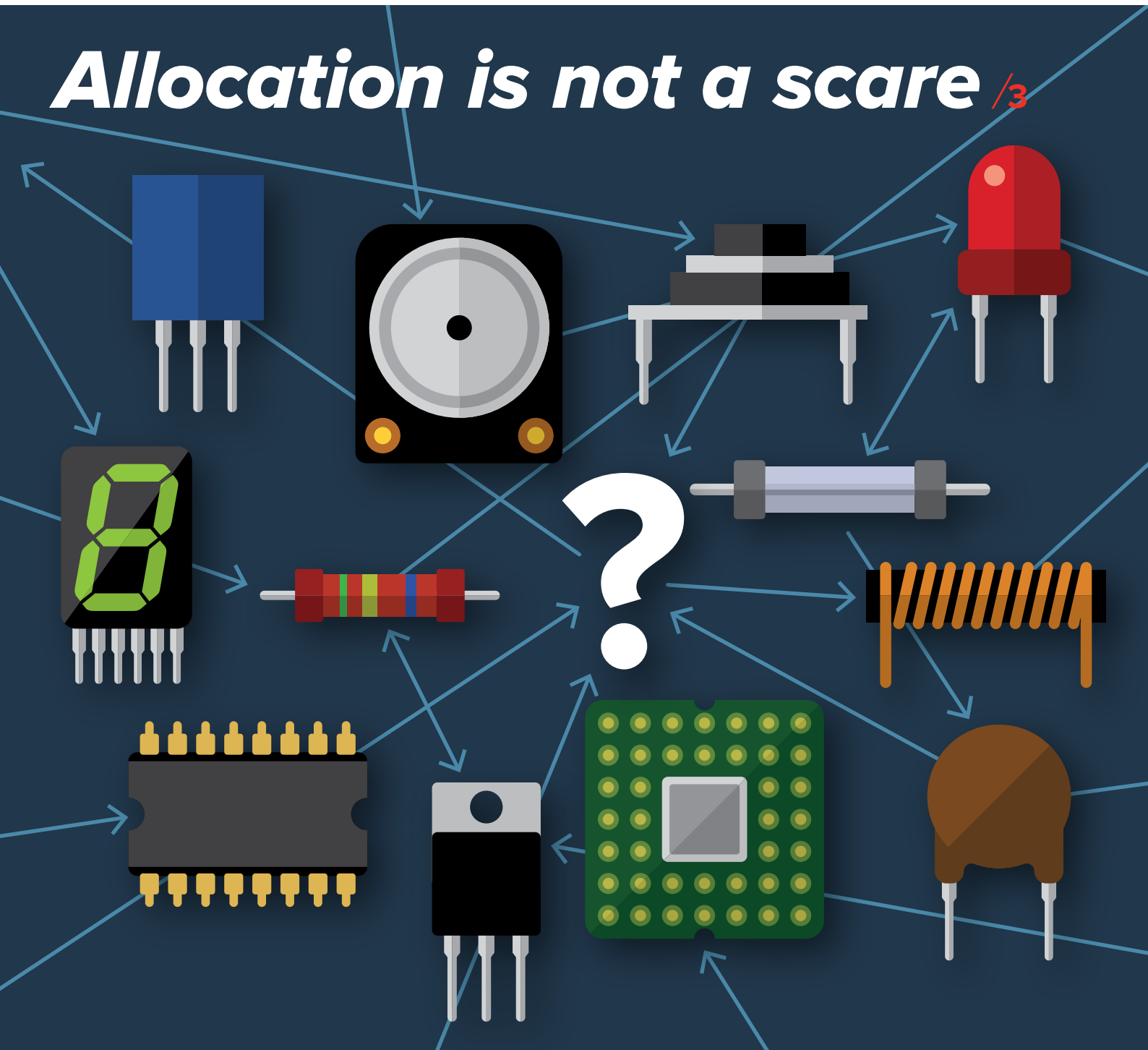


# Allocation is not a scare /3



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Explore Android Things



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**ESP - Real revolution**  
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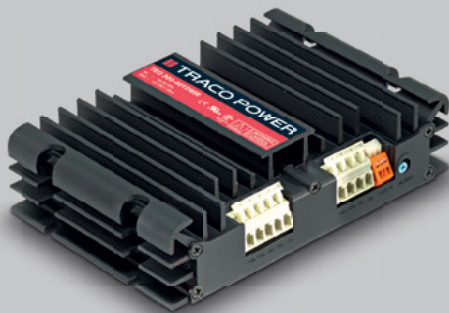
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**Ján Seszták**  
CEO, SOS electronic  
SK, CZ, HU and DE

