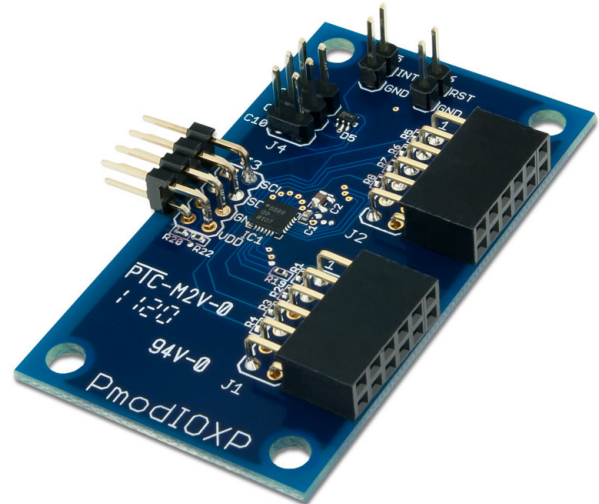


Overview

The PmodIEXP is an I/O expansion module powered by the Analog Devices ADP5589.

Features include:

- 16-element FIFO for event recording
- 19 configurable I/Os
- Keypad decoding for matrices up to 11x8
- PWM generator
- Open-drain interrupt output
- Dual Programmable logic blocks
- Debouncing on I/Os
- I²C interface



Functional Description

The PmodIEXP functions as an I/O port expander and keypad matrix decoder. The PmodIEXP uses a standard 8-pin I²C connector and can communicate to a system board via I²C.

Interface

All communications with the device must specify a register address and a flag indicating whether the communication is a read or a write. This is followed by the actual data transfer.

Device configuration is performed by writing to control registers within the device. Input and event data is accessed by reading certain device registers.

A full list of registers and their functionality, as well as communication specifications, is found in the ADP5589 datasheet available on the Analog Devices website.

Connector J3 – I²C Communications

Pin	Signal	Description
1, 2	SCLK	Serial Clock
3, 4	SDA / SDI / SDIO	I ² C Data / SPI Master out Slave in Data
5, 6	GND	Power Supply Ground
7, 8	VCC	Power Supply (3.3V)

Interface Connector Signal Description

The I²C interface standard uses two signal lines. These are I²C data (SDA) and serial clock (SCLK). These signals map to the serial data (SDA) and serial clock (SCLK) respectively on the ADP5589.

Event FIFO

The PmodIEXP has an event FIFO that can record up to 16 events. The FIFO includes key events and can be configured to include general-purpose input (GPI) and logic activity. When the FIFO is read from, the first entry is always read. Specific registers related to the FIFO are outlined in the ADP5589 datasheet.

Connector J5		
Pin	Signal	Description
1	INT	Interrupt Open Drain Output
2	GND	Power Supply Ground

Open-Drain Interrupt Output

The interrupt pin can be configured to trigger on an event, GPI level, FIFO overflow, logic function output, and on keyboard lock. The corresponding bit in the interrupt enable register must be set in order for the interrupt to be set. Specific registers related to the interrupts are described in the ADP5589 datasheet.

Connector J6		
Pin	Signal	Description
1	RST	Reset pin
2	GND	Power Supply Ground

Reset Pin

The PmodIEXP has an active-low reset pin that can be used to reset the ADP5589 to default settings.

General Purpose I/O (GPIO)

The PmodIEXP has 19 GPIOs that can be configured a number of ways. The GPIOs can be set as either input or output, set to decode a keypad matrix, or implement logic functions. The functionality of the IOs can be set using the configuration registers which are described in the ADP5589 datasheet.

Connector J1 - GPIOs		
Pin	Signal	Description
1	R0	Row 0 (GPIO 1)
2	R1	Row 1 (GPIO 2)
3	R2	Row 2 (GPIO 3)
4	R3	Row 3 (GPIO 4)
5	GND	Power Supply Ground
6	VCC	Power Supply(3.3V)
7	C0	Column 0 (GPIO 9)
8	C1	Column 1 (GPIO 10)
9	C2	Column 2 (GPIO 11)
10	C3	Column 3 (GPIO 12)
11	GND	Power Supply Ground
12	VCC	Power Supply(3.3V)

Connector J2 - GPIOs		
Pin	Signal	Description
1	R4	Row 4 (GPIO 5)
2	R5	Row 5 (GPIO 6)
3	R6	Row 6 (GPIO 7)
4	R7	Row 7 (GPIO 8)
5	GND	Power Supply Ground
6	VCC	Power Supply(3.3V)
7	C4	Column 4 (GPIO 13)
8	C5	Column 5 (GPIO 14)
9	C6	Column 6 (GPIO 15)
10	C7	Column 7 (GPIO 16)
11	GND	Power Supply Ground
12	VCC	Power Supply(3.3V)

Connector J4 - GPIOs		
Pin	Signal	Description
1	C8	Column 8 (GPIO 17)
2	GND	Power Supply Ground
3	C9	Column 9 (GPIO 18)
4	GND	Power Supply Ground
5	C10	Column 10 (GPIO 19)
6	GND	Power Supply Ground

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➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692
Email amall@ameya360.com
QQ 800077892
Skype ameyasales1 ameyasales2

➤ Customer Service :

Email service@ameya360.com

➤ Partnership :

Tel +86 (21) 64016692-8333
Email mkt@ameya360.com