

Extender

SENSEnuts development platform has a wide variety of sensor modules which are compatible with Radio Module, the heart of the platform. They can directly be mounted on the Radio Module and the sensor related data can be reported to the microcontroller.

At times, an application developer may be interested to integrate some third party sensors or any custom sensor which may not be available as a part of SENSEnuts development platform at the moment. Extender module is suitable for such applications.

- This module actually consists of header pins which gives access to all the pins of the processor on the board.
- External sensors can be connected to Radio Module using Extender
- Extender may also be used for hardware debugging when there is a requirement of checking the voltage on some particular pin or view an output waveform from an output port on a DSO (or a CRO).

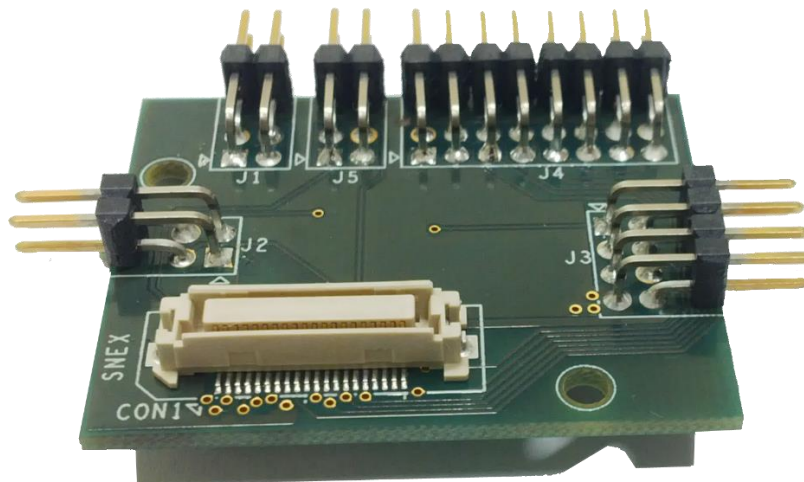


Figure 1

Applications:

- Connecting custom sensors
- Debugging hardware/checking output on DIOs and other ports

The module provide headers which are connected to one or the other pin of the processor on the Radio Module, thereby providing the access to the processor for integrating sensors, or creating an external circuit to design some control mechanism. The pins are divided into sections, which have some specific purpose. Kindly refer to figure 2 for details.

