

# endrich news

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## OUR PRODUCT OF THE MONTH:

STRONGEST SMD VIBRATION MOTOR FROM BAOLONG



BLT-4315B

IoT  
Special

Endrich IoT  
Infrastructure  
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### FEATURES

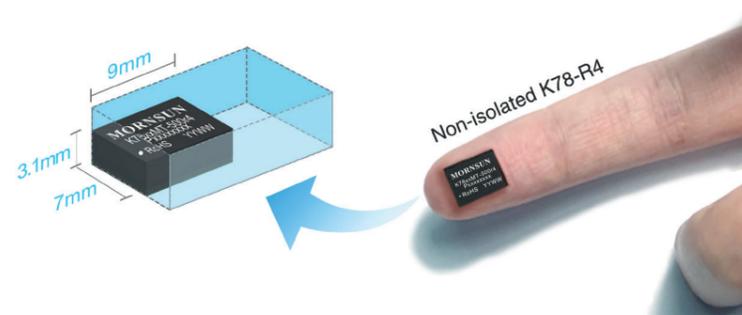
- P/N: BLT-4315B
- Operating voltage: 2.1 V to 3.2 V
- Max. rated speed: 8.500 rpm
- Max. rated current: 130 mA
- Min. operating temperature: -30 °C
- Max. operating temperature: +70 °C



**ULTRA-SMALL/-FLAT K78 CONVERTER IN DFN PACKAGE**



Based on the new technology platform "R4", the power specialist MORNSUN introduced the DC/DC converter family K78xxMT500R4, which offers first-class electrical parameters and a compact surface-mountable housing. MORNSUN wants to significantly accelerate the performance and miniaturization of future products. With this innovative SiP architecture (System in Package), MORNSUN is now able to expand its range in various article categories with particularly compact, reliable and inexpensive products. Depending on the pin assignment, the devices deliver a positive or a negative output voltage of 3.3 V upto 15 V. The input voltage has a nominal value of 24 V or 12 V and wide variation ranges up to 8:1. **Since the devices deliver a positive and negative output, the advantage over many competitive products is, that it is possible to use the devices as an inverter.** The small size of the 6-pin DFN housing is particularly impressive. With dimensions of only 9.0 x 7.0 x 3.1 mm, its mounting area is around 63% and its construction volume is around 86% below the corresponding values of comparable products from MORNSUN! With efficiencies of up to 92%, the new converters are recommended as highly effective POL power supplies for a wide range of equipment and devices.

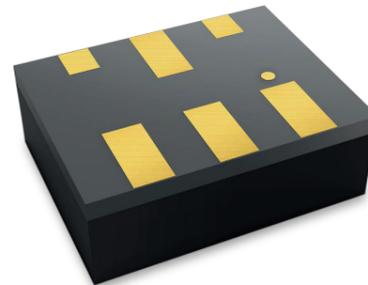


**FEATURES**

- Ultra-small, ultra-thin DFN package (9.0 x 7.0 x 3.1 mm)
- Operating ambient temperature range: -40 °C to +105 °C
- High efficiency up to 92 %
- No-load input current as low as 0.1 mA
- Output short-circuit protection
- AEC-Q100 approved (under testing)

**APPLICATIONS**

- Industrial devices
- Portable equipment
- IoT devices
- Smart home



PART NO.	INPUT VOLTAGE	OUTPUT		FULL LOAD EFFICIENCY TYP. VIN MIN. / VIN NOMINAL / VIN MAX.	CAPACITIVE LOAD MAX.
	NOMINAL (RANGE)	VOLTAGE	CURRENT MAX.		
K7803MT-500R4	24 (24-36) VDC	3.3 VDC	500 mA	89 % / 79 % / 71 %	680 µF
	12 (7-32) VDC	-3.3 VDC	-300 mA	80 % / 82 % / 71 %	470 µF
K7805MT-500R4	24 (6.5-36) VDC	5 VDC	500 mA	91 % / 83 % / 78 %	680 µF
	12 (7-31) VDC	-5 VDC	-300 mA	78 % / 78 % / 71 %	470 µF
K78X6MT-500R4	24 (8-36) VDC	6.5 VDC	500 mA	91 % / 85 % / 81 %	680 µF
	12 (7-28) VDC	-6.5 VDC	-250 mA	80 % / 79 % / 73 %	470 µF
K7809MT-500R4	24 (12-36) VDC	9 VDC	500 mA	92 % / 90 % / 86 %	680 µF
	12 (8-27) VDC	-9 VDC	-200 mA	82 % / 82 % / 77 %	470 µF
K7812MT-500R4	24 (15-36) VDC	12 VDC	500 mA	92 % / 91 % / 86 %	680 µF
	12 (8-24) VDC	-12 VDC	-150 mA	81 % / 83 % / 79 %	470 µF
K7815MT-500R4	24 (18-36) VDC	15 VDC	500 mA	91 % / 91 % / 87 %	680 µF
	12 (8-21) VDC	-15 VDC	-150 mA	80 % / 81 % / 84 %	470 µF

