

# Kallisto® Sensor Platform

## SY020-PCB-Series

### Description

The Kallisto® sensor platform is a family of ready-to-use subassembly modules which embed sensing, processing, energy management, and wireless communication on a small standard-size PCB module. A spectrum of 16 measurands can be simultaneously detected at configurable sampling rates and processed via its on-board ARM Cortex-M4F. Thus, the Kallisto® sensor platform can be easily tailored to any kind of Industrial IoT application through a hardware abstraction layer that allows to interact with the module and its features. Customer-specific application software can be programmed by using specifically provided Kallisto® API libraries. Firmware can be updated over the air (OTA).



### Features & Benefits

- Multi-sensor device for Industrial IoT
- Simultaneous detection of 16 measurands
- Connectivity via Bluetooth® LE, NFC, USB
- 4 high current low-side drivers
- Wireless Qi Power Receiver
- LiPo Charger

### Applications

- Industrial IoT
- Smart Wearables
- Building & Home Automation
- Track & Trace
- Beacons

### Sensors

In its standard configuration, the Kallisto® sensor platform is equipped with a set of rigidly attached sensor components which facilitate the simultaneous detection of 16 different measurands at sampling rates which can be individually configured even after shipment.

Measurands	Value Ranges	Selectable Sampling Rates / Hz
<b>Acceleration</b>	+/- 4 g for each of x-, y-, z-axes	12.5, 25, 50, 100, 200, 400, 800
<b>Angular Velocity</b>	+/- 2,000 °/s for each of x-, y-, z-axes	25, 50, 100, 200, 400, 800
<b>Magnetic Flux</b>	+/- 1,300 µT for each of x- and y-axes +/- 2,500 µT for z-axis	2, 10, 20, 30, 50, 100, 150, 200
<b>Temperature</b>	- 20 ... 70 °C	0.1, 0.2, 1, 2, 4, 10, 20, 40
<b>Relative Humidity</b>	0 ... 100 %	0.1, 0.2, 1, 2, 4, 10, 20, 40
<b>Ambient Pressure</b>	300 ... 1,000 hPa	0.1, 0.2, 1, 2, 4, 10, 20, 40
<b>ECO2</b>	Estimation of CO <sub>2</sub> level in ppm	0.017, 0.1, 1
<b>b-VOC</b>	Estimation of breath VOC equivalents in ppm	0.017, 0.1, 1
<b>IAQ</b>	0 ... 500 (index for air quality)	0.017, 0.1, 1
<b>Light</b>	300 ... 1,000 nm 1.2 ... 10 mW/cm <sup>2</sup>	0.019, 0.022, 0.026, 0.033, 0.043, 0.063, 0.12, 1
<b>Acoustic Sound</b>	- 135 ... + 3 dBFS	1, 10

Optionally, additional sensor components can be connected to the SY020-PCB by making use of its multiple I/O interfaces. This flexibility enables a customization according to customer requirements and application needs.

## Processing Core – Processor, Memory, Interfaces, and Security

The Kallisto® Industrial Sensor Module uses a 64 MHz 32-bit Cortex-M4F. It comes with 1 MB Flash and 256 kB RAM, and has protocol support for Bluetooth LE and mesh, Thread, Zigbee, 802.15.4, ANT, and 2.4 GHz proprietary stacks. Security requirements are fulfilled by an on-chip ARM TrustZone® CryptoCell cryptographic unit.

## Power Supply

Kallisto® is designed to operate in a non-stationary manner while being driven by batteries with a supply voltage ranging from 2.2 to 5.5 V. In stationary applications, Kallisto® can be powered by DC power supplies, e. g. with 24 V (like SY020-MOD02-CM8).

## Nomenclature, Assembly Variants, Order Codes

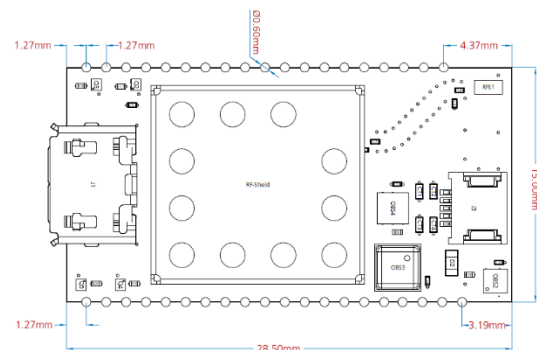
The configuration of Kallisto® PCB subassemblies can be adjusted to the explicit application demands. This maximizes the flexibility to tailor the products. Nomenclature and order codes are as follows:

SY020-PCB	Wireless I/F			LiPo Battery Charge			Sensors / Actors					
	B	N	-	W	U	x	I	M	E	A	L	D
	BLE	NFC		Wireless Qi	USB	No charge	IMU (ACC, GYRO)	Magnetometer	Environment	Air	Light	Driver

<u>NO CHARGE</u>	<u>WIRELESS QI CHARGE</u>	<u>WIRELESS QI + USB CHARGE</u>
SY020-PCB-B-x-IM	SY020-PCB-B-W-IM	SY020-PCB-B-WU-IM
SY020-PCB-B-x-L	SY020-PCB-B-W-L	SY020-PCB-B-WU-L
SY020-PCB-B-x-EA	SY020-PCB-B-W-EA	SY020-PCB-B-WU-EA
SY020-PCB-B-x-IMEA	SY020-PCB-B-W-IMEA	SY020-PCB-B-WU-IMEA
SY020-PCB-B-x-IML	SY020-PCB-B-W-IML	SY020-PCB-B-WU-IML
SY020-PCB-B-x-IMD	SY020-PCB-B-W-IMD	SY020-PCB-B-WU-IMD
SY020-PCB-B-x-IMEAL	SY020-PCB-B-W-IMEAL	SY020-PCB-B-WU-IMEAL
SY020-PCB-B-x-IMEAD	SY020-PCB-B-W-IMEAD	SY020-PCB-B-WU-IMEAD
SY020-PCB-B-x-IMEALD	SY020-PCB-B-W-IMEALD	SY020-PCB-B-WU-IMEALD
SY020-PCB-BN-x-IM	SY020-PCB-BN-W-IM	SY020-PCB-BN-WU-IM
SY020-PCB-BN-x-IMEA	SY020-PCB-BN-W-IMEA	SY020-PCB-BN-WU-IMEA
SY020-PCB-BN-x-IMEAL	SY020-PCB-BN-W-IMEAL	SY020-PCB-BN-WU-IMEAL
SY020-PCB-BN-x-IMEALD	SY020-PCB-BN-W-IMEALD	SY020-PCB-BN-WU-IMEALD

## Mechanical Dimensions

As depicted on the right, the Kallisto® PCB subassembly has small lateral dimensions (28.5 x 15 mm) to facilitate a use even in conditions with limited available space.



## Support

For further questions, development and programming support, and access to our dedicated Gitlab repository, please contact our support via [support@sensry.de](mailto:support@sensry.de).

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