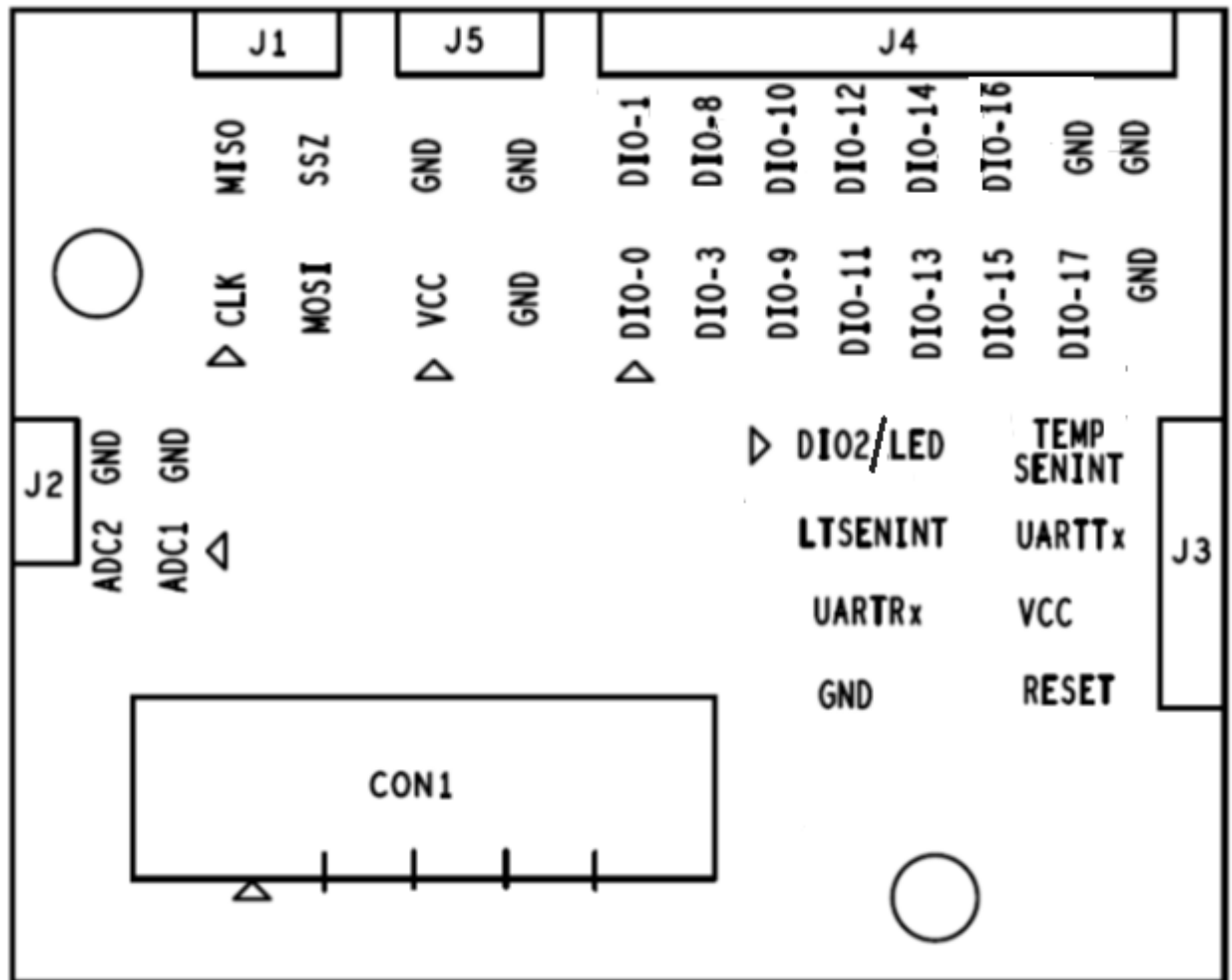


Figure 2

The components on the module are described below:

1. CON1:- It is used to provide the connectivity to other modules. Generally, this component would not be needed to get connected to other modules. Use CON2 instead which is exactly below CON1 on the bottom side of the module
2. J1:- It consists of 4 pins which are described below. Kindly note that pin number 1 for reference is marked with the triangle.

S. NO.	Pin NO.	Functionality
1	1	SPICLK (clock for SPI Port)
2	2	SPI MISO (Master In Serial Out)
3	3	SPI MOSI (Master Out Serial In)
4	4	SSZ (SPI Select Pin)

3. J2:- The functionality provided by this section is described as under:

S. NO.	Pin NO.	Functionality
1	1	ADC1 (Analog To Digital Converter 1)
2	2	ADC2 (Analog to Digital Converter 2)
3	3	GND
4	4	GND

4. J3:- This section has 8 pins. The functionality of each pin is as under:

S. NO.	Pin NO.	Functionality
1	1	DIO 2 (Connected to LED on Radio Module)
2	2	Temperature Sensor Critical Interrupt
3	3	Light Sensor Critical Interrupt
4	4	UART0 Transmit
5	5	UART0 Receive
6	6	VCC
7	7	GND
8	8	Microcontroller Reset

Kindly note that each pin in this section is dedicated to some special use. User is advised to avoid using this section of the module and use some alternate section for the same functionality unless unavoidable or needed specifically for some task.

5. J4:- This section consists of 16 pins. The functionality of each pin is explained below:-

S. NO.	Pin NO.	Functionality
1	1	DIO 0
2	2	DIO 1
3	3	DIO 3
4	4	DIO 8
5	5	DIO 9
6	6	DIO 10
7	7	DIO 11
8	8	GN12
9	9	DIO 13
10	10	DIO 14
11	11	DIO 15
12	12	DIO 16
13	13	DIO 17
14	14	GND
15	15	GND
16	16	GND

6. J5:- This section shall not be required most of the time as it provides just the VCC and the Ground from the extender pin. The functionality of the pins are as under:

S. NO.	Pin NO.	Functionality
1	1	VCC (5 Volts or 3.3 Volts depending upon extender model)
2	2	GND
3	3	GND
4	4	GND

***Note**

- i. If any external sensor is connected to the Radio Module using extender, the voltage on any pin of Radio Module should not exceed 3.3 V. It may damage the microcontroller on the Radio Module and the device would be nonfunctional.
- ii. While performing hardware debugging, make sure that the VCC of the voltage supply does not get shorted with the ground. This may damage the device
- iii. Section J3 is dedicated for special purpose. This section can be used for custom applications but make sure that your application doesn't conflict with the core functionality. For Example, SENSEnuts makes use of UART0 to communicate with PC. If this port is dedicated to communicate with some other hardware, then the communication with the PC may fail. If both external hardware and communication with the PC is carried on, abnormal results may occur

Revision History

Version	Date	Comments
6.1.2	09/22/2015	First Revision