Machine interface

The feeder

The motor for the feeder turns a clam. With that motor turning clockwise the disc, which is on the surface in front of the clam, will be pushed off the surface and on to the conveyor belt. To make sure the engine runs clockwise the minus has to be connected to the connection closest to the spot where 6V is marked. We connect this engine to the 7th output of the pp2-processor.

The position sensor

The way a position sensor is set up us by using a lens lamp and a photo transistor. The lens lamp will be shining in the direction of the photo transistor. The light from the lens lamp makes the photo transistor send a signal to the pp2-processor. If a disc comes in between the lens lamp and the photo transistor then there won’t shine any light at the photo transistor and thus it won’t send a signal to the pp2-processor. The photo transistor is connected to the 8th input of the pp2-board. The photo transistor is polarized and thus it is important that it is connected correctly. The correct way to connected is with the ground to the connection closest to the white spot on the photo transistor. The lens lamp isn’t polarized or turn in any direction and thus it doesn’t matter in which connection the ground is. The lens lamp is connected to the 5th output of the pp2-processor.

The black white detector

The black white detector uses the same components as the position sensor but they are implemented in a different way. The way in which the colour is detected is by the reflection of light on the disc. Because white discs reflect light very well the photo transistor does pick up some light(and thus sends a signal). Black disc on the other hand do not reflect enough light to let the photo transistor pick it up. Thus a white disc can be detected if the sensors are placed in the correct way.

To make sure the photo transistor picks up only the reflected light a cap is placed over it with a hole in the middle. So only light from in front of it will influence the photo transistor. But to make sure that the reflected light can pass through that hole the sensor must placed at an angle. The reflected light which is detected by the photo transistor is at its strongest when the lens lamp is also placed at an angle.

We connected the lens lamp in the same way as the lens lamp of the position sensor only now to the 6th output of the pp2-processor. The photo transistor is also connected as described in the position sensor only now to the 7th inputs.

The buttons

The button which is used to start/stop the machine will be button 0. The button to abort the machine will be button 1.