**UV LEDS FROM EVERLIGHT FOR WATER DISINFECTION AND UV CURING**

Endrich is offering UV LEDs from our long-term supplier Everlight. Those LEDs offer high efficacy, several wave lengths with three different viewing angles.

**Everlight UVA Portfolio**

	SERIES	DEMENSION	POWER CONSUMPTION	SPEC.			DESCRIPTION
				Min. mW	nm	Vf	
	ELUA2016 VA=120° Typ.IF=20 mA / 60 mA / 350 mA	2.0 x 1.6 x 0.7 mm	0.8 W / 0.5 W / 1.8 W	20 - 530 / 25 - 600 / 70 - 700	365 - 375	3.0 - 4.0	Low-, Mid-, High-Power Compact Max if = 25 mA / 100 mA / 700 mA
					380 - 390	3.0 - 4.0	
					390 - 400	3.0 - 4.0	
					400 - 410	3.0 - 4.0	
	ELUA3020 VA=120° Typ.IF=20 mA	3.0 x 2.0 x 0.6 mm	0.8 W	20	365 - 375	3.0 - 4.0	Low Power High output Max if = 25 mA
				25	380 - 390	3.0 - 4.0	
				25	390 - 400	3.0 - 4.0	
				25	400 - 410	3.0 - 4.0	
	ELUA3535 VA=120° Typ.IF=500 mA	3.5 x 3.5 x 2.3 mm	1.8 W	1000	365 - 375	3.0 - 4.0	Versatile High Uniformity Max If = 700 mA
				1000	380 - 390	3.0 - 4.0	
				1000	390 - 400	3.0 - 4.0	
				1000	400 - 410	3.0 - 4.0	
	ELUA3535 VA=50° Typ.IF=500 mA	3.5 x 3.5 x 3.5 mm	1.8 W	900	365 - 375	3.0 - 4.0	Narrow VA High Density Max If = 700 mA
				1000	380 - 390	3.0 - 4.0	
				1000	390 - 400	3.0 - 4.0	
				1000	400 - 410	3.0 - 4.0	
	ELUA3535 VA=30° Glass Typ.IF=1000 mA	3.5 x 3.5 x 3.5 mm	4 W	1300	365 - 375	3.6 - 4.6	Narrow VA High Density Max If = 1.4 A
				1300	380 - 390	3.6 - 4.6	
				1300	390 - 400	3.6 - 4.6	
				1300	400 - 410	3.6 - 4.6	
	ELUA3535 VA=60° Glass Typ.IF=1000 mA	3.5 x 3.5 x 3.5 mm	4 W	1300	365 - 375	3.6 - 4.6	Narrow VA High Density Max If = 1.4 A
				1300	380 - 390	3.6 - 4.6	
				1300	390 - 400	3.6 - 4.6	
				1300	400 - 410	3.6 - 4.6	
	ELUA4545 VA=30° Typ.IF=500 mA	4.5 x 4.5 x 4.5 mm	1.8 W	900	365 - 375	3.2 - 4.1	Narrow VA High Density Max If = 700 mA
				1000	380 - 390	3.2 - 4.1	
				1000	390 - 400	3.2 - 4.1	
				1000	400 - 410	3.2 - 4.1	

