

# endrichnews

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## Meine Meinung



Wolfgang Endrich

Liebe Leserinnen und Leser, es geht um ein kontroverses, schwieriges Thema, das uns seit einigen Monaten beschäftigt und ich möchte Ihnen heute, wie gewohnt, meine persönliche Meinung dazu mitteilen: Neueste Umfragen in Deutschland zeigen, dass rund 50 % unserer Mitbürger der

Meinung sind, dass man die Ukraine sich selbst überlassen sollte. Die Befragten beklagen ihre derzeitige persönliche Situation, die sich infolge von Inflation, hoher Nahrungsmittel- und Benzinpreise verschlechtert hat und geben der Ukraine die Schuld.

Für mich ist dies kaum nachvollziehbar, da wir außer 5.000 Stahlhelmen, Panzerfäusten und alten Haubitzen uns finanziell nicht allzu sehr in der Ukraine engagiert haben. Einen größeren Schaden haben wohl zahlreiche deutsche Firmen, die Produkte in der Ukraine kostengünstig produzieren ließen. Das generelle Thema der Inflation gab es schon vor dem 24. Februar!

Dass die Ukraine aber die Kornkammer Europas ist, die auch uns mit Weizen versorgt, sollten wir nicht vergessen und es sollte uns zu denken geben. Durch Herrn Putin wird der Export verhindert und hunderten Millionen Menschen droht Hunger! Dies ist ein unverzeihliches Verbrechen!

Aber alle Russen hassen? Warum? Und umgekehrt? Der intensive Kulturaustausch, die Beliebtheit deutscher Produkte und viele deutsche Firmen, die ihre Niederlassungen in Russland haben, können dies sicherlich nicht bestätigen. Dass man aber die russische Regierung und das ganze System mit Staatskapitalismus und Oligarchen nun zum Teufel wünscht, kann ich verstehen. Aus eigener Erfahrung kann ich sagen, dass Krieg etwas Fürchterliches ist, menschenverachtend und überhaupt nicht durch irgendetwas zu rechtfertigen.

Leider hat Herr Putin zu viele Geschichtsbücher gelesen und ahmt nun die traurige Politik der Vergangenheit nach: Zuerst Freundschaftsverträge mit den Nachbarn schließen, dann diese unterwandern, damit die Meinung kippt und anschließend mit Waffengewalt erobern.

Dass wir den Krieg verhindern müssen, sollte überhaupt keine Frage für uns Deutsche sein, denn der russische Kommunismus, man denke auch an die DDR-Zeiten, ist kein wirklicher Kommunismus, dafür legen Millionen Russen, die noch immer in schlimmster Armut leben, ein beredtes Zeugnis ab. Wohlstand für alle, wie es Ludwig Erhard forderte – unbekannt! Der russische Staat steckt alles in die Rüstungsindustrie. Es handelt sich um einen Staatskapitalismus, bei dem sich die Führung (d. h. die Funktionäre – angeführt von Herrn Putin) auf unermessliche Weise zu Lasten des Volkes bereichert hat.

Wer hat weltweit die größten Privat-Jachten? Wladimir Putin und zahllose Oligarchen. Wer hat sich einen Palast am Schwarzen Meer gebaut? Wladimir Putin!

Wir haben es mit einer russischen Regierung zu tun, die sich ohne Rücksicht auf das eigene Volk die Taschen füllt, aber in einer solchen Größenordnung, wie wir es uns nicht vorstellen können.

Elon Musk, Bill Gates und andere amerikanische Milliardäre sind im Vergleich dazu arme Zeitgenossen. Leider scheint es auf unserer Welt heute möglich zu sein, dass sich Einzelne zu Herrschern ausrufen können, um sich, ihre Familie und Freunde am Volk maßlos zu bereichern und weil sie nicht genug bekommen, dann versuchen Nachbarstaaten zu unterjochen und ebenfalls auszurauben.

Heute geht es darum, dass wir uns gegen diese Art der Herrschaft verteidigen müssen. Denn wenn es nach dem Willen von Herrn Putin ginge, würde er sich sicherlich auch gerne die Bundesrepublik Deutschland als Industrieprovinz, die viel Geld bringt, einverleiben. Aber Teile unserer Bevölkerung, die anfangs erwähnten 50 %, vermögen vielleicht nicht zu erkennen, um was es wirklich geht.