## Dear friends,

SOSnews' goal is to introduce news from the field of electronic components and positively motivate you to find new solutions. On the top of that, teach you a little bit, but also have fun. Therefore, it is much more difficult for me to write this editorial, whose main topic is rather negative. It concerns a word tied to the complicated situation of components on the market, so-called allocation.

What does it mean? The very meaning of the word is well known - division, redistribution. However, what does it mean in practical terms? If the economy grows, manufacturers of end products have to produce more, components' need grows. However, manufacturers did not count on such a measure and therefore, the capacities are limited. This situation is associated with price fluctuations and unusual prolongation of delivery dates. Is this scary? Absolutely not. I am of the opinion that a rational person should be rather careful than scared. Well, it's essential to understand few things for that. Western European media as well as some of our colleagues, distributors from our field, have been informing and drawing consequences (for example, concerning price) for months, we have also started to follow the situation, but we have only experienced it with some products in recent weeks.

What to do in such a situation? A logical answer would be to stock up. But it's just seemingly easy. It is never crystal clear in advance, which groups of products or specific components will be affected.

What does this particularly concern? It may be a more expensive semiconductor, but it can also be a simple "cent" resistor or a 100nf condenser. However, the manufacture of common modules that you increasingly use is dependent even on these "cent products". In the event of a loss of one of the strategic materials it may also be a mechanical component, such as a relay, a switch or a connector.

What do we do in this situation in SOS electronic? We are already watching the situation for a long time and we are more and more involved with manufacturers. When the risk is detected, we add the potentially allocated goods to the warehouse. We try to keep you informed about our findings, whether using our website or even our colleagues; especially those of you who have long been using some types in production. Of course, we, in cooperation with you, are also trying to find solutions for you. But we do not want to make senseless promises.

Finally, I do not want this editorial to be perceived as some bogeyman. The current situation is certainly not bad. The world is evolving, and it is also possible that these fluctuations, unlike the situation 5 or 10 years ago, will fade away and I hope that nothing dramatic will happen.

Thank you, dear friends, for your CORRECT understanding.

## Read your SOS news on mobile!

You can also read this edition of SOSnews on your tablet or mobile. For each article you will find a QR code with the website address of its electronic form.



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## Latest news on SOS electronic..

We, among the first, have defended the ISO certificate according to the new standards



**New, stricter quality management standards will help us continually improve our services for you.**

We know that you are demanding and your satisfaction with the quality of our services is of the utmost importance to us. Therefore, we were among the first certified according to the new ISO quality management standard (EN ISO 9001:2016).

Quality and risk management under the new stricter rules has been tested by the renowned international certification company TÜV SÜD .

We believe that stricter standards will help us reduce the error rate in the preparation of goods in the warehouse, even though it is quite low (on average 0.17%), as well as increase the overall quality of our services.

In brief, we want to be better and better for you! :-)

## We Support Your Ideas and Projects

**We at SOS understand that human progress depends on the emerging talents. After all, what can force a company forward faster than the “dissatisfaction” of young and talented people?**



We grew thanks to you and that's why we have decided to support the potential of young developers on their way to complete their ideas and projects so they have reliable and strong partner on their side.

### Some of the projects we have supported:

#### 1. Robotic camp

This summer camp is meant for all children interested in electronics. The beginners could learn the basics of programming, and the more advanced ones could try servo motor control or intelligent leds. The camp was focused on working with "more intelligent electronics" with the Arduino platform. We supported this project by delivering Arduino platforms.