**Applications:** UV Paint Curing, Cosmetic Curing, Medical Treatments, Counterfeit Checking, Purification

**Everlight UVC Portfolio**

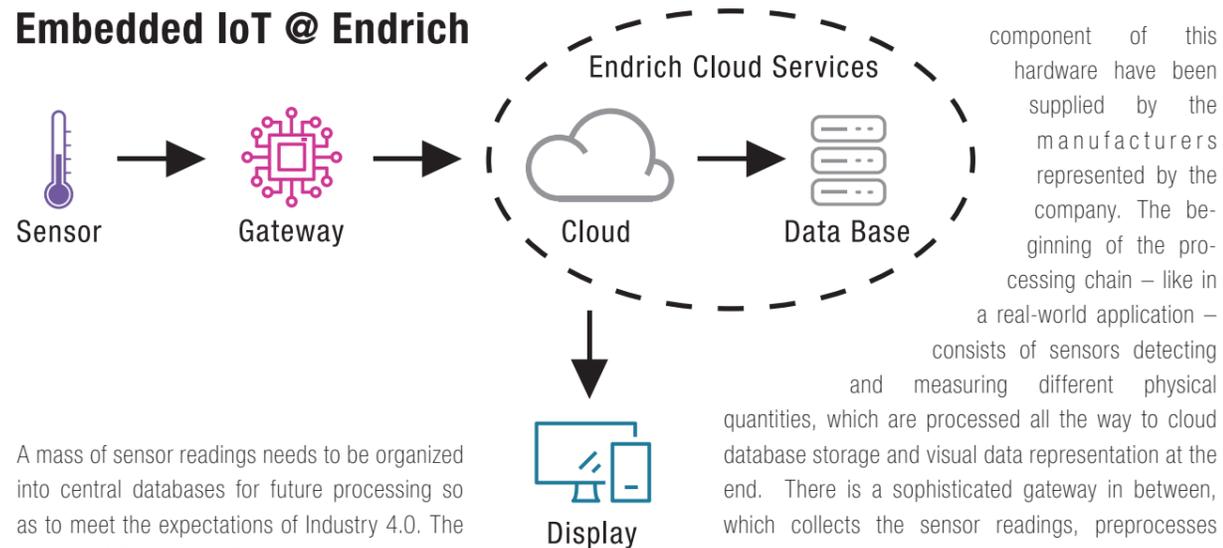
	ELUC3535 VA=120° IF=20 mA	3.5 x 3.5 x 1.2 mm	1 W	2	270 - 280	5.9 - 7.9	In Development Max If = 25 mA
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**Applications:** Sterilization, Disinfection, Purification

**ENDRICH IoT INFRASTRUCTURE – ENDRICH CLOUD DATABASE SERVICE AND RELATED HARDWARE DEVELOPMENT**

A major challenge we face today is digitalization of industrial processes, extending machinery with low power, feature rich microcontroller-based electronics to collect sensor readings and forward data with LPWA communication channels to a cloud database in order to build up the “BIG DATA” – the knowledge base of the future.

**Embedded IoT @ Endrich**



A mass of sensor readings needs to be organized into central databases for future processing so as to meet the expectations of Industry 4.0. The Internet of Things, or IoT provides the ecosystem to deal with this challenge. We review these potentials based on the IoT infrastructure system developed mainly for demonstration purpose by Endrich, a leading electronic spare part distributor in Europe, by showing an example how to work with a modem using Narrow-Band IoT technology and introducing the cloud based database service which was created by the company engineers to help IoT developers at the customers.

Endrich has developed an online sensor network infrastructure for the Embedded World 2020 exhibition, where every

component of this hardware have been supplied by the manufacturers represented by the company. The beginning of the processing chain – like in a real-world application – consists of sensors detecting and measuring different physical quantities, which are processed all the way to cloud database storage and visual data representation at the end. There is a sophisticated gateway in between, which collects the sensor readings, preprocesses these data and sends it through a communication channel to a cloud based database service, where it can be displayed after processing, or used for any purpose appropriate for a given task.

**Sensor and Gateway**

The industrial expectations towards the complete infrastructure are high and diverse

- Minimalization of device, installation and maintenance costs
- Many years of battery lifetime
- Selection of suitable components for a complete solution

**ENDRICH IoT INFRASTRUCTURE – ENDRICH CLOUD DATABASE SERVICE AND RELATED HARDWARE DEVELOPMENT**

The Endrich IoT concept is to implement this structure and provide our partners with hardware and software solutions on several levels.