Nämlich um unsere Freiheit! Die Deutschen haben 70 Jahre in Frieden gelebt. Unsere Eltern haben die Trümmer aufgeräumt – man denke zum Beispiel nur an das völlig zerstörte Dresden. Zahllose Menschen haben vor einigen Monaten noch in Massenkundgebungen für die Freiheit in Deutschland protestiert. Aber sie haben wohl noch nicht verstanden, was Freiheit wirklich bedeutet! Denn heute wird in der Ukraine auch unsere Freiheit verteidigt.

Ihr Wolfgang Endrich

## HIGH RELIABILITY DC/DC CONVERTER FOR 1700 V IGBT/SiC MOSFET DRIVER

HAVE A LOOK

New energy vehicles and the photovoltaic (PV) industry are constantly expanding the application range and requirements of semiconductor devices, including the key component of semiconductor devices in electric vehicle (EV) charging systems and PV static var generator (SVG) systems: IGBT/SiC MOSFET, which also has higher requirements for driving solutions.

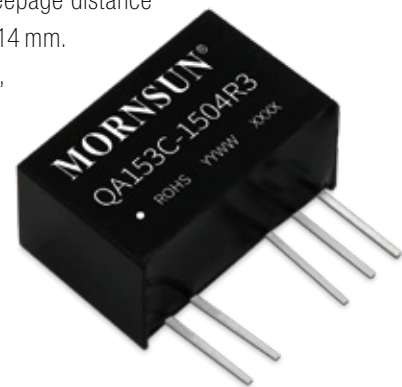
### FEATURES

- Isolation voltage: 5000 VAC (reinforced insulation)
- Continuous barrier withstand voltage 1700 V
- Efficiency up to 87 %
- Compact size SIP package
- Max. capacitive load: 2200  $\mu$ F
- Ultra-low isolation capacitance: 3.5 pF (typ.)
- Operating temperature range: -40 °C to +105 °C

### APPLICATIONS

- QA-R3/QA\_C-R3 Series can be widely used in the IGBT/SiC MOSFET driving solutions of the PV inverter, motor driver, and EV charging

Based on an independent circuit, IC, and process platform, MORNSUN launched the 3rd generation DC/DC converter QA-R3/QA\_C-R3 series special for IGBT/SiC MOSFET driver. The QA\_H-R3/QA\_HC-R3 series creepage distance meets the 1700V system power application, making it the optimal and reliable DC/DC converter of the driving solutions. Comply with IEC-61800-5-1 standard, R3 series features a continuous barrier withstand voltage (continuous discharge) up to 1700 V, which can be used for the IGBT/SiC MOSFET devices with voltages below 1700 V. The creepage distance of QA\_H-R3/QA\_HC-R3 is greater than 14.14 mm. Based on MORNSUN independent IC design, R3 series', the isolation voltage with up to 5000 VAC meets the requirements of reinforced insulation, which is higher than with conventional products on the market (3750 VAC).



### DC/DC converter selection guide

INPUT VOLTAGE	0.5 V	12 V	15 V	24 V
Single-output IGBT driver	QA053-R3	QA123-R3	QA153-R3	QA243-R3
		QA123H-R3	QA153H-R3	QA243H-R3
		QAW123-R3		
Single-output SiC MOSFET driver	QA053C-R3	QA123C-R3	QA153C-R3	QA243C-R3
		QA123H-R3	QA153HC-R3	QA243HC-R3

For dual-output applications, please contact our sales team for more details.

