

## 1 Code File list

### 1.1 Embedded C

**Embedded C** main - main.c

**Embedded C** Digiswitch

**Digiswitch** Digiswitch source - Digiswitch.c

**Digiswitch** Digiswitch header - Digiswitch.h

**Embedded C** PID

**PID** PID source - PID.c

**PID** PID header - PID.h

**Embedded C** Keypad

**Keypad** Keypad source - Keypad.c

**Keypad** Keypad header - Keypad.h

**Embedded C** UI

**UI** UI source - UI.c

**UI** UI header - UI.h

**Embedded C** Blinking

**Blinking** Blinking source - Blinking.c

**Blinking** Blinking header - Blinking.h

**Embedded C** SPI

**SPI** SPI source - SPI.c

**SPI** SPI header - SPI.h

**Embedded C** UART

**UART** uart source - uart.c

**UART** uart header - uart.h

**Embedded C** systick\_frt

**systick\_frt** systick\_frt source - systick\_frt.c

## *Code File list*

**systick\_frt** systick\_frt header - systick\_frt.h

**Embedded C** Config - Config.h

**Embedded C** emp\_type - emp\_type.h

**Embedded C** tm4c123gh6pm - tm4c123gh6pm.h

**Embedded C** tm4c123gh6pm\_startup\_ccs\_gcc - tm4c123gh6pm\_startup\_ccs\_gcc.c

## 1.2 VHDL

### **VHDL** Top level - Info\_test.sch

#### **Top level** Communication - Communication.sch

**Communication** RecMode - RecMode.vhdl

**Communication** SPISlave - SPI.vhdl

**Communication** Toggler - Toggler.vhdl

**Communication** TraMode - TraMode.vhdl

#### **Top level** Control - Control.sch

**Control** ModPWM - ModPWM.vhdl

**Control** Mux8x2 - Mux8x2.vhdl

**Control** PanCalibration - PanCal.vhdl

**Control** TiltCalibration - TiltCal.vhdl

#### **Top level** Encoders - Encoders.sch

**Encoders** EncoderFilter - EncoderFilter.vhdl

**Encoders** Dir\_V3 - Dir\_V3.vhdl

**Encoders** SCount - SCount.vhdl

**Encoders** ErrorMemory - ErrorMemory.vhdl

#### **Top level** InfoDis - InfoDis.sch

##### **InfoDis** BinaryTBcd - BinaryTBcd.sch

**BinaryTBcd** AutoLoadSignal - AutoLoadSignal.vhdl

**BinaryTBcd** BcdDigit - BcdDigit.vhdl

**BinaryTBcd** BinaryToBcd - BinaryToBcd.vhdl

##### **InfoDis** Multiplexed\_Display - Multiplexed\_Display.sch

**Multiplexed\_Display** clkDiv1kHz - clkDiv1kHz.vhdl

**Multiplexed\_Display** Count\_2\_bit - Count\_2\_bit.vhdl

**Multiplexed\_Display** Encoder\_2x4 - Encoder\_2x4.vhdl

**Multiplexed\_Display** Mux\_4x1\_bit - Mux\_4x1\_bit.vhdl

**Multiplexed\_Display** Mux\_4x8\_bit - Mux\_4x8\_bit.vhdl

**Multiplexed\_Display** SegmentDecoder - SegmentDecoder.vhdl

**InfoDis** BlinkDp - Blink.vhdl

**InfoDis** clkDiv1Hz - clkDiv10Hz.vhdl

**InfoDis** clkDiv2Hz - clkDivNHz.vhdl

**InfoDis** Count1Bit - Count1Bit.vhdl

**InfoDis** Mux4x2 - Mux\_4x2.vhdl

**InfoDis** Mux1x2 - Mux1x2.vhdl

**InfoDis** Mux8x2 - Mux8x2.vhdl

**InfoDis** Mux16x2 - Mux16x2.vhdl

**InfoDis** PWMTToLED - PWMTToLED.vhdl

**InfoDis** SCount16Bit - SCount16Bit.vhdl

**InfoDis** SignedToUnsigned - SigendToUSigen.vhdl

## 1.3 MATLAB

### **MATLAB** PID

**PID** Controller\_values - Controller\_values.m

**PID** Controllers\_in\_simulink - Controllers\_in\_simulink.slx

### **MATLAB** LQR

**LQR** Main LQR Project - LQRprojekt.m

**LQR** Nbar calculation script - rscale.m

**LQR** Simulink file for LQR - LQRsim.slx

### **MATLAB** Simulation

**Simulation** RobotFinalV6 - RobotFinalV6.slx

**Simulation** RobotFinalV6 - RobotFinalV6.slxc

**Simulation** RobotFinalV6\_DataFile - RobotFinalV6\_DataFile.m

**Simulation** Component1 - Component1.step

**Simulation** Component11 - Component11.step

**Simulation** Component12 - Component12.step

**Simulation** RobotFinalV6 - RobotFinalV6.xml

**Simulation** singleelementbottomv2.step

**Simulation** singleelementpanv5.step