

# endrich news

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## EINLADUNG ZUR EMBEDDED WORLD 2022 – ENDLICH WIEDER LIVE IN NÜRNBERG



Besuchen Sie uns vom 21. – 23. Juni 2022 auf der embedded world Exhibition & Conference, der weltweit führenden Fachmesse zum Thema Embedded Systems, in Nürnberg: Stand 1-460 in Halle 1



Unsere IoT-Produkt highlights

Wir von Endrich, als Ihr Elektronik Design-In-Distributor, können durch unsere technische Expertise und unser breit aufgestelltes Produktportfolio Ihre Applikation ganzheitlich verstehen. Dadurch ermöglichen wir Ihnen eine Make-or-Buy Entscheidung, um Ihre Entwicklungszeiten zu verkürzen.

Wir laden Sie auch in diesem Jahr zur embedded world auf unseren Stand ein, auf dem sich alles rund um das Thema IoT dreht. Unsere Themenschwerpunkte sind "Intelligent Connected Sensors", "Data Visualization Gateway" und "Endrich Cloud Services". Hierzu präsentieren wir Ihnen unsere neuesten Produkte.

Im Bereich **"Intelligent Connected Sensors"** zeigen wir in Live-Demos, wie mit den neuesten LPWA-Technologien Cat-NB1, Cat-NB2, Cat-M1 und Cat-M2, aber auch mit Bluetooth BT5.1 Daten schnell und sicher in die Cloud übertragen werden können.

Die sehr performanten Core i5 Touch PCs, i.MX8 Embedded Boards, die weißesten und schnellsten E-Paper Displays sind nur eine kleine Auswahl an Produkten im Bereich **"Data Visualization Gateway"**.

Mit den **"Endrich Cloud Services"** stellt Endrich dem Embedded Entwickler eine mehrschichtige cloudbasierte Lösung von der Infrastruktur (IaaS) über die Plattform (PaaS) bis hin zum Softwareservice (SaaS) zur Verfügung.

Für Ihren Messebesuch stellen wir Ihnen gerne eine kostenfreie Dauerkarte zur Verfügung. Lösen Sie dazu einfach Ihren persönlichen Gutscheincode **ew22466856** unter folgendem Link ein: [embedded-world.de/gutschein](https://embedded-world.de/gutschein)

Wir nehmen uns Zeit für Ihre individuellen Bedürfnisse! Lassen Sie uns deshalb bereits im Vorfeld einen Termin vereinbaren. Sie erreichen uns unter: [embedded@endrich.com](mailto:embedded@endrich.com)

Wir freuen uns auf Ihren Besuch!  
Ihr Endrich Team

## 3BIG-MOD – 3 BAND LPWAN MODEM

HAVE A LOOK

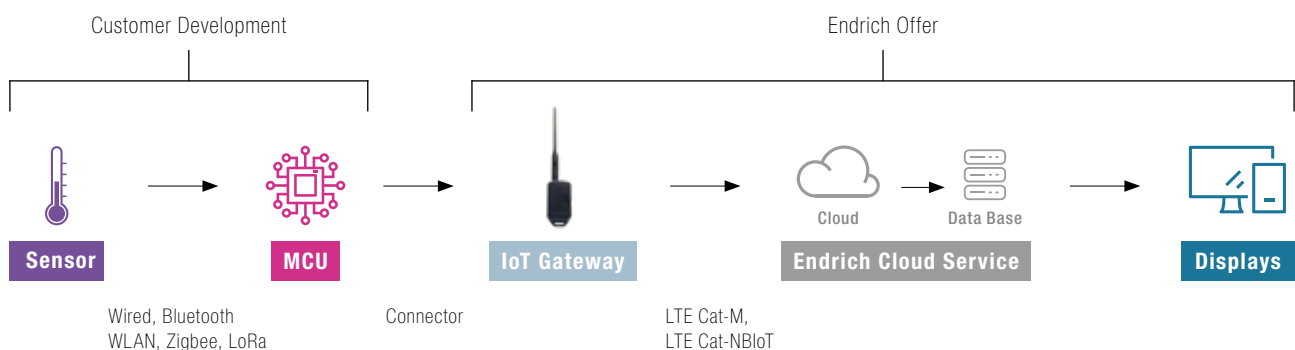
3BIG-MOD is a certified cellular LPWAN Modem to transfer data (e.g. sensor, production data) via LTE Cat-M1, LTE Cat-NB1/NB2 and EGPRS network. The 3BIG-MOD is a suitable product to realise IoT developments or upgrade existing products with cellular IoT technology. The data can be sent with standard protocols to be managed and displayed. Already certified, no RF knowledge is needed and a short time-to-market can be realized.