# ALL-IN-ONE FLYBACK CONTROLLER WITH INTEGRATED PRIMARY CONTROL CIRCUITRY AND SECONDARY SYNCHRONOUS RECTIFICATION DRIVER

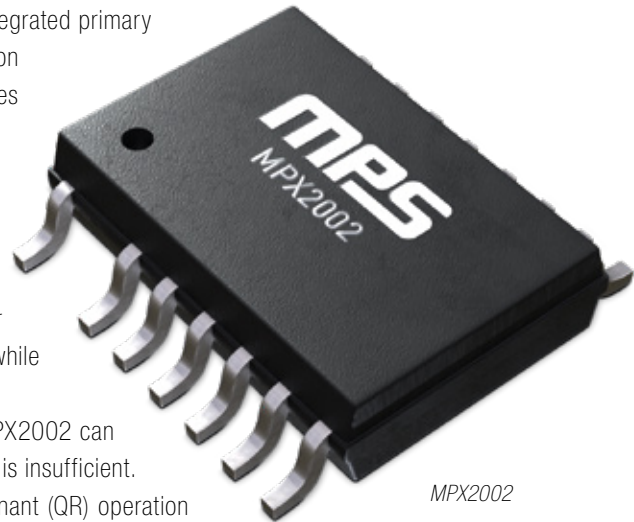
**PRODUCT IS PRE-RELEASED**

The MPX2002 is an all-in-one flyback controller with an integrated primary driving circuit, secondary controller, synchronous rectification driver, and safety compliance feedback. The device provides the benefits of both primary-side regulation (PSR) and secondary-side regulation (SSR).

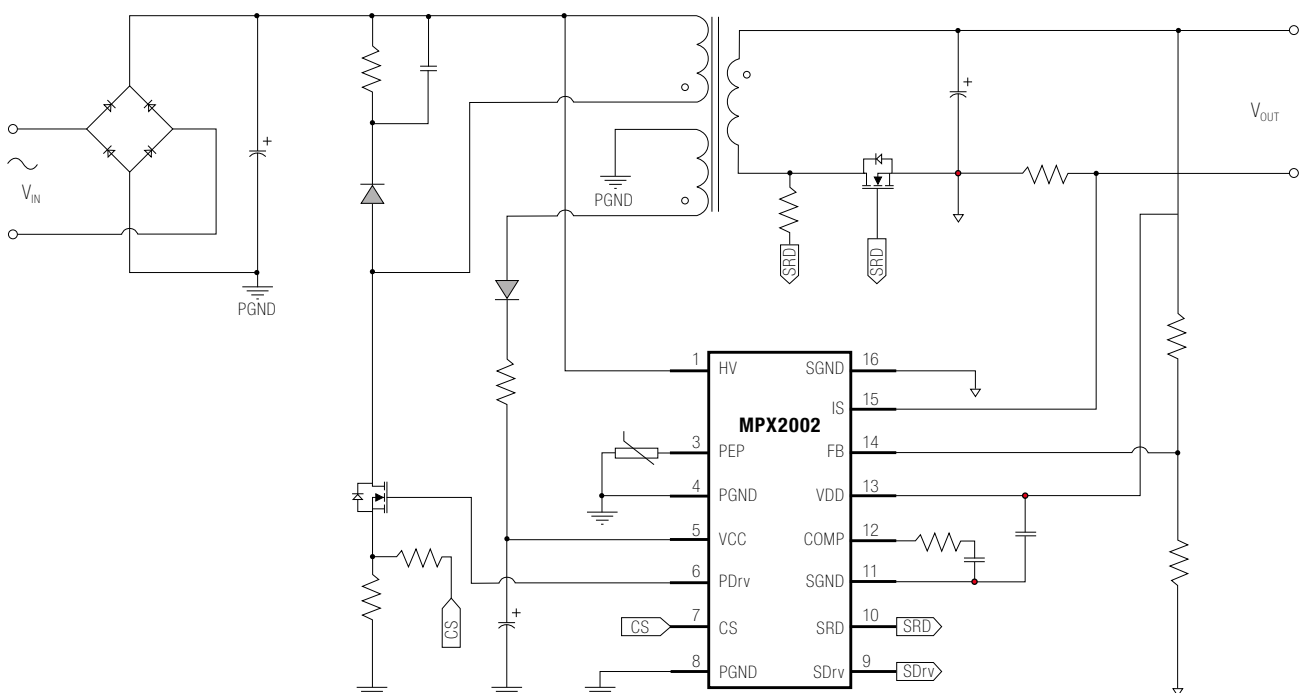
Without the need for a feedback circuit, the system is simplified, and the total BOM cost is reduced. The synchronous rectifier (SR) can match the driving signal of the primary-side MOSFET, which allows the SR to safely operate in continuous conduction mode (CCM). The integrated SR controller regulates the SR MOSFET at a low threshold to increase overall efficiency while providing a more flexible design.

