

Optical illusion



You will use this model to learn about the fundamentals of programming and about the elements used into the model.

If you have already built the model based on the building instructions, then you have certainly already noticed a few important components. In addition to fischertechnik modules, you will use a component called an “actuator”, which is the Mini Motor, and a “sensor”, like a button used to control the motor.

Mini Motor 6-9V	Gears	Button
		

An explanation of the components is provided on the introductory page.

The “Optical illusion” model is divided into 2 programming tasks:

Task 1	<u>Programming level 1</u>
Optical_illusion_1.rpp	Start the motor of the optical illusion with the installed button The motor will go off again after 5 seconds
Task 2	<u>Programming level 1</u>
Optical_illusion_2.rpp	The motor will start when the button is pushed, and will turn the disc to the right for 3 seconds. It will remain stopped for 1 second, then turn the disc to the left for 3 seconds. Then the motor is switched off.

Task 1

Start the ROBO Pro program. The working screen will appear with the different work areas.



If you need further information on the ROBO Pro program, use your mouse to click on the “Help” link in the program.

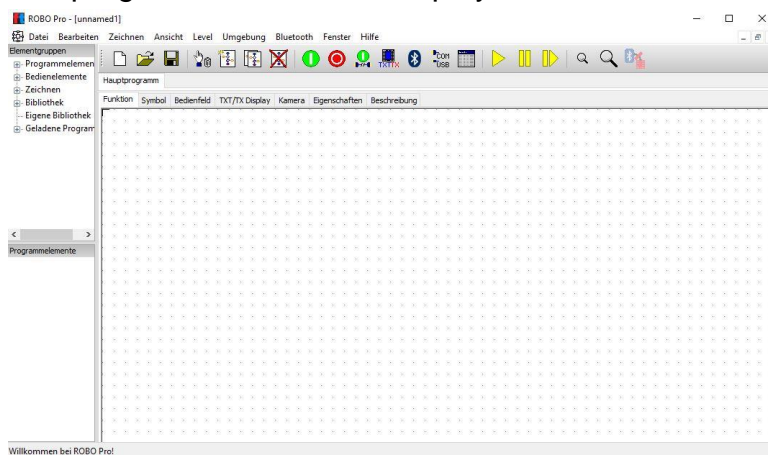
Click in the tool bar



on the “Create a new ROBO Pro program” icon.



The programmer screen is displayed.



Now, you can give programming a try. Look at the first task once again:

“The motor should be started by the built-in button”.

Important: For this task, you will need programmer level “Level 1: Beginner”.



The first command you need is located on the left side of the screen under “Program elements”.



Drag the “Start” command into the programming screen with your mouse.



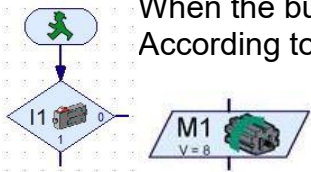
As you have probably already read in the ROBO Pro Help section, a process always starts with this start element.



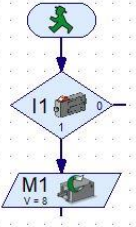
Now, you need the command to query the button. Drag the “Digital branching” command to the connection point for the start command.



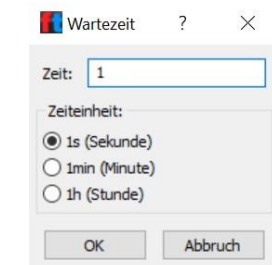
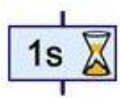
When the button is pushed (logical 1), the program will continue at command output “1”. According to the task, the motor on motor output “M1” should now be switched on. To do so, drag the command “Motor output” under the button query. The ROBO Pro Help function also provides important information on this command.



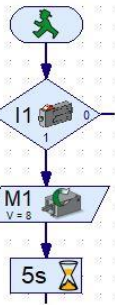
Important: If a connection between the program elements does not work, review the ROBO Pro Help section under 3.4.



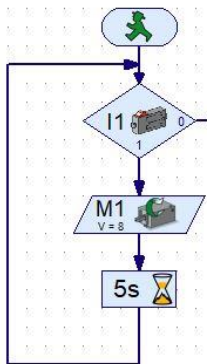
The motor or rotary disc should turn for 5 seconds. You will need the “Wait time” command to make this happen. Drag it under the motor. The connection is then completed automatically.