VISIT US AT OUR BOOTH!



### APPLICATIONS

- Smart city
- Smart building
- Factory automation
- Energy management



## 3BIG-MOD – 3 BAND LPWAN MODEM

### FEATURES

- LTE CAT-M1 / CAT-NB2
- 2G/ EGPRS fallback
- Optional GNSS
- UART interface
- Integration support
- Supported protocol stacks:  
PPP / TCP / UDP / SSL / TLS  
/ FTP(S) / HTTP(S) / MQTT /  
CoAP / LWM2M
- Tasks
  - Sensor to cloud connection
  - Predictive maintenance
  - Data-logging
  - Tracking
  - Machine-to-machine communication
  - Device management and controlling



To easily integrate the 3BIG-MOD into new or existing designs, Endrich provides support for product selection, design and ramp up. Using standard AT-commands, the IoT communication via cellular network, the upgrade to existing microcontroller platforms can be smoothly realized. From sampling to evaluation including hardware and software support, our IoT competence team provides the documentation and – if needed – example python scripts and C-code.

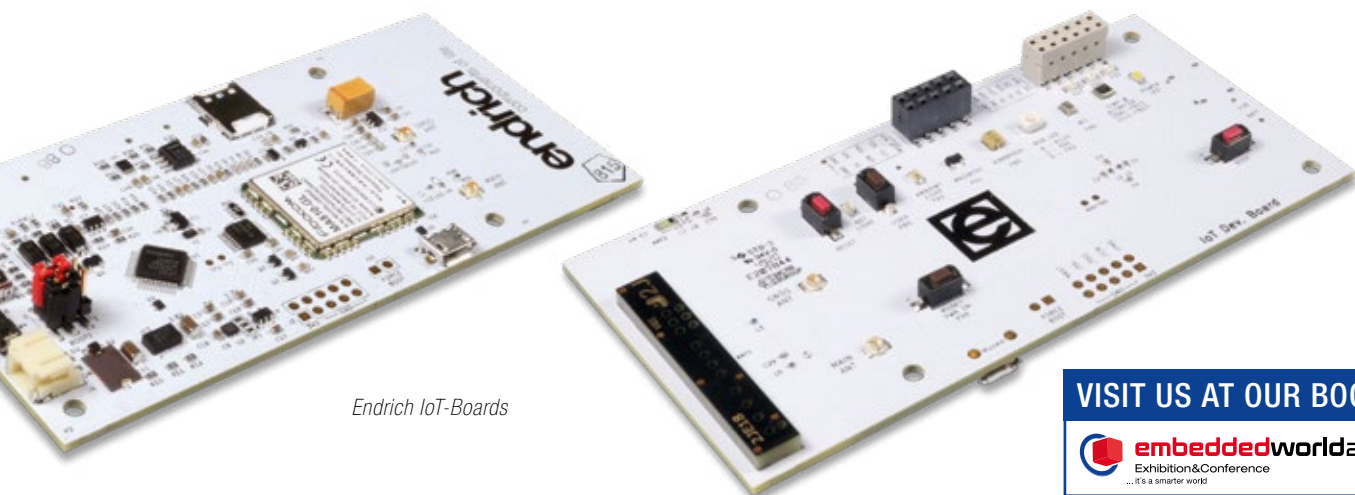
## ENDRICH IOT ECOSYSTEM – FOR SMART AND CONNECTED APPLICATIONS

HAVE A  
LOOK

One concept to cover the basics of IoT. Not a dream but a real platform developed by Endrich to contribute to a smart and connected world. The Endrich IoT platform concept combines sensors, intelligence, wireless technology and cloud connection with open source support.

The heart of the Endrich IoT concept is our self-developed base board called Endrich IoT board v52. The board is equipped with various sensors, a RISV-V architecture microcontroller, LTE-M/NB-IoT technology and multiple options to control and drive a wide range of applications. Via I<sup>2</sup>C, SPI & GPIO and UART can be used to directly communicate with the Endrich IoT board to send or receive the sensor data (from ALS-, Hall-, temperature-, air pressure-, vibration sensor or MEMS microphone). Since most applications communicate wirelessly, a LTE-M/NB-IoT modem with antenna is integrated. Thus the data can be connected to the cloud with standard protocols like MQTT/CoAP/LWM2M PPP/TCP/UDP/HTTP(S) and more.

