

# DevKit Electronics

## Product Brief



### Key Features

- State-of-the-art read-out electronics without crosstalk between pixels
- 12-bit ADC resolution
- Supports sensor matrices with up to 32x32 sensor pixels
- Scan frequency for maximum resolution (32x32): 8 Hz
- Up to 8 individual FSR sensors supported
- Simple data readout via USB Serial
- Implementation as an extension board for Arduino Nano BLE @
- BLE connectivity, 3D accelerometer, gyroscope and magnetometer of the Arduino can be used
- Programmable via Arduino IDE, source code available
- Two client app options: feature-rich GUI software for Windows (SensorMatrixLAB) or open-source Unix console client
- Powering options: via USB port or battery powered

### Usage

InnovationLab's DevKit Electronics is an entry-level crosstalk-less solution for capturing and visualizing data from printed sensor matrices. It allows to easily evaluate capabilities of resistive sensors like FSR (force-sensitive resistor) technology and quickly develop prototypes of various usage scenarios. It is based on a high-performing analog module, which is also used in InnovationLab's universal electronics. This results in state-of-the-art readout precision with simple Arduino-based programming interface.

### What's in the package?

#### Included:

- Main board with 1 Analog Module (for scans of up to 32x32 pixel matrices)
- Arduino Nano BLE (preprogrammed)
- Open-source Unix console client ([github](#))
- Open-source Arduino Code ([github](#))

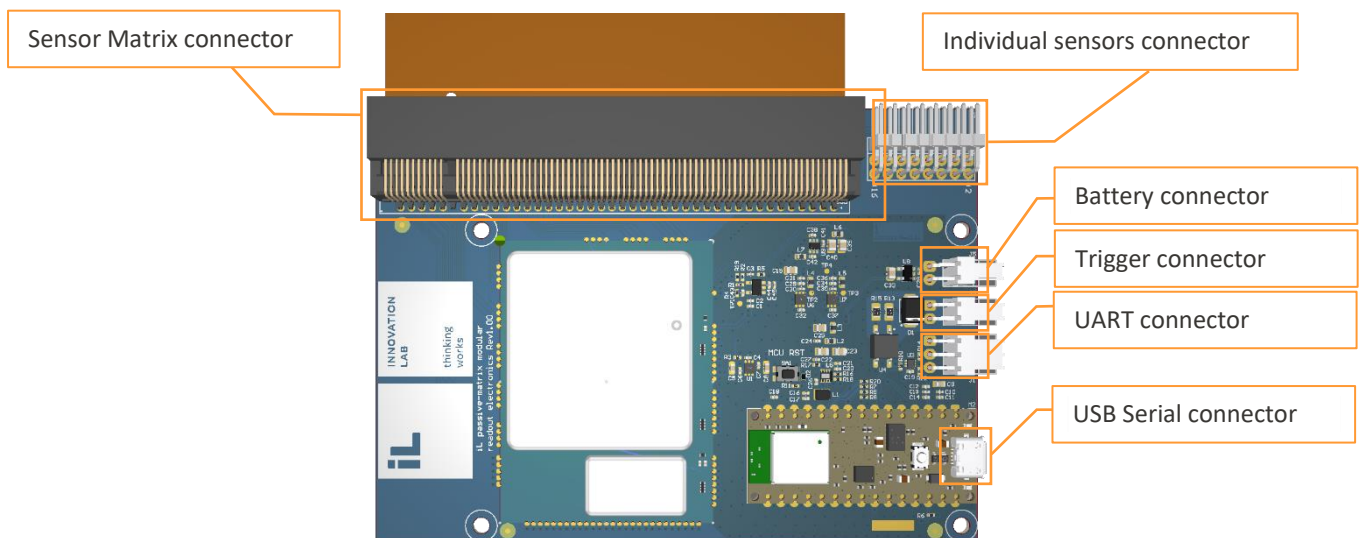
#### Not included:

- Micro USB cable
- Battery
- Sensors (check our [DevKit](#))
- Dedicated Software: [SensorMatrixLAB](#) (licenses available upon request)

### Dimensions

LxWxH: 115x82x14 mm<sup>3</sup>

## On-board connectors



### Sensor Matrix connector

The PCI express connector is used for attaching printed sensor matrices to the DevKit electronics. Pins A01-A32 are connected to matrix rows (drive), pins B01-B32 are connected to matrix columns (read).

### Individual sensors connector

The right angle two rows pin header connector is used for attaching to the DevKit individual resistive sensors. Pin mapping is as follows:

15 – S8D	13 – S7D	11 – S6D	9 – S5D	7 – S4D	5 – S3D	3 – S2D	1 – S1D
16 – S8R	14 – S1R	12 – S6R	10 – S5R	8 – S4R	6 – S3R	4 – S2R	2 – S1R

Where **SxD** corresponds to **Sensor x Drive** and **SxR** corresponds to **Sensor x Read**.

### USB Serial Connector

The connector of an Arduino Nano BLE is used for both programming the DevKit electronics via Arduino IDE and the data exchange with the software client. When configuring the software client, the data rate of 1 000 000 bps should be used.

### Trigger Connector

Used for synchronizing the DevKit with an external equipment.

Pin	Label	Arduino connection	Description
1	TRIG-	GND	Trigger relay negative input (decoupled)
2	TRIG+	AIN5_A3/GPIO23	Trigger relay positive input (decoupled)

1 mA required for activating the relay, 60 V max.

### UART Connector

Pin	Label	Arduino connection	Description
1	GND	GND	Signal and System ground
2	TX	Arduino TX, pin 17	Transmit Data
3	RX	Arduino RX, pin 16	Receive Data

For DevKit electronics the voltage level of 3.3V is used. Use Arduino **Serial** object to access the port.

### Battery Connector

Voltage range: 2,5 – 5.5 V (only for supply, no charging possible)