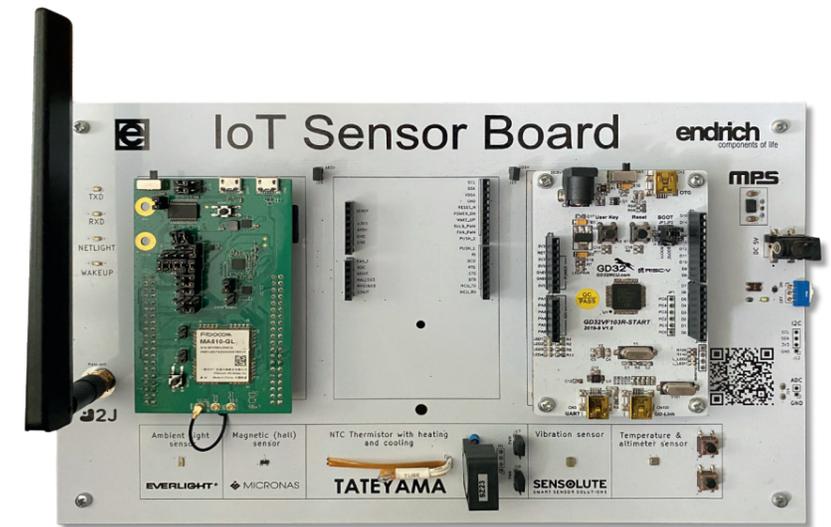
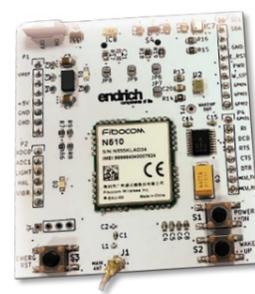
**The First Step**

Endrich has started to develop – as the first step – a microcontroller driven sensor board equipped with narrow band GSM communication module. This Sensor & Communication Board as a hardware, together with the cloud based background network infrastructure (Endrich Cloud Database Service Software) offer a fully working concept of a general IoT solution, and it has been exhibited on national and international expos and conferences earlier in this year.

Data provided by the Everlight ambient light sensor (ALS), the Tateyama and Semitec temperature sensors (NTC), the magnetic sensor from TDK-Micronas (Hall) and Sensolute miniature vibration sensor get collected by the newly developed GD32V103 RISC-V microcontroller from Gigadevice, and sent through the communication channel to the server. The telecommunication connection is implemented by a Fibocom MA510 module, which supports both NB-IoT and GPRS networks, and posts data using UDP protocol for storing in the Endrich Cloud Database Server – created for our partners. The panel size is for demonstration, a real application would be much smaller in size.

**The Second Step**

Endrich has also prepared an equivalent compact solution for other MCU platforms, so we can provide an IoT end point as a communication shield for third party MCU boards. This device fits to the commercial Arduino Leonardo boards and also to GigaDevice evaluation kits for ARM®

