

05/2024

# endrich NEWS

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## READERS' POLL FOR DISTRIBUTOR OF THE YEAR 2024

In this year's readers' poll for Distributor of the Year by elektroniknet.de and the magazine Elektronik, endrich group is represented in 2 categories in the special distributors section:

1. In the group semiconductors, embedded, displays and assemblies (endrich)
2. In the group connection technology, passive components, electromechanics and power supplies (Novitronic)

All votes cast are analysed separately. endrich group can therefore score points in several categories. Cast your vote in our favour. We would like to take this opportunity to thank you for your trust and for the good and long-standing business relationship.

We look forward to your votes!

Click here for the election:  
[www.elektronik.de/distributorwahl](http://www.elektronik.de/distributorwahl)



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## CARBON DIOXIDE GAS SENSOR IN THE AIR QUALITY MANAGEMENT SYSTEM

In Earth's atmosphere, carbon dioxide is a trace gas that plays an integral part in the greenhouse effect, carbon cycle, photosynthesis and oceanic carbon cycle. It is one of several greenhouse gases in the atmosphere of Earth.

Carbon dioxide is a chemical compound with the chemical formula CO<sub>2</sub>. In the air, carbon dioxide is transparent to visible light but absorbs infrared radiation, acting as a greenhouse gas. Carbon dioxide is soluble in water. Carbon dioxide is a multifunctional industrial material, apply in welding and fire extinguishers, in decaffeination in fermentation of sugars in bread, beer and wine making, and is added to carbonated beverages like seltzer, for effervescence in beer and soda water.

Carbon dioxide is an end product of cellular respiration in organisms that obtain energy by breaking down sugars, fats and amino acids with oxygen as part of their metabolism.

Poor ventilation is one of the main causes of excessive Carbon dioxide concentrations in closed spaces, leading to poor indoor air quality.

Carbon dioxide is one of the mediators of local autoregulation of blood supply. If its concentration is high, the capillaries expand to allow a greater blood flow to that tissue.

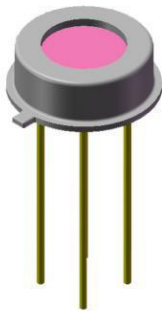
CO<sub>2</sub> measurement is critical in many applications such as indoor air quality, ventilation systems storage Facilities and greenhouse gas monitoring.

Different types of gas sensors can be used to detect CO<sub>2</sub>, such as: NDIR sensors, Metal Oxide Semiconductor (MOS) Sensors, Electrochemical sensors, Optical sensors (absorption or fluorescence of light to detect CO<sub>2</sub>) and Solid-state sensors (Based on the change of electrical or physical properties of a material due to the presence of CO<sub>2</sub>). Non-dispersive infrared (NDIR) sensors – Use infrared light to detect CO<sub>2</sub> by measuring the absorption of infrared light by CO<sub>2</sub> molecules. NDIR sensors are very accurate and can be used in a wide range of applications.

Greenhouse air purifier, Smoke detector, Air quality monitor

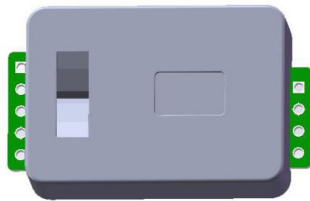


# NEWS



## CO2 Gas Sensor XGZG360M

- MEMS Thermopile element
- TO-46 Package
- High sensitivity
- 4.26µm Narrow band Filter
- High accuracy NTC



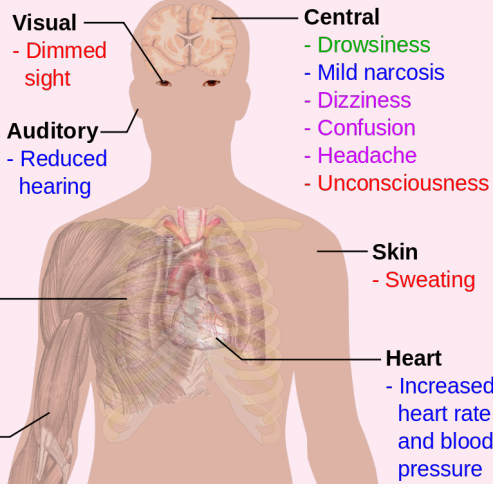
## CO2 Gas Sensor XGZG360M

- Infrared working principle
- High sensitivity, low power consumption
- Small size and high precision
- Built-in temperature compensation
- Support serial-port (UART), PWM etc output methods

