen ptp and linear motion for executing the tool paths
- 20) Air motion position type: Chose betwen joint and cartesian motion
- 21) Sub process position type: Chose betwen joint and cartesian motion for executing the tool-path
- 22) Air motion speed preference: Set 0 for the maximum possible speed, set 1.0 for the speed defined by the motion planner
- 23) TCP carthesian speed preference: Set 0 for the define possible speed, set 1.0 for the speed estimated by the motion planner
- 24) TCP speed corridor: the calculated speed can vary along a path. You can set a tolerance of the speed to suppress frequent exportation of speed commands.
- 25) Base frame: Chose e.g. the frame of the workpiece
- 26) Base frame reference: Chose e.g. the cell center.
- 27) Text replacements: allows to exchange parts of the exported program
- 30+31) Specify UTOOL and UFRAME
- 32) Sepcify the position register
- 33+34) choose blending mode
- 35+36) define the blending value - in case of FANUC robots e.g. %
- 37) Program storage configuration

Additional Axes

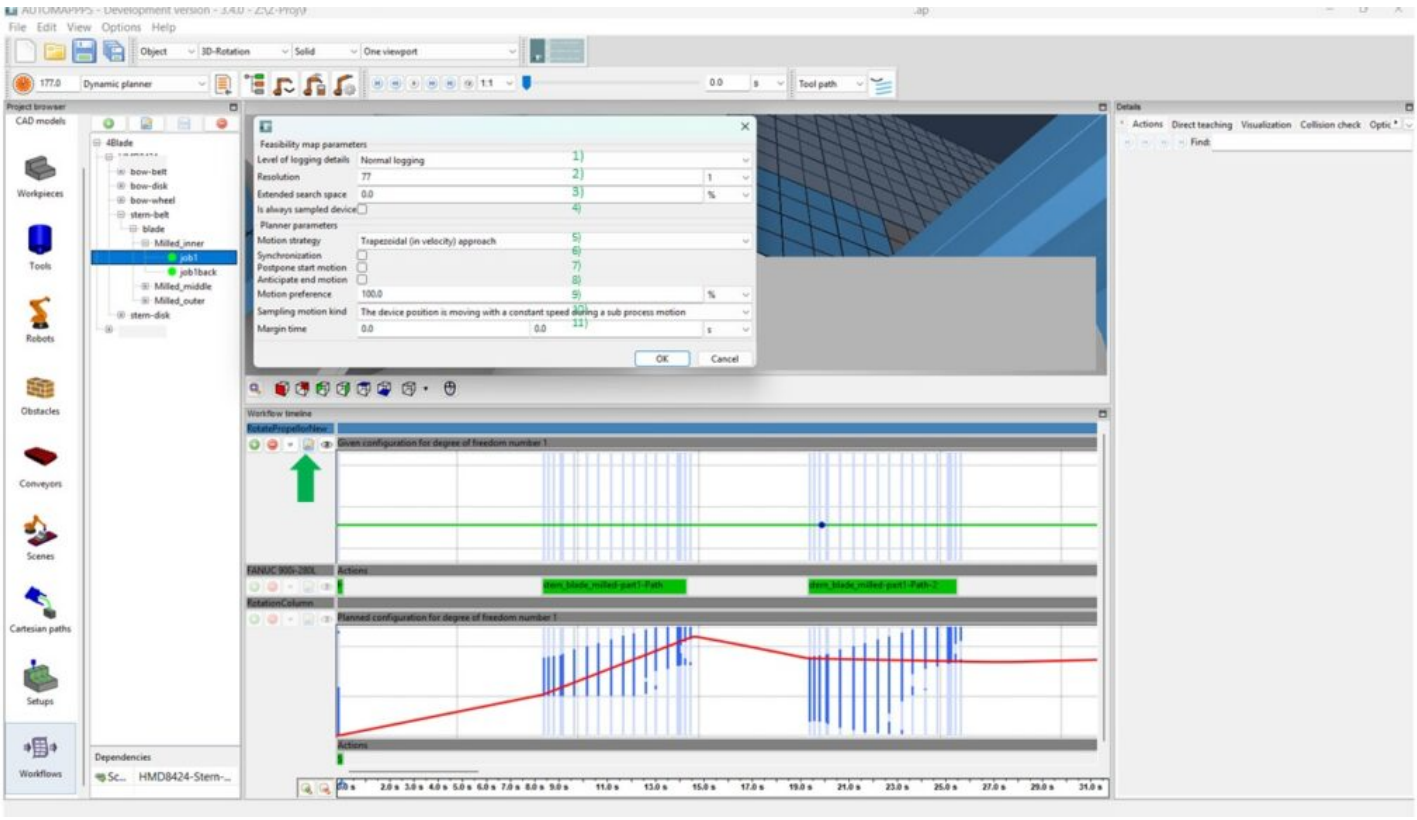


Feasibilty map parameters

- 1) Define the level of logging
- 2) Resolution: Define in how many section the axis is subdivided to for testing
- 3) Extended search space: If the sampling mode is not full mode but only reduced or minimal sampling, this value defines how many percent (left and right) of the actual pose of the axis the search for solutions is carried out.
- 4)

Planner parameters

- 5) - 11) same planner parameters as for the robot



The parameters of the rotation table are similar. The main difference is that the parameter 3) the extended search space is set to 0%. This reduced the search space that needs to be checked compared to allowing both external axes to vary.