#### 2. Landrover 4x4 RC model

Landrover 4x4 is a robotic and engineering competition. The task is to design and construct a four-wheel vehicle (4x4) with radio control as specified by the International Rules Committee. They must successfully pass and complete obstacles on the testing off-road, which is as demanding as the real one. The vehicle must include a four-wheel drive system, a tilt sensor and a light sensor, and thus the robotic and engineering capabilities are also tested. The winner of the national round goes to the global finals that will take place directly at Landrovar. Students from Postova grammar-school in Kosice also took part in this project.

We supported this project by delivering electronic components.

#### 3. Formula

On the Silverstone racing circuit in the UK, the Formula Student UK competition took place. It was the biggest student race events in the formula racing. The task of the students was to build a functional formula for these races. Students from the Technical University in Stuttgart have compiled a formula that has received several awards.

We supported this project by delivering electronic components and tools.

Do you also have a project that you think is unique? Tell us about it and we will be glad to help you:

**[marketing@soselectronic.com](mailto:marketing@soselectronic.com)**



# Level of rights for e-shop users

Our e-shop allows setting different levels of rights for individual users. You can choose whether your colleagues should have an access to invoices, orders, or whether they can order goods on behalf of your company.

It is possible to select one of these three levels:

**Administrator** - can do everything, including setting rights to their colleagues.

**Senior** - can do everything, except setting rights to their colleagues.

**Basic** - does not see the business agenda of the company, cannot buy, cannot set the rights to their colleagues.

You can check your level of rights on My Profile / Basic Information page where the My Information column including your set level is positioned on the top right. Your colleagues' settings (if we register them) can be seen on the same page below, under My colleagues section. If you have Administrator rights, you can set rights to your colleagues here.

#### ADMINISTRATOR can set:

- who will have an access to the e-shop and who will not - activate / deactivate the account
- the level of rights in the e-shop
- change the data about colleague (email, tlf, name)
- delete a colleague from the list (for example, if s/he is not employed anymore)
- add a new colleague to the list



#### What cannot SENIOR user do?

- request a change of billing information
- work with My colleagues list. However, they can view it.

#### What limitations does BASIC user have?

User with this level of rights cannot:

- put items into shopping cart and place the order
- view Invoices
- view Orders and import the order
- view Complaints and file a new complaint
- go to favourite items and add more items in there
- insert customer labels and view them (they can be seen on goods)
- request a change of billing information
- work with My colleagues list. However, they can view it.
- work with delivery addresses



# PCN - Product Change Notifications

If the manufacturer has announced the change or termination of the component production, we will let you know. If you have purchased a product with us, we will send you a notification email. And on the web, we have all these changes in the "Product change information" section.



If we have information from the manufacturer that there has been a change in the parameters of the product, we publish it on our website. We also disclose end-of-production information, information on the product being inaccessible, or that we are excluding the product from our offer, even though it is still being manufactured.

#### Information on our web

A new section titled "Product change information" has been added to the product detail page. All the information about the changes to the product is chronologically arranged. We publish the following information:

#### PCN - Product Change Notification

The manufacturer announced the change of the product from the published date. The description of the changes is usually given in the attached PDF document.

#### NRND - Not Recommended for New Design

The component is not recommended for new projects from the given date.

#### EOL - End of Life

The manufacturer plans to end the production of the component. After that date, s/he no longer accepts new orders. The component will be available until the stock is sold out.

#### OBSOLETE

The component is not manufactured from the given date and will be available only until stocks are sold out.

#### DISCONTINUED

We excluded the part from our offer from the given date and it will be available only until the stock is sold out.

#### Notification emails

If you have purchased a product from us in the past 2 years, we will also send you a notification email. It will include the information on the product and what kind of change has occurred. Link to the product detail page is also included. There is usually a PDF document with more detailed information from the manufacturer. We send the email on the day we receive the information from our supplier - the manufacturer of the product.



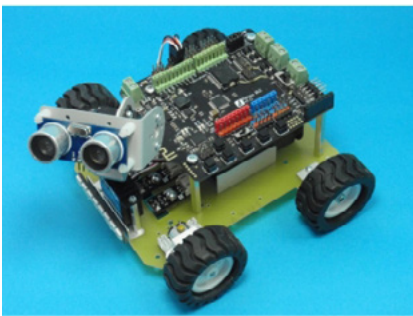
# Examples of your solutions...