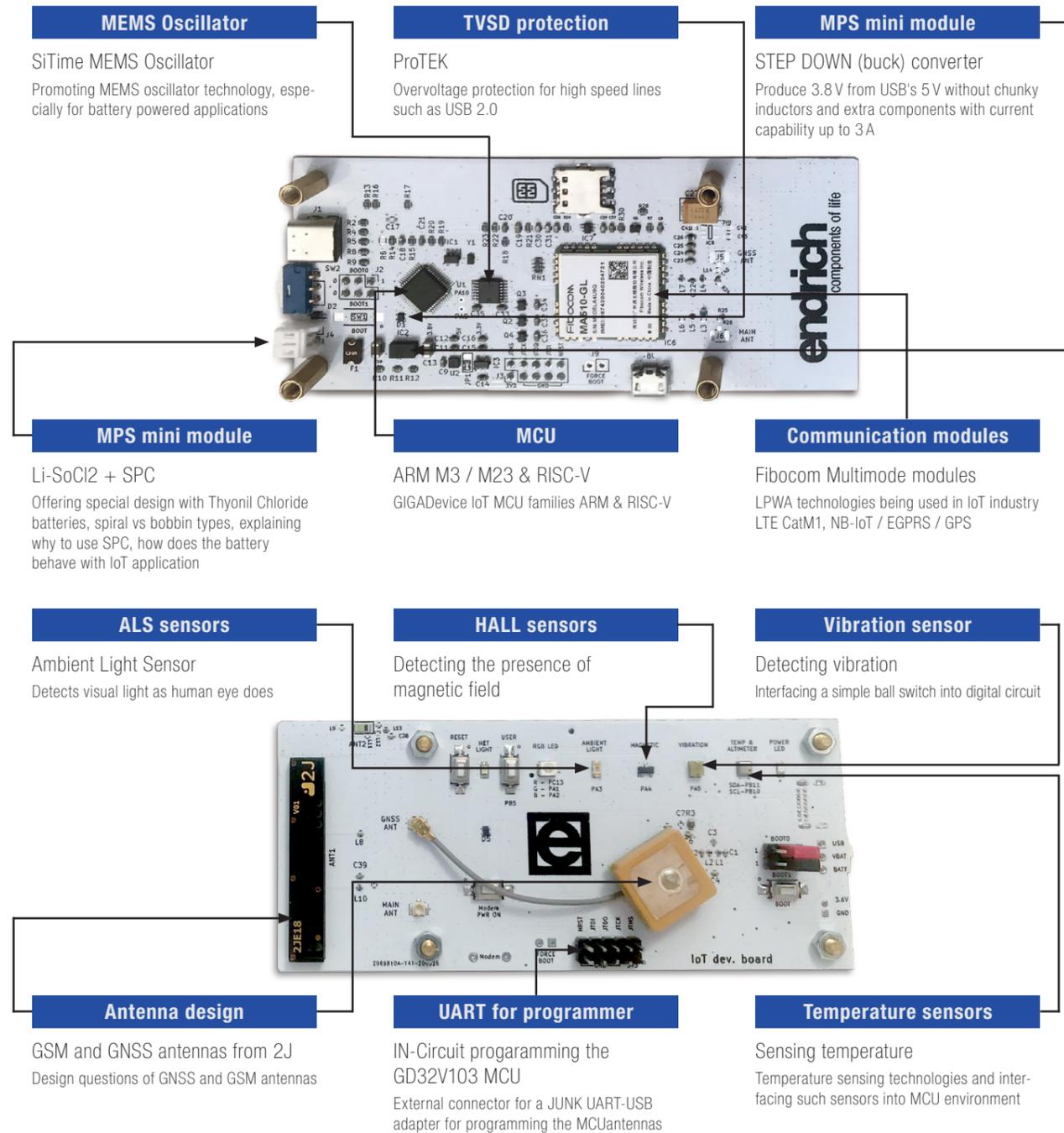


Cortex® M23 or RISC-V microcontrollers converting them to an IoT end point with sensing and communication capabilities. Endrich is providing this conceptual development infrastructure as a platform, not as a product, we still live on component sales, but supplement it with development support sharing reference circuit design, software code and providing access to our cloud database during the product development.

**The Third Step**

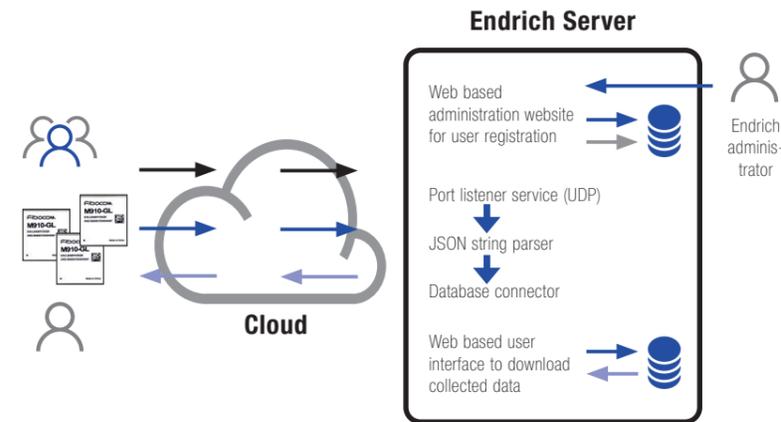
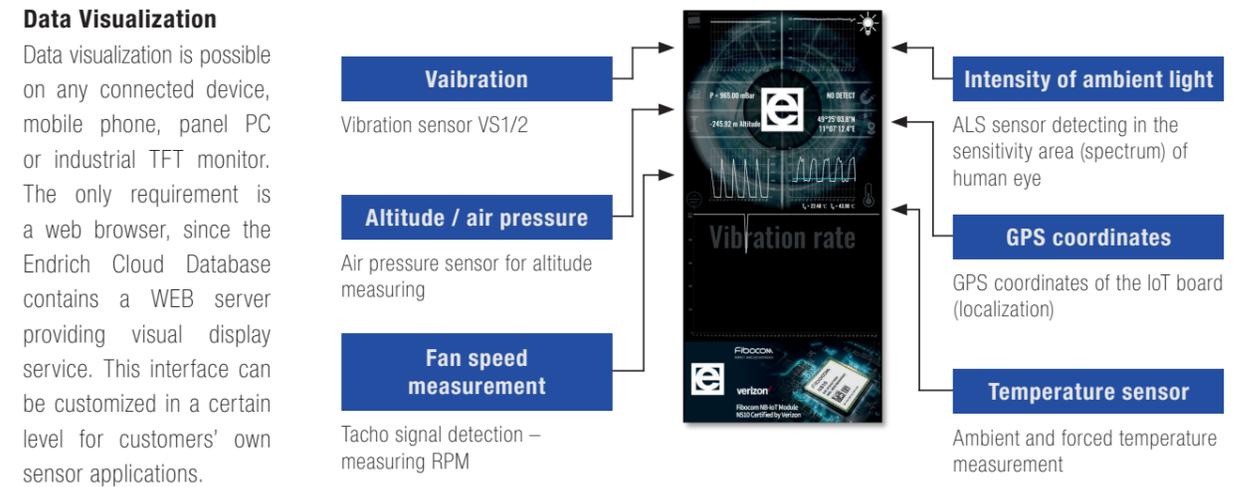
The third development step integrates all IoT functions (sensors, MCU and communication) into one single PCB. The constructed IoT endpoint is capable of vibration and magnetic field sensing, ambient light intensity, temperature and air pressure measurement, altitude change calculation, and reporting the data through GSM network. This IoT board works autonomously as an island device powered by Lithium battery or USB power bank, and also reports GPS location thus can be applied even for vehicle superstructure tracking (such as cold storage or truck cargo compartment.)