An integrated, internal linear regulator provides the SR power supply, so the MPX2002 can drive the low-side SR MOSFET without auxiliary winding, even when the output is insufficient.

The MPX2002 can run in CCM under heavy loads, then switch to Quasi-Resonant (QR) operation when the load decreases. If the load drops further, the MPX2002 works in pulse-frequency modulation (PFM) mode. The switching frequency is fixed at 20 kHz when it enters burst mode, which reduces audible noise. With this feature, the MPX2002 can achieve high efficiency under all load conditions with excellent electromagnetic interference (EMI) performance. The MPX2002 features advanced protections, including VCC over-voltage protection (OVP), primary over-current protection (POCP), secondary-sense output overload protection (OLP), internal brown-in (B/I) and brownout (B/O), short-circuit protection (SCP), current-sense short protection (SSP), SR gate open/short protection (SGOP/SGSP), SRD abnormal protection (SRDP), FB OVP and under-voltage protection (UVP), internal thermal shutdown, under-voltage lockout (UVLO), and an externally triggered protection (Ext.P). The MPX2002 is available in SOICW-16 and SOICW-16-T packages.



MPX2002



## ENDRICH IOT @ EMBEDDED WORLD 2022

From sensor to cloud – in today's world, data exchange and visualization is an important part in many applications.

With the Endrich IoT concept, it is possible to transfer and visualize data to the cloud via the cellular network (LTE Cat-M1, LTE Cat-NB1/NB2 and EGPRS). This concept was exhibited at this year's embedded world in Nuremberg. An important element of this concept is the systems business, because

Endrich is not only a partner for component sales, but offers also customer-specific systems. Here, the topic of IoT plays an important role, according to the motto: "we make your device smart!"



*IoT Sensor Demo Board integrated in a Mojito Dispenser. Worldwide access to sensor data via the Endrich Cloud.*

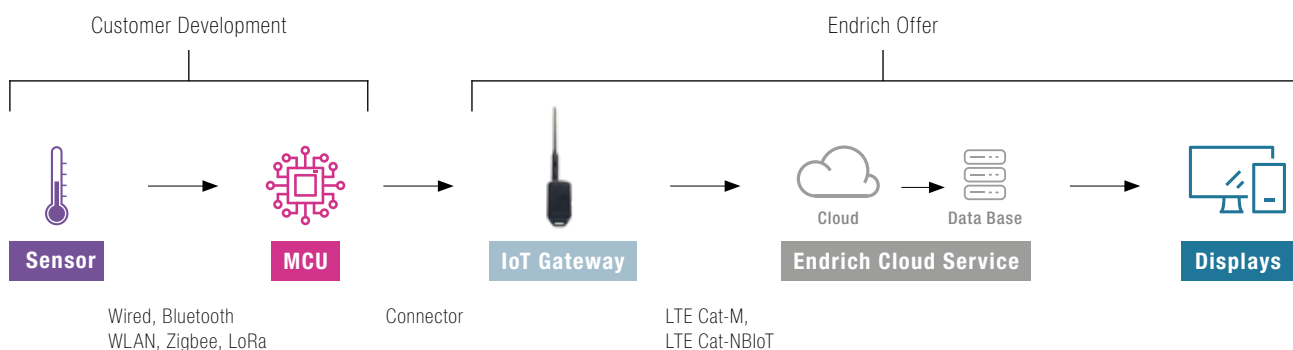
### 3BIG-MOD (IOT SENSOR DEMO BOARD)

The 3BIG-MOD is a certified LPWAN modem for data communication. The data communication is done via standard protocols such as MQTT, PPP, TCP, UDP and many more. In combination with the IoT Sensor Demo Board, which contains a variety of different sensors and an Arduino, the sensor data can be uploaded to the Endrich Cloud via the 3BIG-MOD and visualized.