For evaluation purposes we established our Endrich Cloud Database to easily visualize data. The UDP cloud data are shown in a messaging log as well as in a customized visualization tool. The cloud database can be used freely for testing purposes during the development with our IoT products. With external partners, it is planned to extend the offer and provide different cloud databases for example MQTT based with different visualization options. Even bigger cloud systems like Azure or AWS are supported to integrate our IoT solutions into existing platforms. The best way to learn about our partners is the direct contact with our sales and the Endrich team.



*Endrich IoT-Boards*

VISIT US AT OUR BOOTH!



At the current stage, the website shows the basic concept of our Endrich IoT platform in combination with the Endrich Cloud Database. Also, the user manual is implemented with detailed descriptions on hardware and software development as well as information on the products used on the IoT board. The

website is always in progress and to be extended with more information. More materials like photos and videos are already accessible.

**All information are available for free on our IoT Website:**  
<https://e-iot.info/>

**ENDRICH IOT ECOSYSTEM – FOR SMART AND CONNECTED APPLICATIONS**

**DATA VISUALIZATION**

**VIBRATION**

Vibration sensor VS1/2

Detecting vibration:  
Signaling of machines' running, detecting of motor start, monitoring motor run, rain, intrusion & anti vandalism detection

**ALTITUDE / AIR PRESSURE**

Air pressure sensor for altitude measuring

Detecting altitude by measuring air pressure

**FAN SPEED MEASUREMENT**

Tacho signal detection – measuring RPM

Measuring rotation speed with 4 wire cooling fan



**INTENSITY OF AMBIENT LIGHT**

ALS sensor detecting in the sensitivity area (spectrum) of human eye

Detecting light and dark condition, measuring visible light intensity

**GPS COORDINATES**

GNSS coordinates (localization)

Providing device's physical location – device tracking

**TEMPERATURE SENSOR**

Ambient and forced temperature measurement

Different sensors for ambient temperature and forced temperature

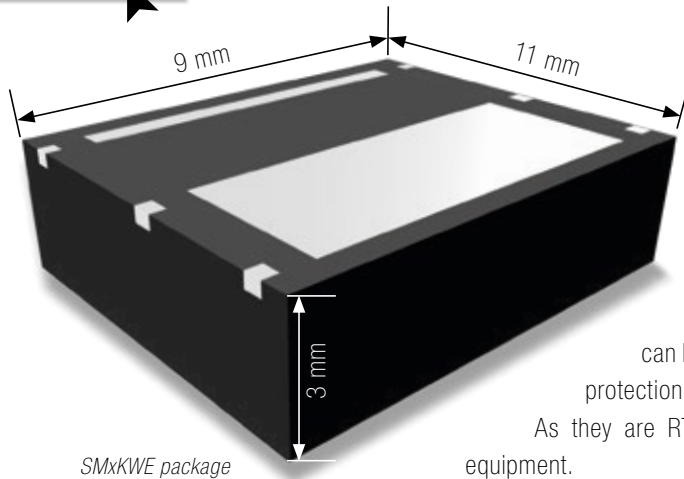
Customized solutions as well as universal adapter boards are possible with our R&D team located in Hungary. Adapter boards may be just a short extension for a battery pack but can also be external boards with different sensors to easily receive sensor data from sensors which are not on the Endrich IoT baseboard. A customization can be similar – just based on different designs. Especially for companies with limited time or knowledge about wireless protocols or IoT integration, this

option provides a unique position for a distributor like Endrich in the market.

More information about our IoT concept and different products will be shared in the future. For direct contact or discussions how to make your product smart and connected feel free to contact Endrich at any time. All information are available for free on our IoT Website: <https://e-iot.info/>

## 30 KW TVS COMPONENTS IN COMPACT DFN-2 PACKAGE

HAVE A LOOK



The SM30KWE<sub>xx</sub>A/CA series are high-powered surface mount transient voltage suppression components designed to protect equipment and systems from the damaging effects of high voltage spikes. The surface mount package configuration provides a lower profile compared to legacy axial lead package configurations. These devices provide 30 kilowatts of peak pulse power dissipation for an 10/1000  $\mu$ s waveform.

Due to the compact DFN-2 package, with a size of 11 x 9 x 3 mm they can be used in space saving devices. Applications include AC and DC power line protection, terrestrial base station protection as well as module lightning protection. As they are RTCA DO-160G compliant, they can be ideally used to protect airborne equipment.