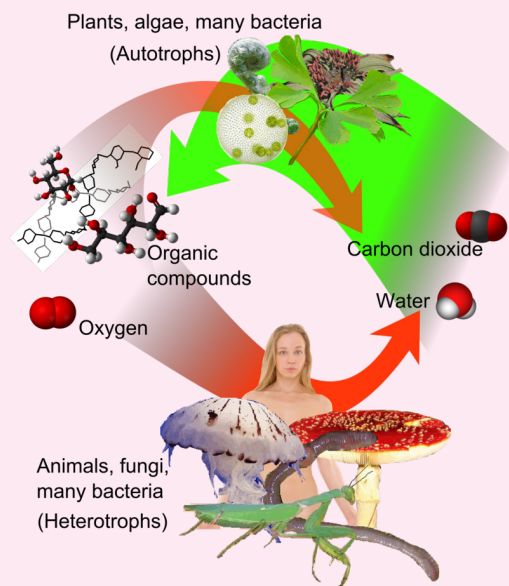
### Symptoms of carbon dioxide toxicity

#### Main symptoms of Carbon dioxide toxicity

Volume % in air
Green - 1%
Blue - 3%
Purple - 5%
Red - 8%



### Auto and heterotrophs Overview of photosynthesis and respiration



## INNOVATION FOR THE FUTURE:

### Discover the lithium iron phosphate batteries from Vision

We are pleased to present to you today an innovative new product on the battery market: The lithium iron phosphate batteries from the renowned manufacturer Vision. These batteries represent a remarkable advancement in energy storage technology and offer a multitude of advantages. Vision's lithium iron phosphate batteries are characterised by their high performance and exceptional longevity. Thanks to the use of high-quality materials and state-of-the-art production techniques, they guarantee optimum energy yield and a long service life. This means that you can benefit from the power supply of your devices for longer before a recharge is required.



Another significant advantage of these batteries is their high level of safety. Compared to conventional lithium-ion batteries, lithium iron phosphate batteries are less susceptible to overheating and thermal instability. As a result, they significantly minimise the risk of short circuits or fires and offer you a reliable and safe power source. In addition, Vision's lithium iron phosphate batteries are characterised by their environmental friendliness. They contain no toxic heavy metal and are therefore much less harmful to the environment. This emphasises Vision's sustainable orientation and enables you to act in an environmentally conscious manner without having to compromise on performance.

Vision batteries are available in different versions and can be used in a wide range of applications. Whether in electric vehicles, solar panels, power tools or other electronic devices, the lithium iron phosphate batteries offer you the performance and reliability you need.

At Endrich, we always endeavour to offer you the latest and most advanced technologies. Vision's lithium iron phosphate batteries are an impressive example of this. Visit our website or contact us directly for more information and to benefit from the advantages of these batteries.

With best regards,  
Your Endrich Team

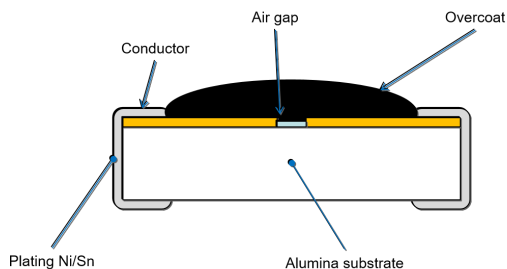
# NEWS

## ESD GUARD: NEW LOW CAPACITANCE TFE SERIES

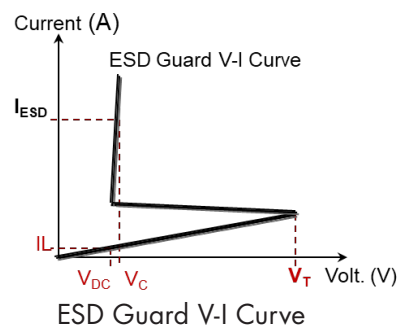
The manufacturer INPAQ Technology Co., Ltd. Introduced a new series of ESD Guards – the TFE series products. Instead of the thick film technologies used for the famous EGA series, the new ESD protection devices of the TFE series use a thin film process with an air gap structure. The new devices are characterised by a low capacitance of typical 0,05pf, which makes them an ideal solution for high frequency applications due to the very low insertion loss.