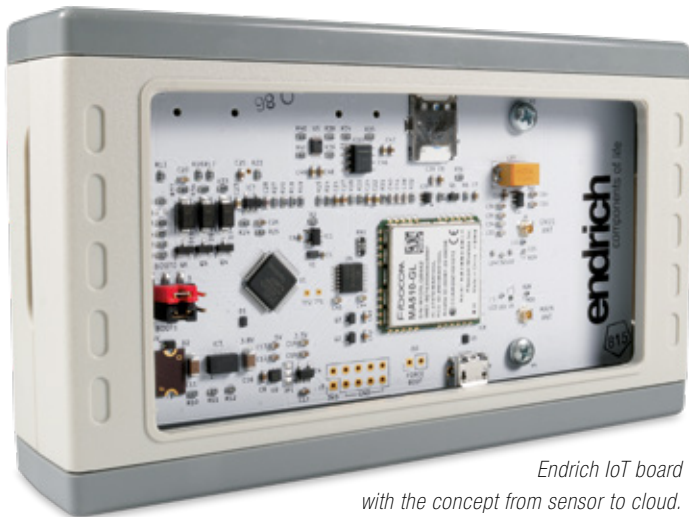
The crowd puller at the exhibition was the IoT Sensor Demo Board integrated into a mojito dispenser, so the fill level and temperature of the mojito could be checked worldwide via the Endrich Cloud.

### Other application areas of the 3BIG-MDOS include:

- Sensor to cloud connection
- Predictive maintenance
- Data logger
- Tracking
- Machine-to-machine communication



## ENDRICH IOT @ EMBEDDED WORLD 2022



*Endrich IoT board with the concept from sensor to cloud.*

### E-IOT PLATFORM

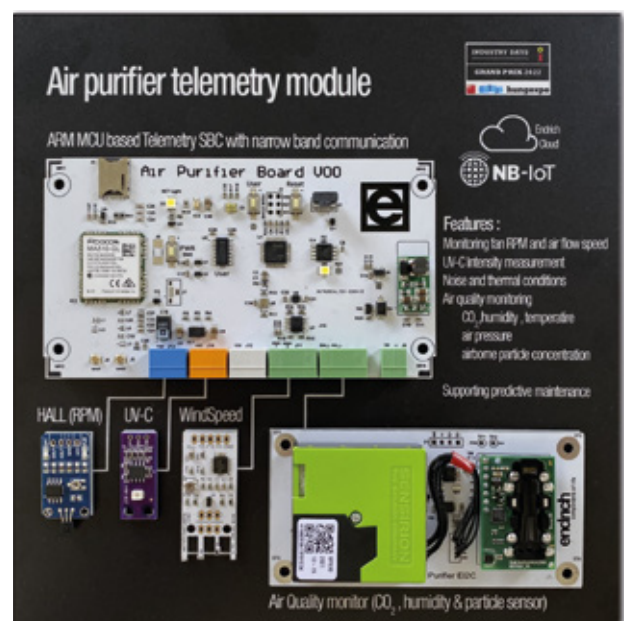
The guiding principle “from the sensor to the cloud” also applies to the E-IoT platform. There are many sensors on the E-IoT board, and with the help of the MA510 from Fibocom, this data can in turn be stored in the cloud. With the additional adapter boards, even more sensors or displays can be connected to the board. This gives the customer free design options. Furthermore, customer-specific adaptations by the Endrich R&D team are also possible. There are also options to upload sensor data to the cloud using different protocols. At the exhibition, the E-IoT board was connected to an AWS-based cloud using the MQTT protocol and another board was connected to the Endrich cloud via UDP.

The mesh variant of the E-IoT board was also presented as a new feature at the trade fair. A demo mesh network with 868 MHz was set up. In this network, sensors were connected wirelessly to the E-IoT board by using adapter boards. Data could then be uploaded from the E-IoT board to the Endrich cloud via LTE-M/NB-IoT. Another option is to pair the sensors with the E-IoT Board via Bluetooth.

### E-IOT PLATFORM- PREDICTIVE MAINTENANCE

Predictive maintenance is a classic example of IoT applications. Predictive maintenance can save costs and time for regular maintenance. This is another area where the E-IoT platform can help with the air purifier Board which was on show at the exhibition.

