

Fork Lift Pin Assignment

1 Jason's Car with Fan

1.1 Motor

1. TIM3→CCR4 \Rightarrow PE5 (FL) (C) (PWM)
 - Prescale = 170-1
 - ARR = 10000-1
2. TIM2→CCR1 \Rightarrow (RL) (D) (PWM)
 - Prescale = 170-1
 - ARR = 10000-1
3. TIM2→CCR1 \Rightarrow (FR) (B) (PWM)
 - Prescale = 170-1
 - ARR = 10000-1
4. TIM2→CCR2 \Rightarrow (RR) (A) (PWM)
 - Prescale = 170-1
 - ARR = 10000-1

1.2 Encoder

1. TIM1 \Rightarrow FL encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
2. TIM5 \Rightarrow RL encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
3. TIM8 \Rightarrow FR encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
4. TIM4 \Rightarrow RR encoder (TIMER)

- Prescale = 1-1
- ARR = 65535

1.3 External TB6612 Module (for right motor)

1. EN_L \Rightarrow 3.3V / 5V (shorted)
2. C_IN1 \Rightarrow PB0 (GPIO)
 - GPIO Output
 - Pull Down
3. C_IN2 \Rightarrow PE6 (GPIO)
 - GPIO Output
 - Pull Down
4. D_IN1 \Rightarrow PD7 (GPIO)
 - GPIO Output
 - Pull Down
5. D_IN2 \Rightarrow PB3 (GPIO)
 - GPIO Output
 - Pull Down

1.4 External TB6612 Module (for left motor)

1. EN_R \Rightarrow 3.3V / 5V (shorted)
2. A_IN1 \Rightarrow PA15 (GPIO)
 - GPIO Output
 - Pull Down
3. A_IN2 \Rightarrow PB7 (GPIO)
 - GPIO Output
 - Pull Down
4. B_IN1 \Rightarrow PD2 (GPIO)
 - GPIO Output
 - Pull Down
5. B_IN2 \Rightarrow PC12 (GPIO)
 - GPIO Output
 - Pull Down

1.5 Fan

1. TIM3→CCR3 ⇒ PE4 (PWM)
 - Prescale = 170-1
 - ARR = 10000-1

1.6 Hiwonder Board

1. UART4_TX ⇒ PC10 (UART)
 - 9600 Bits/s
2. UART4_RX ⇒ PC11 (UART)
 - 9600 Bits/s

1.7 Remote Controller

1. UART1_TX ⇒ PC4 (UART)
 - 115200 Bits/s
2. UART1_RX ⇒ PC5 (UART)
 - 115200 Bits/s

2 Jason's Car without Fan

2.1 Motor

1. TIM3→CCR4 ⇒ PE5 (FL) (C) (PWM)
 - Prescale = 1-1
 - ARR = 16800-1
2. TIM2→CCR4 ⇒ PD6 (RL) (D) (PWM)
 - Prescale = 1-1
 - ARR = 16800-1
3. TIM3→CCR2 ⇒ PE3 (FR) (B) (PWM)
 - Prescale = 1-1
 - ARR = 16800-1
4. TIM3→CCR1 ⇒ PE2 (RR) (A) (PWM)
 - Prescale = 1-1
 - ARR = 16800-1

2.2 Encoder

1. TIM1 \Rightarrow FL encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
2. TIM5 \Rightarrow RL encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
3. TIM8 \Rightarrow FR encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
4. TIM4 \Rightarrow RR encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535

2.3 External TB6612 Module (for right motor)

1. EN_L \Rightarrow 3.3V / 5V (shorted)
2. C_IN1 \Rightarrow PB0 (GPIO)
 - GPIO Output
 - Pull Down
3. C_IN2 \Rightarrow PE6 (GPIO)
 - GPIO Output
 - Pull Down
4. D_IN1 \Rightarrow PD7 (GPIO)
 - GPIO Output
 - Pull Down
5. D_IN2 \Rightarrow PB3 (GPIO)
 - GPIO Output
 - Pull Down

2.4 External TB6612 Module (for left motor)

1. EN_R \Rightarrow 3.3V / 5V (shorted)
2. A_IN1 \Rightarrow PA15 (GPIO)
 - GPIO Output

- Pull Down
- 3. A_IN2 \Rightarrow PB7 (GPIO)
 - GPIO Output
 - Pull Down
- 4. B_IN1 \Rightarrow PD2 (GPIO)
 - GPIO Output
 - Pull Down
- 5. B_IN2 \Rightarrow PC12 (GPIO)
 - GPIO Output
 - Pull Down

2.5 Hiwonder Board

1. UART4_TX \Rightarrow PC10 (UART)
 - 9600 Bits/s
2. UART4_RX \Rightarrow PC11 (UART)
 - 9600 Bits/s

2.6 Remote Controller

1. UART1_TX \Rightarrow PC4 (UART)
 - 115200 Bits/s
2. UART1_RX \Rightarrow PC5 (UART)
 - 115200 Bits/s

3 Tommy's Car

3.1 Motor

1. TIM3 \rightarrow CCR4 \Rightarrow PE5 (FL) (C) (PWM)
 - Prescale = 1-1
 - ARR = 65535
2. TIM3 \rightarrow CCR2 \Rightarrow PE3 (RL) (D) (PWM)
 - Prescale = 1-1
 - ARR = 65535
3. TIM3 \rightarrow CCR1 \Rightarrow PE2 (FR) (B) (PWM)
 - Prescale = 1-1