PART NUMBER	STAND-OFF VOLTAGE $V_{WM}$	BREAKDOWN VOLTAGE $V_{(BR)}$	LEAKAGE CURRENT $I_D$	CLAMPING VOLTAGE $V_C @ I_{PP}$
SM30KWE16A	16.0	19.5	100	26.0V @ 1150 A
SM30KWE20A	22.2	24.5	15	34.3V @ 874 A
SM30KWE24A	26.7	29.5	15	40.7V @ 738 A
SM30KWE28A	31.1	34.4	15	47.5V @ 632 A
SM30KWE30A	30.0	33.3	10	50.7V @ 592 A
SM30KWE33A	36.8	40.4	10	54.8V @ 548 A
SM30KWE36A	40.0	44.2	10	59.7V @ 502 A
SM30KWE48A	48.0	53.3	10	73.2V @ 410 A
SM30KWE54A	60.0	66.3	10	87.1V @ 344 A
SM30KWE70A	77.8	86.0	10	114.0V @ 264 A
SM30KWE75A	83.3	92.1	10	122.0V @ 246 A
SM30KWE78A	86.7	95.8	5	126.0V @ 238 A
SM30KWE110A	122.0	135.0	5	178.0V @ 168 A
SM30KWE120A	133.0	147.0	5	193.0V @ 156 A
SM30KWE180A	200.0	220.0	5	291.0V @ 104 A
SM30KWE200A	222.0	244.2	5	320.0V @ 94 A
SM30KWE220A	245.0	269.5	5	356.0V @ 84 A

### FEATURES

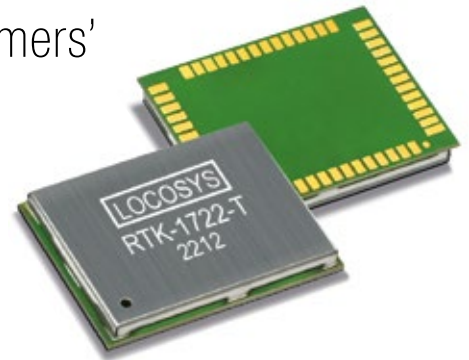
- RTCA DO-160G compliant product
- Waveforms (Pin injection) 3 and 4 – level 5; waveform 5A – level 4
- Low clamping voltage
- 30 kilowatts peak pulse power per line (tp = 10/1000  $\mu$ s)
- Unidirectional & bidirectional configurations
- Easy mounting to printed circuit board
- Available in multiple voltages
- RoHS & REACH compliant

### APPLICATIONS

- Relay drives
- Motor (start/stop) back EMF protection
- Module lightning protection
- Secondary lightning protection for AC/DC

**RTK-1612- DG, RTK-1722-DG, RTK-1722-T GNSS MODULES**

Taiwan LOCOSYS, as a global leading satellite positioning module designer and manufacturer, has been launching the smallest RTK module (RTK-1010) and arousing global customers' strong attention since March 2021.



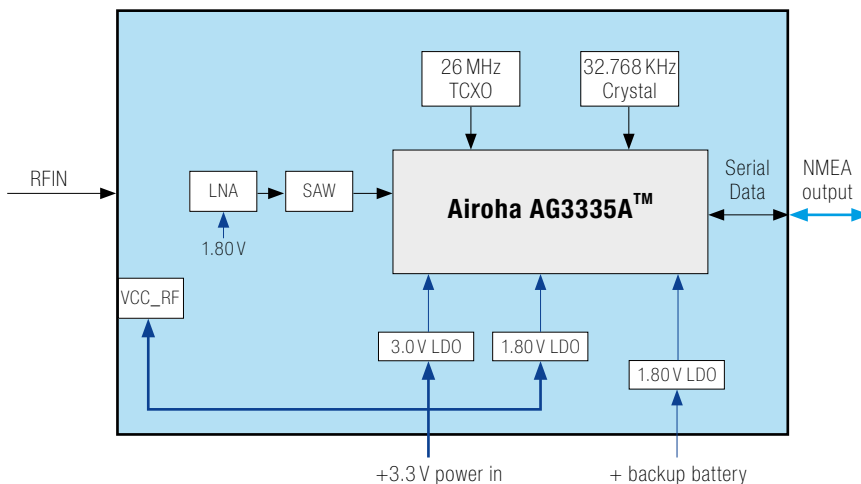
The RTK-1010 then successfully obtains official evaluation report from Taiwan government. In 2022, LOCOSYS are continuously devoting themselves to developing and expanding RTK-related applications, especially targeting in 5G IoT and VX2 market, for offering customers multiple solutions promptly, including their high cost-effective RTK modules: RTK-1722-T, RTK-1612-DG, and RTK-1722-DG.