## AMEX Research Corporation Technologies

### Mini Robot II

Mini Robot II is a new, unique educational platform for building a mobile mini robot. The platform is designed in a way that provides a variety of configurations of mechanical and electronic part of the robot.

It gives the possibility of creating as many as seven different versions of the chassis mounted on the same mounting boards. The change of the chassis is made by using different motors, wheels, tracks and changing their geometry and their placement on the mounting board.



## CLE Automazioni

### Fiber optic converter

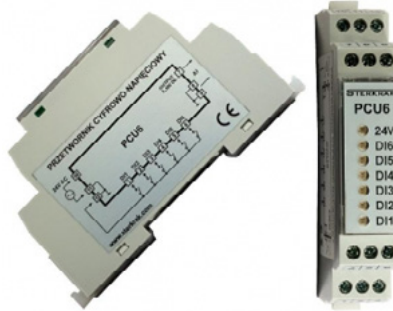
Wide range of converters for copper and fiber optic network, simple to order and easy to install.

Our RS232 / RS485 / RS422 / USB / Fiber Optic converters are available in a number of varieties and form factor, including 9 pin Port Powered and DIN rail mounting, both 9-24V and 230V power supply.



## STERKRAK

### The digital-to-analog expansion module PCU6



PCU6 module is used in automation systems to expand the number of digital inputs of PLC controllers.

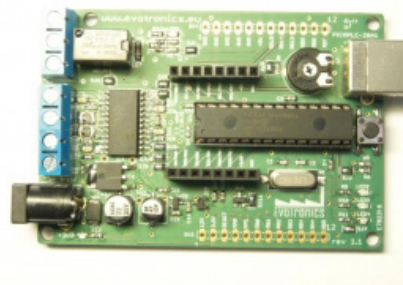
By connecting the device to an analog input of the controller, we get the ability to read and monitor 6 digital inputs.

By using precision electronic components, the output voltage of the module is stable in time, temperature and precisely maps the input states.

LEDs indicate the status of digital inputs.

## Evotronics Kft.

### PICoPLC devboard



The PICoPLC is an embedded PLC software which is running on a microcontroller and it is easily programmable graphically (in ladder diagram). It enables the realization of embedded systems for those who are less familiar with programming. Everybody can compose the required software in the PICoPLC ladder diagram development environment program, load it to the IC whereon it can run. The ladder diagram is similar to the basic logic

circuit, so anybody can learn that easily who has a little experience in electronics. The PICoPLC perfectly combines the advantages of the PLC and the embedded systems.

## Embedize

### USB485ISO



Compact USB to RS485 converter with 4kV galvanic isolation. Based on the proven FTDI chip which drivers are usually included in most operating systems. Suitable for development or for industrial environment.

## Foxtron Ltd.

### EIBACMi105

interface KNX - air-condition Mitsubishi. Signalization of communication. Power supply from KNX bus. Adjustable addresses on KNX.



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More information can be found at [www.ecubeportal.com](http://www.ecubeportal.com)



# Latest articles to read...

## QUECTEL BG96 – IoT Module Ready for the Future



BG96 is an interesting new product of the IoT modules producer Quectel. It combines an LTE Cat. M1/Cat.NB1/EGPRS module, offering a maximum data rate of 375kbps downlink and uplink.



## GNSS antenna for special applications 2J0801



Ceramic patch antennas used for GPS applications have a significant limitation – they must face the sky in order to get the best reception. Moreover, these antennas are



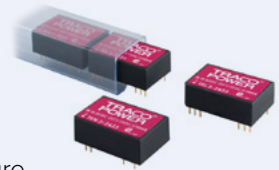
sensitive to the size of the ground plane area and must be tuned together with the ground plane, which is a serious drawback.



## How to Understand Output Derating of TRACO Products



The front page of a DC/DC converter module datasheet often mentions electrical performance that, in fact, cannot deliver the product into the system. This is especially true for output power at maximum ambient temperature.