- ARR = 65535
4. TIM2 → CCR3 ⇒ PD7 (RR) (A) (PWM)
 - Prescale = 1-1
 - ARR = 65535

3.2 Encoder

1. TIM1 ⇒ FL encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
2. TIM5 ⇒ RL encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
3. TIM8 ⇒ FR encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
4. TIM4 ⇒ RR encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535

3.3 External TB6612 Module (for left motor)

1. EN_L ⇒ 3.3V / 5V (shorted)
2. C_IN1 ⇒ PB13 (GPIO)
 - GPIO Output
 - Pull Down
3. C_IN2 ⇒ PB15 (GPIO)
 - GPIO Output
 - Pull Down
4. D_IN1 ⇒ PE6 (GPIO)
 - GPIO Output
 - Pull Down
5. D_IN2 ⇒ PD8 (GPIO)
 - GPIO Output
 - Pull Down

3.4 External TB6612 Module (for right motor)

1. EN_R \Rightarrow 3.3V / 5V (shorted)
2. A_IN1 \Rightarrow PE11 (GPIO)
 - GPIO Output
 - Pull Down
3. A_IN2 \Rightarrow PE12 (GPIO)
 - GPIO Output
 - Pull Down
4. B_IN1 \Rightarrow PB10 (GPIO)
 - GPIO Output
 - Pull Down
5. B_IN2 \Rightarrow PE13 (GPIO)
 - GPIO Output
 - Pull Down

3.5 Linear Actuator

1. LINEAR_ACT_1_1 \Rightarrow PC10 (GPIO)
 - GPIO Output
 - Pull Down
2. LINEAR_ACT_1_2 \Rightarrow PF2 (GPIO)
 - GPIO Output
 - Pull Down
3. LINEAR_ACT_2_1 \Rightarrow PF9 (GPIO)
 - GPIO Output
 - Pull Down
4. LINEAR_ACT_2_2 \Rightarrow PE14 (GPIO)
 - GPIO Output
 - Pull Down

3.6 Remote Controller

1. UART1_TX \Rightarrow PC4 (UART)
 - 115200 Bits/s
2. UART1_RX \Rightarrow PC5 (UART)

- 115200 Bits/s

4 Kitty's Car

4.1 Motor

1. TIM3→CCR2 \Rightarrow PE3 (FL) (PWM)
 - Prescale = 15-1
 - ARR = 65535-1
2. TIM2→CCR1 \Rightarrow PD3 (RL) (PWM)
 - Prescale = 15-1
 - ARR = 65535-1
3. TIM3→CCR1 \Rightarrow PE2 (FR) (PWM)
 - Prescale = 15-1
 - ARR = 65535-1
4. TIM2→CCR2 \Rightarrow PD4 (RR) (PWM)
 - Prescale = 15-1
 - ARR = 65535-1

4.2 Encoder

1. TIM1 \Rightarrow FL encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
2. TIM5 \Rightarrow RL encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
3. TIM8 \Rightarrow FR encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535
4. TIM4 \Rightarrow RR encoder (TIMER)
 - Prescale = 1-1
 - ARR = 65535

4.3 TB6612 (for left motor)

1. MOTOR_LEFT_ENABLE \Rightarrow PC3 (GPIO)
 - GPIO Output
 - Pull Down
2. MOTOR_FL_IN1 \Rightarrow PA5 (GPIO)
 - GPIO Output
 - Pull Down
3. MOTOR_FL_IN2 \Rightarrow PA4 (GPIO)
 - GPIO Output
 - Pull Down
4. MOTOR_RL_IN1 \Rightarrow PA6 (GPIO)
 - GPIO Output
 - Pull Down
5. MOTOR_RL_IN2 \Rightarrow PA7 (GPIO)
 - GPIO Output
 - Pull Down

4.4 TB6612 (for right motor)

1. MOTOR_RIGHT_ENABLE \Rightarrow PD15 (GPIO)
 - GPIO Output
 - Pull Down
2. MOTOR_FR_IN1 \Rightarrow PA10 (GPIO)
 - GPIO Output
 - Pull Down
3. MOTOR_FR_IN2 \Rightarrow PA11 (GPIO)
 - GPIO Output
 - Pull Down
4. MOTOR_RR_IN1 \Rightarrow PA9 (GPIO)
 - GPIO Output
 - Pull Down
5. MOTOR_RR_IN2 \Rightarrow PA8 (GPIO)
 - GPIO Output
 - Pull Down

4.5 Stepper Motor

1. TIM3→CCR4 ⇒ PE5 (PWM)
 - Prescale = 1-1
 - ARR = 65535
2. STEPPER_DIR_GPIO_Port ⇒ PE4 (GPIO)
 - GPIO Output
 - Pull Down

4.6 Servo Motor

1. TIM2→CCR4 ⇒ PD6 (Big Wheel's Servo) (PWM)
 - Prescale = 1-1
 - ARR = 65535

4.7 Remote Controller

1. UART1_TX ⇒ PC4 (UART)
 - 115200 Bits/s
2. UART1_RX ⇒ PC5 (UART)
 - 115200 Bits/s