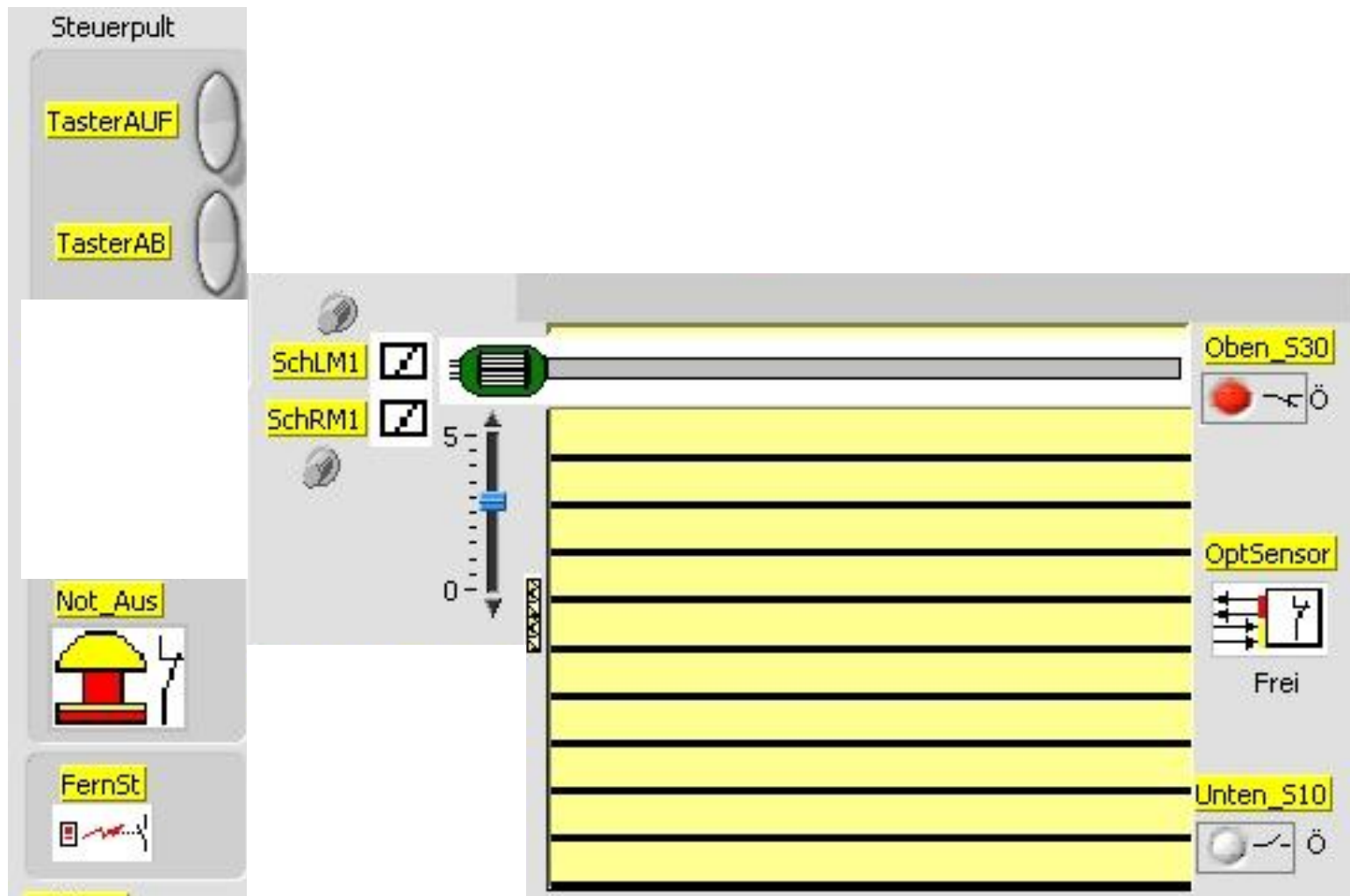


PLC 2013 2014 second semester

1. Exercise

- Industrial gate



- The industrial gate is driven by 2 contactors, the gate is driven upward by SchLM1 and is driven downward by SchRM1.
- To determine the position, two sensors are available. Oben_S30 detects the upper limit position and Unten_S10 senses the lower limit position.
- There are 2 Buttons available for Human-Machine-Interaction. By pressing the TasterAUF button, the gate is driven upward (open). By pressing the TasterAB button, the gate is driven downward (close). One should be aware, the gate should react on the level changing of the button, i.e. the button need not to be pressed during the opening or closing of the gate. The gate is not designed to be half-opened.
- To avoid damage to human or material, a light barrier (OptSensor) is provided. If the light barrier senses an object, the gate should be driven upward until it reaches the upper limit position.
- The gate stops immediately and remains its actual position by pressing the Not-Aus button (Not_Aus). It can not operate until a Reset is taken place.

- Additionally to the simple specification, the gate can be controlled by a remote controller.
- The remote controller has only one button, it should be considered as a biased switch.
- The gate should react as following by pressing the button on the remote controller:
 - If the gate is moving and is not completely opened or closed, then it should move to the opposite direction.
 - If the gate is complete closed, it should be opened.
 - If the gate is complete opened, it should be closed.
 - If the light barrier senses an object, the remote controller has no more function on the gate.

- Table of input signals

Signal-Name	Meaning of logic 0	Meaning of logic 1
TasterAUF	Button is not pressed	Button is pressed
TasterAB	Button is not pressed	Button is pressed
Not_Aus	Button is pressed	Button is not pressed
FernSt	Button is not pressed	Button is pressed
Unten_S10	Gate is complete closed	Gate is not complete closed
Oben_S30	Gate is complete opened	Gate is not complete opened
OptSensor	Light beam is obstructed	Light beam is not obstructed

- Table of output signals

Signal-Name	Meaning of logic 0	Meaning of logic 1
SchLM1	Motor dose not rotates counter-clockwise	Motor rotates counter-clockwise <i>(gate moves upward)</i>
SchRM1	Motor dose not rotates clockwise	Motor rotates clockwise <i>(gate moves downward)</i>

1. Please design a control for the simple specification (without remote controller)
2. Take the remote controller into consideration, add its function to your solution.