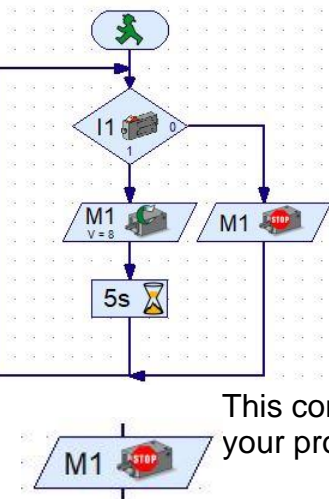
Change the time from 1 second to 5 seconds as well. To do so, right click on the command. Then change the time from 1 to 5 in the dialogue box, and click “OK” to end.



Now, you need to connect the output of the wait command with the input of the button query. To do so, click on the output connection. A connecting line (cable) is connected to the cursor. Drag it down slightly and click to position it. Then drag the line to the left and position it, then upward between the start command and the button query, and then to the start command and button query connection.



Important: This function is also called a cable loop from the start of the program to the end of the program.

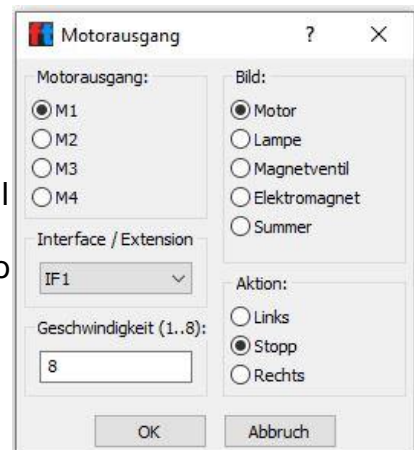


As you can see, the output connection on button query “0” is still open, or no command is connected to it yet.

The task requires that the motor stops here when the button is not activated.

So, you will once again add a motor command, but will convert it to “Stop” in the dialogue field (right mouse click). Then join the two connections from the button to the motor input and from the motor output to the loop.

This completes programming for the first task. You can test your programming using the model.



Important: If you would like to test the program (this applies for all programs), you must have connected your computer to the model.



Now, start the test by pressing the button “Start program in online mode” in the tool bar.

The program is now started on your computer. Press the button on the model, and the disc will start to turn. It will stop again after 5 seconds. Each time you press the button, this process will be repeated.



Before solving the 2nd task, save the program on your computer. To do so, activate the “Save current ROBO Pro program in a file” command.

Name the program **“Optical_illusion_1”**

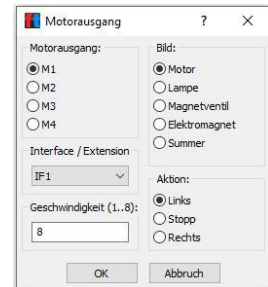
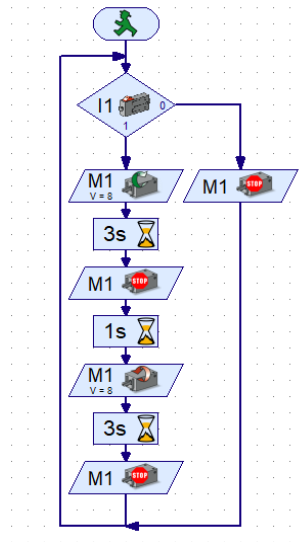


Since the program does not have its own stop command, you must end it using the command “Stop all running programs”.

Task 2

Now, solve the 2nd task.

To do so, delete the cables you do not need at the moment, insert another motor for anticlockwise running and another wait time, and then re-connect the connections of the commands.



Test out the program and save it under the name

“Optical_illusion_2.rpp”

on your computer.

Now you have written the first two program, and operated the “Optical illusion” model.

Note: All example programs for every task are also available in the ROBOPro directory, in the Beispielpprogramme\ROBOTICS Smarttech folder.

The standard directory is: C:\Programme(x86)\ROBOPro\Beispielpprogramme\ROBOTICS Smarttech\

Now, disassemble the model and try out the next task.