ST Robotics

Mounting

Mount the robot as shown in the picture below. Use the 4 M10 screws provided. Connect the 2 cables to the robot base as shown. The cables from the controller to the track are shown bottom left.

Overview

The track is the 6th axis in an R12 or R17 system that has a track.
The Roboforth for an R17 system with a track is R17V16 and for an R12 it is R12V16
It is not the same software as a 6 axis robot which has Cartesian kinetics for 6 axes.
The only differences between the 5 axis robot and a 5 axis robot with track are #AXES and the encoder fitted pattern EFP.

#AXES ? Is 6
EFP ? Is 63

These variables are part of the robot signature file (Rxxxx.SIG.RAM) and are USAVEd.

Reverting to 5 axes.

If you remove the robot and wish to use it stand alone as 5 axes change the above values
```
5  #AXES  !
31 EFP  !
```
(bear in mind EFP does not take effect until after START)
USAVE if you want to save these to flash.
You will need a standard motor cable. The track cable has a 36 way round connector each end. The standard cable has a 25W D one end.
To revert again to 6 axes
```
6  #AXES  !
63 EFP  !
USAVE
```

Cartesian coordinates

The track is not included in Cartesian commands. Wherever the track is the robot will take up the Cartesian position relative to where it is. Changing X will not move the track.
Therefore the best programming technique is to move the track to required position first using MOVE or MOVETO then send the Cartesian command to position the robot.

Track Speed

The track will not run as fast as the rest of the robot. There is a track speed limit TRACKSPEED. You can see it in SETTINGS.

For MOVE and MOVETO commands the track will only move at that speed and not at whatever you have set for the rest of the robot. SPEED will therefore affect only the robot. However the DSP does not make the distinction and will attempt to make compound (multi-axis) moves at SPEED shared according the the count required for each axis. This could result in the track being moved at greater than it's maximum speed resulting in a stall. This is another good reason to move the track first then the robot. For example

```
SETTINGS
SPEED     TRACKSPEED    ACCEL
10000         10000         1000
40000         20000         2000
TELL TRACK 8000 MOVETO
READY
```

In this case the robot will move on the track to position 8000 at speed 20000 then go to READY at speed 40000 (shared) by DSP. Do not use HOME because that is a compound move. Use instead

```
TELL TRACK 0 MOVETO
HOME
or
TELL WAIST SHOULDER ELBOW HAND 0 MOVETO
TELL TRACK 0 MOVETO
```
or define a new word e.g.
```
: THOME
SPEED @
20000 SPEED !
HOME
SPEED !
;
```