Due to the crowbar characteristics the devices offer a very low clamping voltage of typ. 20V only and a response time of <1 ns. Therefore, the new ESD Guard products are ideal to protect most of the sensitive electronics devices.

Like all ESG Guard solutions of INPAQ, the TFE product family is offer in EIA 0201 and 0402 size and with rated voltages of 6,12,15,24 and 30V. As usual the components protect against undesired ESD events according IEC61000-4-2 Level 4 (contact discharge 8kV/air discharge 15kV).



TFE series structure



ESD Guard V-I Curve

CHARACTERISTIC	UNIT	TFE10201 SERIES	TFE10402 SERIES
Rated voltage	V	6/12/15/24/30	6/12/15/24/30
Leakage current	μA	0.01	0.01
Trigger voltage	V	300	300
Clamping voltage	V	20	20
Capacitance, @1MHz	pF	0.05	0.05
Response time	ns	<1	<1
ESD voltage capability, Contact discharge mode	kV	8	8
ESD voltage capability, Air discharge mode	kV	15	15
ESD pulse withstand	pulses	1000	1000

### FEATURES

- Protection against ESD voltages and currents (IEC61000-4-2 Level 4)
- Extremely quick response time (<1ns) present ideal ESD protection
- Extremely low capacitance (0.05 pF typical)
- Extremely low leakage current
- Automotive grade (AEC-Q200)

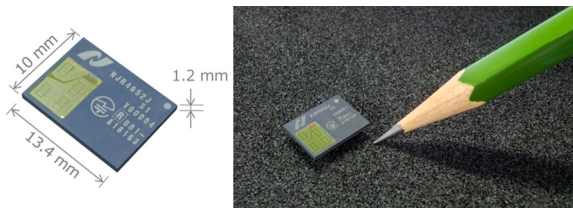
### APPLICATIONS

- RF antenna/X BOX RF antenna/GNSS antenna
- Networking (Router/Set-top box/CPE)
- Communication (Table/Projector/Barcode scanner)
- Automotive (Infotainment/RF Antennas)

## 60GHZ SMART SENSOR MICRO-MODULE NJR4652 SERIES

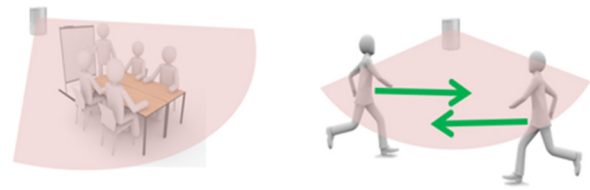
### The world 's smallest 60 GHz radar sensor module

The NJR4652 is one of the world's smallest sensor modules, incorporating a 60GHz radar sensor IC and MCU for control and signal processing in an ultra-compact IC-like package measuring 10x13.4x1.2mm.



This product has multiple antennas. Green part is radar sensor IC. It has one Tx antenna and three Rx antennas. It can simultaneously get both distance and position (angle) information to an object with high resolution.

This product (the model that includes the turnkey solution) alone has obtained technical standard compliance certification available in Japan and FCC certification available in the United States. We are also planning to obtain CE certification. No additional radio certification is required by the customer.



Presence Detection Entrance Counter

NJR4652 is released to especial two application software as Turnkey-solution.

One is Presence Detection. It can detect the presence or absence of people in the room.

PART NO.	ON-BOARD SOFTWARE	RF FREQUENCY	REGION / REGULATIONS
NJR4652JS1	PRESENCE DETECTION	60.0 to 60.5 GHz	Japan / Technical Conformity (Certified)
NJR4652F2S1		61.0 to 61.5 GHz	Europe / CE - RE Directive (expected Q2/2024) U.S.A. / FCC Certification (Certified)
NJR4652JS2	Entrance Counter	60.0 to 60.5 GHz	Japan / Technical Conformity (Certified)
NJR4652F2S2		61.0 to 61.5 GHz	Europe / CE - RE Directive (expected Q2/2024) U.S.A. / FCC Certification (Certified)

# NEWS

The other is Entrance Counter. It can count entering and exiting people at the entrance.