## The Most Reliable Data Storage for Industries



Apacer SFD25A, SU120-25, SM210-25 and SM130-25 series 2.5 inch SSD offer solution for almost every application, even for the most demanding industrial and military environment.



## EA DIP displays – maximal active area at minimal dimensions



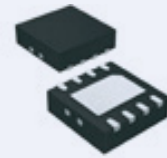
Classic series of EA DIP displays solves two common problems – minimum of useless borders and frames, as well as ensured long/term availability.



## How to Easily Monitor the Battery State of Charge



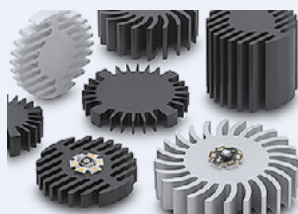
The LTC2944 is a battery monitor that measures charge, voltage, current and temperature to 1% accuracy, the essential parameters required to accurately assess battery state of charge (SoC).



## Which heatsink surface treatment to choose?



Do you know that a surface treatment of an aluminium enclosure has a significant influence on its efficiency depending on conditions in which it's used?



## Schurter TA45, One Switch with Thermal Breaker, 2900 variants



TA45 switch combined with thermal breaker in one housing not only saves place in your equipment, it offers much more.



## Do you use embedded computers? You will need this



Attend now offers two interesting MXM Module Sockets. One for SMARC/EDM/APALIS Modules and one for QSeven Modules.





# LTE NB-IoT module BC95 excellent base for your IoT device

Recently, a few new technologies have come into the market, focusing on linking things to the Internet. In this article, we want to focus on NB-IoT (Narrow Band) technology.



This technology belongs to the LowPowerWide Area Network (LPWAN), which includes, for example, the most famous SIGFOX, LoRa and many more.

**The main advantages of these technologies are:**

- Low power consumption (ideal for battery powered devices with up to 10 years operation)
- Low data transmission volumes
- Small size modules
- Long range up to 15 km
- Good obstacle penetration

This figure shows the main differences between technologies used for wireless data transmission. For example, GSM/GPRS module consumes around 10-15mA current in standby mode, on the other hand BC95 consumes only 5uA, which is a huge difference and allows BC95 to run from battery up to 10years.

Recommended applications for NB-IoT modules:

**Energy**

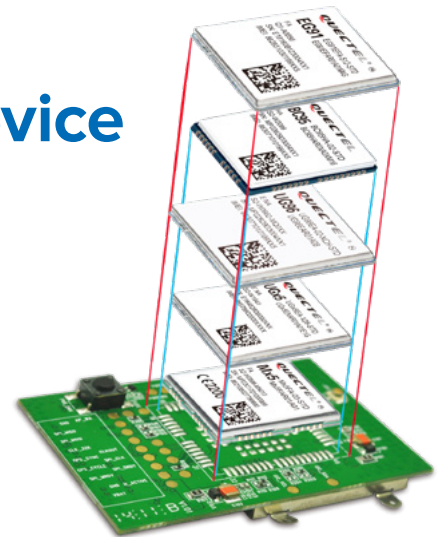
- Electricity meter
- Gas meter
- Water meter
- Heat meter
- Smart Grid
- Wind turbines
- Solar panel
- Charging Pile

**Smart City**

- Street lighting
- Traffic light
- Elevator
- Digital signage
- Advertisement Display
- LED Lightning
- Garbage Bin monitoring
- Parking

This was basic description and comparison of the LPWAN technologies.

Next, we will only focus on the module BC95. Quectel offers 3 basic versions that work on different frequency bands:



**BC95-B5** (850MHz)

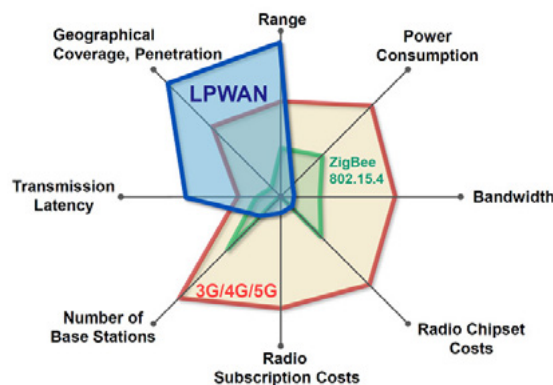
**BC95-B8** (900MHz)

**BC95-B20** (800MHz)

All these modules are mechanically compatible and have same functionality. In addition, they are pin compatible with the M95 GSM/GPRS module. For more information on modules compatibility, please check [Quectel\\_BC95&M95 R2.0\\_Compactible\\_Design\\_V1.1](#).