# ENDRICH IoT INFRASTRUCTURE – ENDRICH CLOUD DATABASE SERVICE AND RELATED HARDWARE DEVELOPMENT



The IoT board acts as a development evaluation board for the IoT technology. Can be used as MCU evaluation, GSM modem evaluation. For this purpose, external connectors are available for the MCU and the Modem UART interfaces

# ENDRICH IoT INFRASTRUCTURE – ENDRICH CLOUD DATABASE SERVICE AND RELATED HARDWARE DEVELOPMENT



**Endrich Cloud Database Service**  
Apart from our usual service to help finding and testing the appropriate components for a given IoT solution, Endrich recognizes the need for background services, which also support development engineers providing cloud database service to administrate and store structured sensor data for later processing. The service can be used during evaluation and development until the developer is ready with his/her own cloud-based backend. The data is transferred in UDP channel using a predefined format and supports any number of end points.

## How can we help our customers?

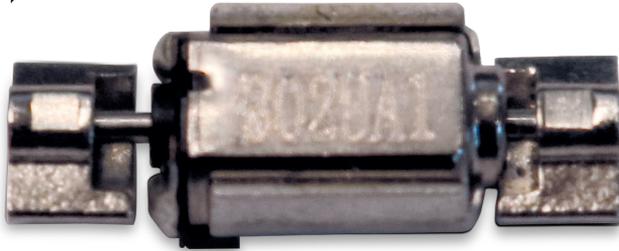
We are happy to share the reference designs of the sensor interfacing, help microcontroller programming and selecting the best fitting components for any IoT applications our customers are developing. Our demonstration purpose devices are using advanced IoT technology, and help to review the operation of the sensors, to handle microcontroller data input and to implement wireless communication. We take care of the appropriate voltage leveling, power supply

and conversions. The card can be energized by advanced lithium primary battery, we are available for consultation on ER or CR batteries, rechargeable Li-ion accumulators or DC/DC converters or power supplies. We advise on MCU frequency control using MEMS oscillators, help in EMI issues and also overvoltage protection.

We are happy to organize online or personal demonstration, please address any question to the author at z.kiss@endrich.com.

## STRONGEST SMD VIBRATION MOTOR FROM BAOLONG

HAVE A  
LOOK



BLT-4315B

### SMD SURFACE MOUNT VIBRATION MOTORS HAVE THREE MAIN ADVANTAGES:

1. The small size of the motor saves space. That's why many wearable devices prefer this type of motor.
2. The motor can be directly soldered to the PCB board, which is suitable for automated production. These SMD surface mount vibrator motors use high-temperature materials which can withstand 2–3 reflows.
3. The motor has excellent reliability and can generally work in an environment of -30 °C to 70 °C.

### APPLICATIONS

- E-call generation of perceptible feedback (mechanical vibration)
- Portable phones and communication devices
- Silent alarm / security communication
- Industrial control units (haptic feedback confirmation)

### SPECIFICATIONS

- P/N: BLT-4315B
- Operating voltage: 2.1 V to 3.2 V
- Max. rated speed: 8,500 rpm
- Max. rated current: 130 mA
- Min. operating temperature: -30 °C
- Max. operating temperature: +70 °C

### FEATURES

- SMD
- For different driving voltages
- Different rotation speed and vibration strength
- Expert advice & design-in support available



Vibration alerting for wearables devices



Vibration feedback for industrial control units



Vibration feedback for future multifunction steering wheels

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