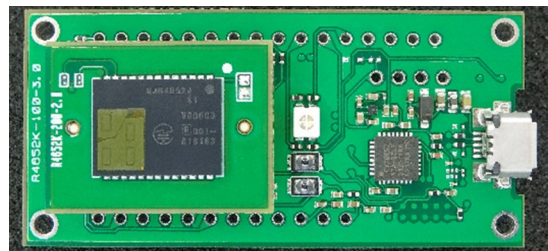
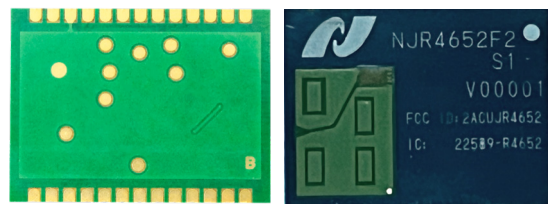
The system of Presence Detection can detect the presence of people in offices, conference rooms, etc. Even stationary people can be detected. Distance information to the target of detection can also be obtained. There are two ways to identify presence detection: macro motion detection and micro motion detection.

Macro motion refers to large movements, while micro motion refers to small movements (microvibrations of a person).

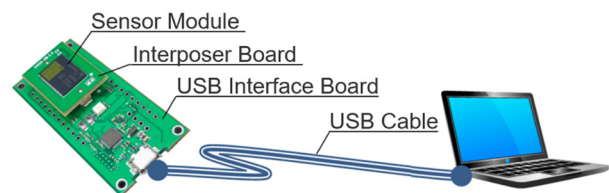
An evaluation kit for the module is available. It consists of:

- the 60GHz Sensor Module mounted on an interposer board
- a USB interface board
- a USB cable
- GUI evaluation software

Simply plug the USB cable into a laptop or desktop pc and launch the GUI software to get started.



## Evaluation Kit



NJR4652F2S1EV Presence Detection  
NJR4652F2S2EV Entrance Counter

## APPLICATIONS

- Lighting
- Security
- Housing Facilities
- Robot/Hobby
- Other applications which need motion sensors.

## FEATURES

- Distance / angle / state detection sensor using 60GHz band millimeter wave
- World's smallest class ultra-compact module
- Antenna, Microwave RF circuit, Base-band IF circuit, MCU and also signal processing are integrated
- IC-like package compatible with SMT
- Low power consumption: 13 mA (Average) @ 3.6 V power supply
- Installation of application software
- Presence Detection / Entrance Counter

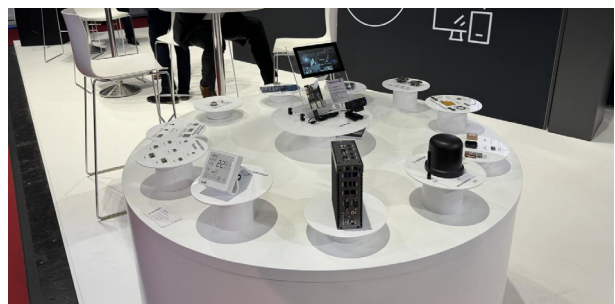
# endrich

## ENDRICH ON THE EMBEDDED WORLD 24 SHOW IN NUREMBERG

The 'embedded world' trade show took place in Nuremberg from April 9-11. We were having our booth in hall 1. This year our highlights were 'Intelligent Sensor Networks', 'IoT Gateway Solutions' and 'Environmental Parameter Sensing'. Based on the Endrich IoT platform, we presented the latest solutions for the existing cellular IoT gateway with a sub-GHz sensor mesh network. For displays and embedded systems, we showed our new generation of touch monitors with up to 27" and 4k resolution, as well as the ARM®-based System-on-Modules (SoM). This year, the focus in embedded systems was on our new products from ASRock Industrial and DFI. Therefore x86 (Intel, AMD) based motherboards, box PCs and IoT controllers were presented.

Our team (consisting of product managers, field service colleagues and our IoT specialists Zoltan Kiss and Zsolt Veresegyházy from our Hungarian team) had many exciting discussions with customers and suppliers throughout the days. The topic of IoT was a big eye-catcher; apart from us, there was no other exhibitor with anything similar to our IoT solution.

Our solution, which makes it possible to respond to customer-specific needs, attracted a lot of attention. Requests that may seem unusual at first glance, such as the need of a screed contractor who wants to remotely monitor the humidity and temperature of his construction sites, show the huge application potential of our customised IoT solutions.



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