

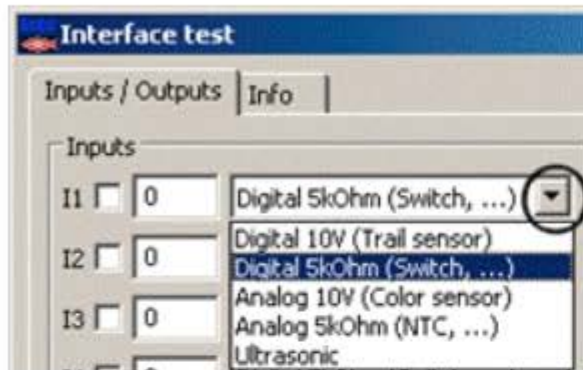
## 2.4 Is everything working – the Interface test

Once the connection has been correctly set up, you can use the Interface test to test the ROBO TX Controller and the models connected to it. The test window displays the various inputs and outputs of the Controller:



- **Universal inputs I1—I8**

I1—I8 are the universal inputs of the ROBOTICS TXT Controller and the ROBO TX Controller. This is where different types of sensors can be connected. There are digital and analog sensors. You set the universal inputs depending on the type of sensor you would like to connect.



- **Digital sensors** can only assume the states 0 and 1, or Yes and No. By default, both universal inputs are set to the input type Digital 5kOhm. Switches (mini pushbutton-switches), as well as phototransistors (light sensors) or reed-switches (magnetic sensors), can be connected to these digital inputs.

You can check the functioning of these inputs by connecting a mini-sensor (item number 37783) to the Interface, e.g. to I1 (use contacts 1 and 3 on the switch). As soon as you press the button, a check-mark appears in the display of I1. If you have connected the

switch the other way around (contacts 1 and 2), the check-mark will appear straight away and disappear when you press the button.

- The setting **Digital 10V** is used for the infrared trail sensor.
- The setting **Analog 10V** can be used for the color sensor or to measure voltages between 0 and 10V such as the supply voltage of the battery pack. The voltage is displayed in mV (millivolt).
- **Analog 5kOhm** is used for the NTC resistor to measure temperatures and for the photoresistor to measure light. Here the reading is displayed Ohm ( $\Omega$  = electrical resistance).
- The setting **Distance** is used for the ultrasound distance sensor (for the ROBOTICS TXT Controller and the ROBO TX Controller only the version TX of the distance sensor with 3 pin connection cable, item number 133009, can be used).

- **Counter inputs C1-C4**

These inputs allow you to count fast pulses with frequencies of up to 1000 pulses per second. You can also use them as digital inputs for buttons (not suitable for the trail sensor). If you connect a button to this input, every push of the button (=pulse) will increase the value of the counter by 1. This allows you, for example, to let a robot travel a specific distance.

- **Motor outputs M1—M4**

M1 – M4 are the outputs from the Interface. This is where the so-called actuators are connected. These can be, e.g., motors, electromagnets or lamps. The 4 motor outputs can be controlled in speed and in direction. Speed is controlled using the slide control. You can choose between a coarse resolution with 8 different steps of speed and a fine resolution with 512 steps. The program elements in levels 1 and 2 only use the coarse resolution, but starting with level 3, there are elements which allow you to use the fine resolution. The speed is displayed next to the slider control as a number. If you would like to test an output, you connect a motor to an output, e.g. M1.

- **Lamp outputs O1—O8**

Each motor output can alternatively be used as a pair of individual outputs. These can be used to control not only lamps, but also motors which only need to move in one direction (e.g. for a conveyor belt). If you would like to test one of these outputs, you connect one lamp contact to the output, e.g. O1. You connect the other lamp contact with one of the ground sockets of the R ( $\perp$ ).

- **Extension modules**

Additional interfaces of the same type or expansion modules (extensions) can be connected to the different interfaces (see the user manual related to the device). These buttons allow you to select which of the connected devices you would like to access with the test window.