The supply voltage is in the range of 3.1 - 4.2V, but the typical supply voltage is 3.8V. Historically, some customers expect that the module will operate at 3.1V, but if battery voltage drops under 80% of nominal voltage of an LiSoCl battery, the module stops running. Therefore, the manufacturer gives the typical voltage as well as the battery life information.

Battery use depends on every single application, so please consider using batteries, and if it is a must, we recommend using high quality LiSoCl batteries from e.g. XENO from our offer.



Order no.	Type	Description	Guide price
234632	BC95-B20	Module LTE NB-IoT (B20 Band) 23,6x19,9x2,2mm	20,31 €
235003	BC95-B20 TE-A	Testing adapter to general EVB KIT	38,19 €





# Explore Android Things with PICO-iMX6UL Kit

**PICO-iMX6UL Kit is one of the first available boards that carries the Android Things logo.**

Android Things is a turnkey solution that provides certified hardware for the creation of IoT devices. Developers can continue to use familiar tools and APIs such as Android Studio, the Android SDK, and Google Play services. In the future, Android Things will be updated to include infrastructure for the installation of updates, Weave - a communication protocol that enables both local and cloud connectivity via multiple wireless protocols and more.

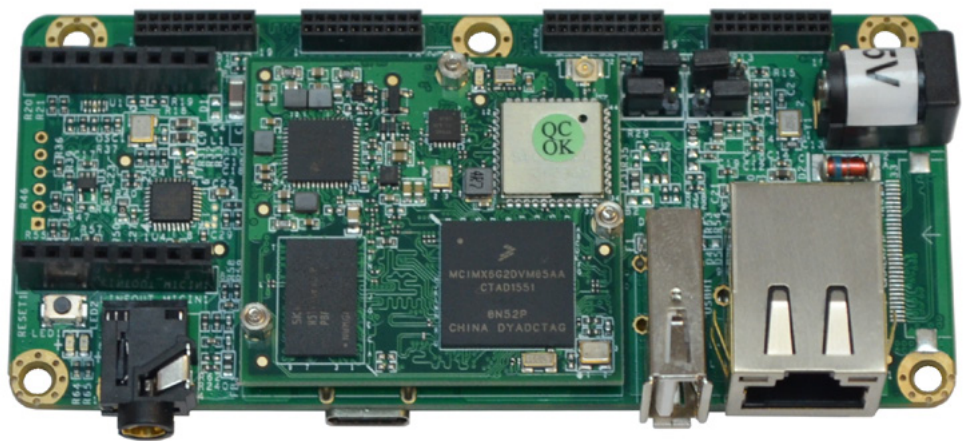
Android Things is only in a preview state at the moment, however sufficient portion of the final operating system is already working and thus the developers can start creating Android Things based projects.

To support developers, we provide Wandboard PICO-iMX6UL Kit which is based on TechNexion HobbitFL carrier board and PICO-iMX6UL module.

HobbitFL board provides I/O connectors, expansion headers and mikroBUS™ socket. Ethernet PHY and audio codec IC is also placed on the board. Customization of carrier board is supported by freely available schematics, design files, board files and BOM lists; but the use of HobbitFL is more cost-effective solution for a small or medium series.

PICO-iMX6UL is based on a single-core 528MHz NXP i.MX6UL application processor combined with 512MB DDR3L RAM, 4GB eMMC and Wi-Fi 802.11bgn / Bluetooth LE 4.0 combo module. PICO-iMX6UL also provides USB 2.0 Host, USB OTG and 100Mbit RMII interfaces

# android things



and low speed interfaces as UART, SPI, I2C etc.