A UVC sensor, CO2 sensor, wind speed sensor and a PM sensor were connected to this board. By visualizing the measurement data via the cloud, the status of the air purifier can be mapped and possible faults can be reported and remedied immediately. With the help of artificial intelligence, a prediction can even be made as to when the air purifier needs a filter change or other maintenance.

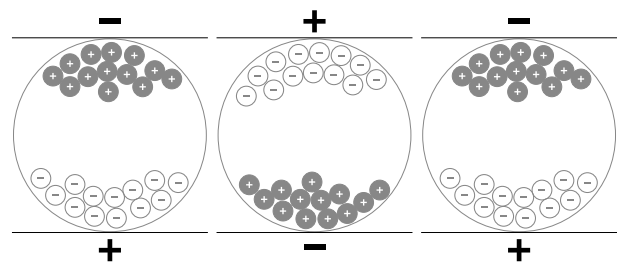


*The air purifier board is the connector between the air purifier and the cloud.*

## E-PAPER THAT ARE OPTIMALLY READABLE IN SUNLIGHT

Thanks to the extremely thin, flexible and high-resolution E-paper, the display is optimally readable even in strong sunlight and thus offers decisive advantages.

The display readability is guaranteed by the reflective display with low scattered reflections without flicker, without dazzle and a maximum reading angle of up to 180°. Therefore, the display can be used despite strong sunlight and bright ambient light. By reflecting the ambient light, no constant backlighting of the display is required. The abdication of the backlight is reflected by the low power consumption of E-paper displays. The E-papers are very reliable and can be utilized for more than 5 years under regular use. The display can be initialized more than 1 million times. Due to the bi-stable technology, the display retains its once entered charge pattern without further energy input. The fluid consists of both black positively charged particles and white negatively charged particles. By applying a single voltage, the particles align themselves and the display image is shown. This state is maintained until it is changed by a new voltage supply. As a result, the display image will remain static. Furthermore, the E-paper is characterized by a fast image change of less than 160 ms. The displays are available both as segment display and full graphic display and additionally as monochrome and in color. Our standard modules include sizes from 1.54" to 8". In addition, we also offer customized modules and can support you in the development.



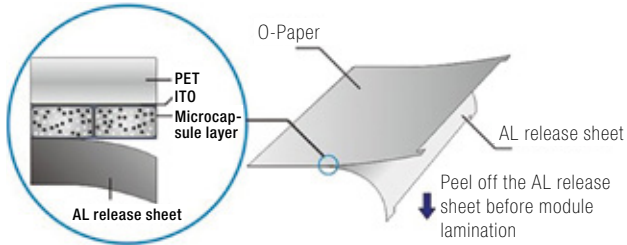
### APPLICATIONS

- ESL
- E-reader
- Smart home
- Smart wear
- IoT
- Advertising
- Public traffic information

### FEATURES

- High contrast
- Max. viewing angle up to 180 °C
- Fast screen change under 160 msec
- Bi-stable technology with high energy efficiencies
- Types: ICON, graphic
- Available in monochrome and color (up to 4.096 colors)
- Customized ICON E-paper on request
- Customized touch solutions on request

# E-PAPER THAT ARE OPTIMALLY READABLE IN SUNLIGHT

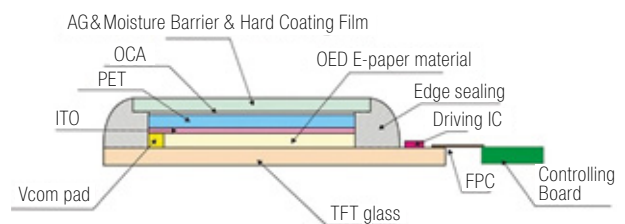


## FILM

The graphic shows the structure of the E-paper film. The already mentioned particles are encapsulated in chambers, which are connected to a PET-carrier. Between both layers the transparent, conductive ITO layer is shown.

## Module

The complete structure of an E-paper module can be seen in the next graphic. The actual film with PET, ITO and the chambers, as described before, is shown in the center. On top of this structure, the hard coating film is laminated with OCA to the E-paper film. The counter-pole to the upper ITO layer is a TFT glass which is also used in normal TN TFT displays. Instead of aligning the liquid crystals according to the switching status as with TFTs, with E-Paper modules, the encapsulated micro-particles are moved vertically to the surface.



