

Product Brief

Key Features

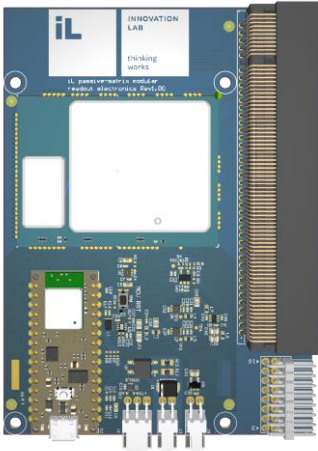


Image is not contractual

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

Usage

InnovationLab's Printed Sensor Development Kit is an entry-level crosstalk-less solution for capturing and visualizing data from printed sensor matrices. It allows quickly evaluate capabilities of FSR (Force-Sensitive Resistor) technology and quickly develop prototypes of various usage scenarios. It is based on high-performing analog module, same as used in other InnovationLab's electronics, which results in state-of-the-art readout precision with simple Arduino-based programming interface.

What is in the package

Included:

- Printed Sensor Development Kit's main board with 1 Analog Module (up to 32x32).
- Arduino Nano BLE (pre-programmed).
- Printed pressure sensitive foil (12x20 resolution) with FFC elongator.
- Open-source Unix console client ([github](#)).
- Open-source Arduino Code ([github](#)).

Not included:

- Micro USB cable.
- Battery.
- Individual FSR sensors (available upon request).
- Feature-rich GUI tool: [SensorMatrixLAB](#) (licenses available upon request).

Dimensions

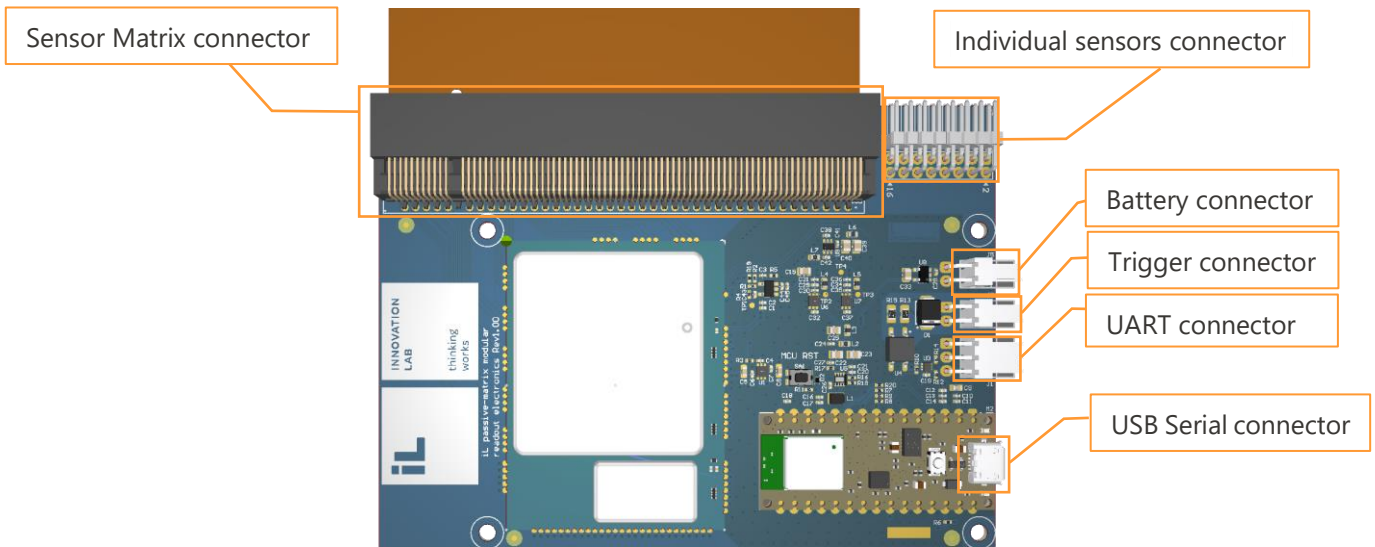
LxWxH (in mm): 115x82x14 mm

Characteristics

Property	Value
	<i>Matrix</i>
Sensing Area (mm)	376x224
Pixel (NxM)	20x12
Width Foil (mm)	450
Height Foil (mm)	300
Thickness (µm)	70
	<i>Pixel</i>
Number of Pixels (Width x Height)	20x12
Width (mm)	11
Height (mm)	11
	<i>Performance</i>
Possible Measuring Range (N/cm ²)	0.1-100 N/cm ²
Resolution	0.5 N
Temperature Range	Up to 100°C / 85 RH at 85°C

The matrix presented here serves only as an illustration of one of our various sensor foils, which can be adapted to your specific requirements.

On-board connectors



Sensor Matrix connector

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

Individual sensors connector

The right angle 2 rows pin header connector is used for attaching to the Devkit individual FSR 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 via Arduino IDE and the data exchange with the client software. When configuring the client software, the data rate of 1000000 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, 60V 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 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, no charge.

Contact

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