MCP23017 Library

This library is used for communication between the eYFi-Mega board and the eY-LFA sensor using the I2C protocol. The eY-LFA board uses the MCP23017 I2C Port Expander. Hence this library for MCP23017 acts as a bridge between eY-LFA and eYFi-Mega board. Two pins (SDA and SCL) are required for interfacing.

The following functions can be used to initialize MCP23017 and get readings from eY-LFA:

- **void mcp23017_init ()**
  - Description: Initializes the chip (MCP23017)
  - Parameters: None
  - Returns: void

- **void mcp23017_setmodeA (uint8_t addr, uint8_t mode)**
  - Description: Used to set entire Port A as Input / Output
  - Parameters:
    - **addr:** address of the device
    - **mode:**
      - **MCP23017_MODEOUTPUTALL**: to set Port as Output
      - **MCP23017_MODEINPUTALL**: to set Port as Input
  - Returns: void

- **void mcp23017_setmodeB (uint8_t addr, uint8_t mode)**
  - Description: Used to set entire Port B as Input / Output
  - Parameters:
    - **addr:** address of the device
    - **mode:**
      - **MCP23017_MODEOUTPUTALL**: to set Port as Output
      - **MCP23017_MODEINPUTALL**: to set Port as Input
  - Returns: void

- **void mcp23017_setmodepinA (uint8_t addr, uint8_t pin, uint8_t mode)**
  - Description: Used to set a particular pin of Port A as Input / Output
  - Parameters:
    - **addr:** address of the device
    - **pin**: pin number to be configured as Input / Output (ranges from 0 to 7)
    - **mode:**
      - **MCP23017_MODEOUTPUT**: to set a pin as Output
      - **MCP23017_MODEINPUT**: to set a pin as Input
  - Returns: void

- **void mcp23017_setmodepinB (uint8_t addr, uint8_t pin, uint8_t mode)**
  - Description: Used to set a particular pin of Port B as Input / Output
  - Parameters:
    - **addr:** address of the device
    - **pin**: pin number to be configured as Input / Output (ranges from 0 to 7)
    - **mode:**
      - **MCP23017_MODEOUTPUT**: to set a pin as Output
      - **MCP23017_MODEINPUT**: to set a pin as Input
  - Returns: void

- **void mcp23017_writepinA (uint8_t addr, uint8_t pin, uint8_t state)**
  - Description: Used to set a particular pin of Port A as High / Low
  - Parameters:
    - **addr:** address of the device
    - **pin**: pin number to be configured as HIGH / LOW (ranges from 0 to 7)
    - **state:**
      - **MCP23017_PINSTATEON**: to set a pin as High
      - **MCP23017_PINSTATEOFF**: to set a pin as Low

- Returns: void

- **void mcp23017_writepinB (uint8_t addr, uint8_t pin, uint8_t state)**
  - Description: Used to set a particular pin of Port B as High / Low
  - Parameters:
    - **addr:** address of the device
    - **pin**: pin number to be configured as HIGH /LOW (ranges from 0 to 7)
    - **state:**
      - **MCP23017_PINSTATEON**: to set a pin as High
      - **MCP23017_PINSTATEOFF**: to set a pin as Low
  - Returns: void

- **void mcp23017_writepinsA (uint8_t addr, uint8_t state)**
  - Description: Used to set all pins of Port A as High / Low
  - Parameters:
    - **addr:** address of the device
    - **state:**
      - **MCP23017_PINSTATEONALL**: to set all pins as High
      - **MCP23017_PINSTATEOFFALL**: to set all pins as Low
  - Returns: void

- **void mcp23017_writepinsB (uint8_t addr, uint8_t state)**
  - Description: Used to set all pins of Port B as High / Low
  - Parameters:
    - **addr:** address of the device
    - **state:**
      - **MCP23017_PINSTATEONALL**: to set all pins as High
      - **MCP23017_PINSTATEOFFALL**: to set all pins as Low

- Returns: void

- **uint8_t mcp23017_readpinA (uint8_t addr, uint8_t pin)**
  - Description: Used to read status of a particular pin of Port A
  - Parameters:
    - **addr:** address of the device
    - **pin:** pin number whose status is to be read (ranges from 0 to 7)
  - Returns: pin status (either 0 or 1)

- **uint8_t mcp23017_readpinB (uint8_t addr, uint8_t pin)**
  - Description: Used to read status of a particular pin of Port B
  - Parameters:
    - **addr:** address of the device
    - **pin:** pin number whose status is to be read (ranges from 0 to 7)
  - Returns: pin status (either 0 or 1)

- **uint8_t mcp23017_readpinsA (uint8_t addr)**
  - Description: Used to read status of all pins of Port A
  - Parameters:
    - **addr:** address of the device
  - Returns: Port A status (from 0 to 255)

- **uint8_t mcp23017_readpinsB (uint8_t addr)**
  - Description: Used to read status of all pins of Port B
  - Parameters:
    - **addr:** address of the device
  - Returns: Port B status (from 0 to 255)