Additionally, the Vcom-pad as connection between ITO-layer and TFT can be seen. The TFTs are controlled by a driving IC, which is connected to the external controller board.

P/N	SIZE (Inch)	DOT FORMAT	A.A. (mm)	OUTLINE SIZE (mm)	INTERFACE	COLORS
EE0154BE-2	1.54"	152 x 152	27.51 x 27.51	31.8 x 37.32 x 0.843	SPI	White / black
EE0154CE-2	1.54"	200 x 200	27.0 x 27.0	31.80 x 37.32 x 0.90	SPI	White / black
EE0213AE-3	2.13"	212 x 104	23.71 x 48.55	29.2 x 59.2 x 0.98	SPI	White / black
EE0213BE-1	2.13"	104 x 212	23.71 x 48.55	29.2 x 59.2 x 0.843	SPI	White / black
EE0213BE-2	2.13"	122 x 250	23.704 x 48.55	29.2 x 59.2 x 0.843	SPI	White / black
EE0270A1E-1	2.7"	176 x 264	38.192 x 57.288	45.8 x 70.42 x 1.14	SPI	White / black
EE0270BE-1	2.7"	152 x 296	30.704 x 60.088	36.3 x 71.8 x 1.14	SPI	White / black
EE0270CE-1	2.7"	176 x 264	38.192 x 57.288	45.8 x 70.42 x 0.561	SPI	White / black (flexible type)
EE0290BE-1	2.9"	128 x 296	29.05 x 66.89	36.7 x 79 x 1.05	SPI	White / black
EE0290CE-1	2.9"	128 x 296	29.1 x 66.85	36.7 x 79 x 1.14	SPI	White / black
EE0352AE-1	3.52"	240 x 360	49.67 x 74.51	54.41 x 84.70 x 1.14	SPI	White / black
EE0420A1E-1	4.2"	400 x 300	84.8 x 63.6	91 x 77 x 1.34	SPI	White / black
EE0420AE-3	4.2"	400 x 300	84.8 x 63.6	91 x 77 x 1.9	SPI	White / black / red with UC8276c IC
EE0430AE-1	4.3"	800 x 600	88 x 66	104 x 74.6 x 1.17	MCU	White / black
EE0600AE-1	6.0"	1024 x 758	90.581 x 122.368	101.8 x 138.4 x 1.14	MCU	White / black
EE0750AE-1	7.5"	640 x 384	163.2 x 97.92	170.2 x 111.2 x 1.14	SPI	White / black
EE0800AE-1	8.0"	768 x 1024	122.11 x 162.82	134.11 x 178.56 x 1.18	MCU	White / black

## MPM280AU PIEZORESISTIVE PRESSURE SENSOR WITH GOLDPLATED DIAPHRAGM FOR HYDROGEN PRESSURE MEASUREMENT

HAVE A  
LOOK



MPM280AU

Hydrogen as an energy carrier is playing an increasingly important role in securing future energy supplies. Currently, hydrogen is usually stored and transported in liquid form at minus 253 °C in special tanks or in gaseous form at 200 to 700 bar in pressure vessels.

Continuous measurement of pressure is therefore essential because hydrogen, a flammable gas, causes unimaginable consequences if it escapes.

However, most pressure sensors currently on the market cannot be used to measure hydrogen pressure because the materials used in these products are not resistant to so-called hydrogen embrittlement and hydrogen penetration.

To fill this gap, Micro Sensor has developed a special pressure sensor with a gold-coated diaphragm. Due to the excellent compression and stability of gold, a gold coating on the surface of the sensor membrane can effectively prevent the occurrence of hydrogen embrittlement, extend the service life of the sensor and significantly increase the safety of hydrogen pressure measurement.

### FEATURES

- Pressure range: -100 kPa ~ 35 kPa... 20 MPa
- Gauge, absolute and sealed gauge
- Power supply: ≤2.0 mA DC
- Gold plated type, suitable for hydrogen pressure measurement application

### APPLICATIONS

- Pressure measurement of high-purity hydrogen or mixed gas pressure with high hydrogen content
- Industrial process control
- Pressure measuring instrument
- Pressure calibration instrument
- Aviation and nautical inspection

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