

RDT introduction

Target of this exercise is to use RDT to develop a high-level human-machine interface (HMI) to communicate with an already existing Robox R3 program.

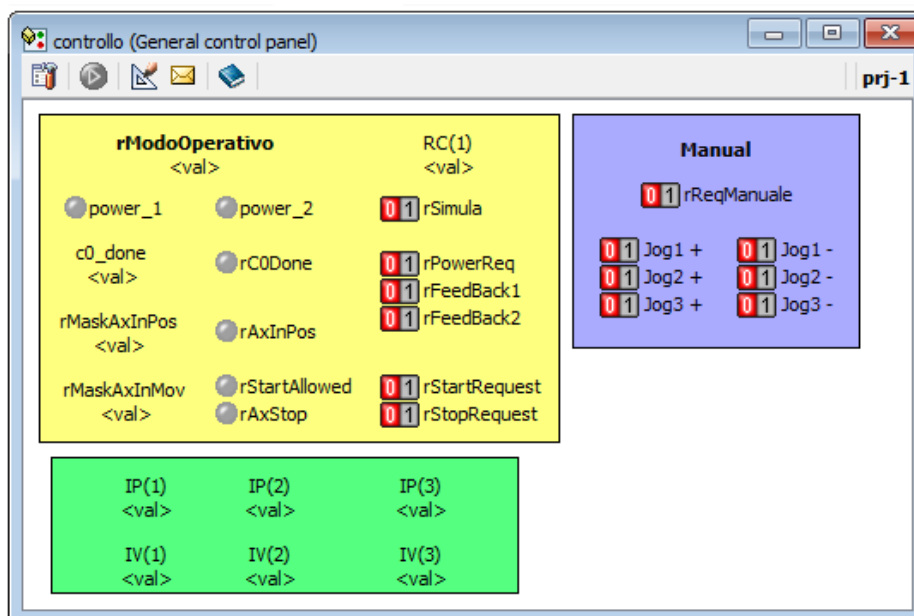
To make this exercise you will need a controller and a pc with RDE and RDT. In order to try your HMI project, you will need a Robox HMI device; if you don't have any, you can use RTM on your pc.

1. RDE_Base_project

Start opening the RDE workspace you did during "01_RDE_R3" exercise. If you don't have done it yet, you can download the RDE base project (so called "skeleton") from Robox shared folder in OneDrive. This is a base project with 3 axes controlled by an easy program composed of a task and rules.

Load this project on your controller and make it start. Using RDE you can switch on a shell to speak with your Robox controller and check if communication is good.

Then, switch on the RDE graphical panel shown in **picture 1** and learn how to make the system move: reset the initial alarms, set feedback on, power on, then you can move in jog (manual mode) or press start and perform the zero cycle (simulated) and then make positioning and go start the automatic cycle.



Picture 1 – graphical control panel of RDE project

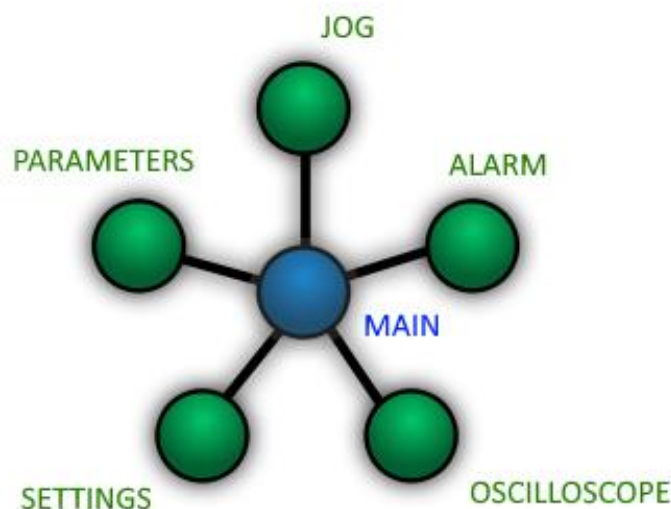
After this initial approach to this project, you should use no more RDE to control the system but just the HMI that you will develop in this exercise.

2. Robox Display Tool (RDT)

Open RDT and make a project to speak with your controller. You must make the following pages:

- **Main page:** this is the entry page. From here you must be able to check the system status, power set, press start and stop, check CO_DONE mask and switch to other pages by pressing some buttons.
- **Alarm page:** page with RDT log and related buttons.
- **Jog page:** here you can set up the manual request and play with jog buttons.
- **Parameters page:** here the user can change the value of important registers, such as speed, accelerations or max and min strokes. Important parameters (such as strokes) will request a password level > 1 to be changed.
- **Settings page:** here you can change time, date, password level and language. Remember that this project must have at least 2 languages and English is compulsory (eg. English and Chinese, English and Italian, English and French...).
- **Oscilloscope page:** here there must be an oscilloscope with IV of all axes.

For this exercise the page structure must follow a “radial topology” as shown in **picture 2**, also known as “star topology”, where main page is the center and all the others are connected to it.



Picture 2 – scheme of a radial network structure

3. Graphics and presentation

When you work with HMI you must always remember that the user likes to deal with an easy to use interface and the customer will appreciate if your graphical level is good. To reach both these targets, Robox provides an RDT buttons repository with some themes (**picture 3**), which is stored in RSM shared OneDrive folder. Using this kind of button libraries will allow you to write less text and to gain a lot in the beauty of your HMI presentation.



Picture 3 – Examples of different button themes provided: brown, blue and orange.

4. Debug

Reboot your controller and connect it to your HMI. If you don't have an HMI device, you can use RTM directly on your PC. Try to use your HMI to control the system and see if everything is working correctly.