TechNexion guarantees 12 year availability of modules and a revision control (4 years of active product development, 7 years of final product manufacture and 1 year of availability after the end of manufacture notice), which means that modules will be available until 2026 at least.

PICO-iMX6UL is available for commercial 0...60°C and extended -20...70°C ambient temperature range. It uses proprietary 36x40mm form factor with three 70-pin expansion connectors on the bottom side and U.FL antenna connector on the top side. Provided heatsink is safely attached to the module using included screws, nuts and spacers.

## PICO-iMX6UL Kit Features:

### PICO-iMX6UL module:

- single-core ARM Cortex-A7, NXP i.MX6UL528MHz
- 512MB DDR3L RAM
- 4GB eMMC
- Wi-Fi 802.11bgn/Bluetooth LE 4.0

### HobbitFL carrier board connectors and headers:

- RJ-45LAN connector
- USB 2.0 Host and USB OTG Type C connector
- CTIA compliant 3.5 mm audio jack (Line Out, Mic In)
- barrel jack for 5V power supply
- three expansion headers (18/24 bit TTL RGB, GPIO, SPI and I2C)
- mikroBUS™ socket (GPIO, UART, SPI, I2C, PWM, ADC)

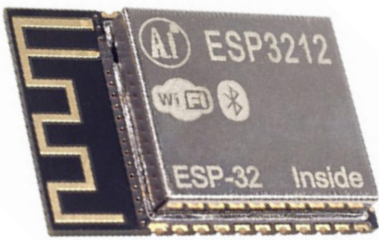
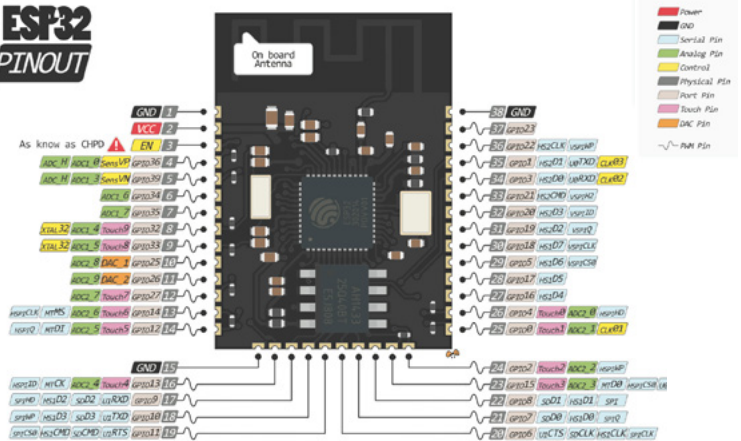
Order no.	Type	Description	Guide price
217563	PICO-IMX6G205-R512-E04	PICO I.MX6 ULTRALITE 528MHZ 512MB RAM 4GB EMMC	39,70 €
218504	PICO-HOBBIT-FL	PICO-HOBBIT carrier board with 10/100Mb LAN	39,80 €
231492	PICO-IMX6UL-KIT	Android Things NXP Pico i.MX6UL Kit	69,90 €



# The real revolution in IoT world – Espressif ESP modules



Everybody is waiting for IoT boom that's going to change our lives completely. A very important aspect of this change is a price of the end device used for IoT. It seems that the right solution has already been found and nothing can stop the IoT rolling out anymore.



Espressif came with their famous ESP8266 chip on the market only few months ago and it immediately attracted a lot of attention in makers world. This tiny chip combined with external Flash memory for application is a full WiFi radio combined with a CPU core which can run applications and thanks to its very low

price tag around 2-3USD for the whole module, it took the leadership in WiFi connected nodes.

In the beginning of 2017, Espressif announced the second generation of its famous SoC with more powerful dual core CPU, which is now available from our stock as a module with P/N ESP32. This module is also equipped with a Bluetooth 4.2 compatible protocol and offers much more interfaces as before. This product will certainly gain a lot of applications very soon also thanks to its unbeatable price tag.