According to the 5G ITU-T G.8273.2 standard of Transport Application Specification, the standards of class D phase/time should be in accordance with  $\pm 5$  ns accuracy. Outstandingly, the PPS timing accuracy of RTK-1722-T has already realized  $\pm 2$  ns, which is much more precise than the standards. Besides, according to the research report of IHS Markit, the global business data consulting services, it pointed out that 5G-related applications will create 13 trillion output value and will continue increasing afterwards. With the continuous increase of data transfer rate, the infrastructure equipments (e.g. 5G Telecom providers, routers, switches, micro base stations, and so on) need higher and higher accuracy of time synchronization. Not only does the specification of RTK-1722-T stay ahead of our international competitors, but also its competitive unit price is affordable for our global customers. RTK-1722-T will definitely help the customer shorten the design and development cycles of the whole project and accelerating time-to-market.

**FEATURES**

- Dual-band, multi-frequency and with maximum fixed update rate up to 10 Hz
- Capable of SBAS (WAAS, EGNOS, MSAS, GAGAN)
- GNSS based timing solution for O-RAN (Open Radio Access Network)
- Low power consumption
- Fast TTFB at low signal level
- RTCM ready (RTCM v2.3 and v3.3)
- SMD type; RoHS compliant
- IATF 16949 quality control

**RTK-1722-T Block Diagram**



**APPLICATIONS (RTK-1722-T)**

- Suitable of the 5G Telecom providers, routers, switches, micro base stations
- With the  $\pm 2$  ns PPS timing accuracy
- Conforming for 5G ITU-T G.8273.2 standard of transport application specification (class D phase/time:  $\pm 2$  ns)

# RTK-1612- DG, RTK-1722-DG, RTK-1722-T GNSS MODULES



Because of the ADAS (advanced driver assistance system) and autonomous driving market continue to accelerate their evolution, both LOCOSYS RTK-1612-DG and RTK-1722-DG modules can meet the application requirements of autonomous driving. The two modules have L1+L5 multi-frequency high-precision ADR/ UDR inertial navigation. They can allow mobile vehicles to maintain the centimeter-level positioning accuracy. When the satellite signal is disconnected, the driving route can be still maintained. The modules, which integrate high-precision and 6-axis-sensor dynamic algorithm, have the ability to learn intelligently in order to suit for various vehicle environments and to output the dynamic attitude and angle of the car. RTK-1612-DG and

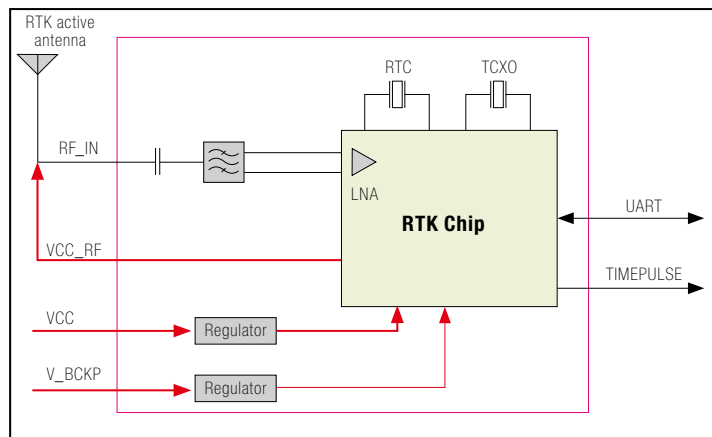
RTK-1722-DG improve several times of performance than general GPS positioning solutions do, including: centimeter-level positioning accuracy, 100 Mhz high update rate, ADR/UDR automatic switching, low latency and anti-interference, and other advantages. These modules are the best choices to customers in using self-driving and unmanned applications.

## FEATURES

- Dual-frequency and multi-constellation RTK positioning solution
- Support GPS, GLONASS, GALILEO, BEIDOU and QZSS
- Capable of SBAS (WAAS, EGNOS, MSAS, GAGAN)
- Support 135-channel GNSS
- Low power consumption
- Fast TTFF at low signal level
- Up to 10 Hz update rate
- Small form factor  
16 x 12.2 x 2.4 mm
- SMD type with stamp holes; RoHS compliant
- IATF 16949 quality control

## APPLICATIONS (RTK-1612-DG & RTK-1722-DG)

- ADAS (advanced driver assistance system) and autonomous driving market
- L1+L5 multi-frequency high-precision
- ADR/ UDR inertial navigation
- High-precision and 6-axis-sensor dynamic algorithm



System Block Diagram

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