Order no.	Type	Description	Guide price
231276	ESP-WROOM-02	WiFi modul w/ESP8266 802.11b/g/n 20dBm 20x18x3mm	3,35 €
234033	ESP-WROOM-32	WiFi/BT BLE modul ESP32-D0WDQ6, SPI Flash, UART	5,67 €

# LTE Antenna for demanding applications



More and more applications use LTE connection nowadays. To meet a strong market demand for LTE antennas, 2J released a 2JW0124, which is a high gain, universal antenna.



2JW0124 is a connector mount, high gain multiband antenna, capable to cover 4G/LTE bands (699-960/1710-2690 MHz) and GNSS bands as well (GALILEO E1, GPS and GLONASS frequencies), thus perfectly suitable for tracking applications, where GPS coordinates should be transferred in real time to the cloud.

Based on customer feedback, the manufacturer has extended the offer of 2JW0124-C868b antenna, which is tuned to the frequency of 868MHz instead of GSM band. This way it is better suited for the devices using this frequency. 2JW0124 is available in black and white.

2JW0124 is a connector mount, high gain multiband antenna, capable to cover 4G/LTE bands (699-960/1710-2690 MHz) and GNSS bands as well (GALILEO E1, GPS and GLONASS frequencies), thus perfectly suitable for tracking applications, where GPS coordinates should be transferred in real time to the cloud.

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Order no.	Type	Description	Guide price
200022	2JW0124-C737B	LTE/GPS/GLONASS/GALILEO Blade Antenna with Swivel SMA M Ni	7,53 €
231283	2JW0124-C868Bb	LTE/GPS/GLONASS/GALILEO Blade Antenna SMA M BK Brass	7,53 €

# Simple graphic HMI design? ESD 3.x will solve it

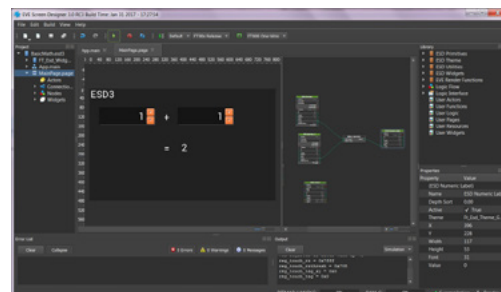
**EVE Screen Designer (ESD) 3.x is the most recent IDE SW for the development of graphic applications based on FT 90x and FT 81x chips.**

Growing family of EVE graphic chips (embedded video engine) brought and is still bringing a significant simplification of applications with a graphic design to the market.

Latest IDE from company Bridgetek (created by FTDI) called EVE Screen Designer (ESD) 3.x truly brings quite a lot.

We can say that in the intuitive graphic environment it's possible to build the whole application without detailed knowledge of the FT90x or FT81x chips. Of course, editing generated code (ANSI C) is always possible.

Similar situation applies for IDE for HMI design. ESD 3.x functions as "WYSIWYG" (what you see is what you get)



## Features

- visual development environment for graphic interface development
- whole design up to code generation is in visual environment without necessity of programming
- possibility of designed project simulation (live preview)
- many ready-to-use components of higher level (widgets)
- many sample projects

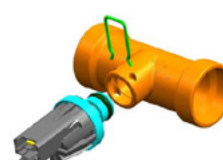
Order no.	Type	Description	Guide price
196399	FT810Q-T	Embedded Video Engine Chip QFN48 Reel	5,96 €
204372	FT900L-T	FT32 FT90x Microcontroller 32-Bit 100MHz 256kB FLASH LQFP100	6,08 €
204869	MM900EV-LITE	FT900 Development Module, Lite Version	36,70 €

thus all that is necessary is to use ready-to-use components ("widgets") without laborious creation of them.

Thanks to visual SW tools such as ESD 3.x, it's possible to focus on "what we want to reach" without long and demanding study of "how to make it".



# Do you have your pressure under control?



  
**MARQUARDT**

**Analogue pressure sensors, the quality of which increases your blood pressure (from enthusiasm), but whose price reduces it (from satisfaction).**



The 2066 pressure sensor series from Marquardt has been extended by one new innovative model. The robust and simple technical design of the "Megapascal" sensor uses Hall Effect sensor technology in the mea-

suring range of 0 – 10 bar (145 psi).

The sensor is designed for pressure measurement of liquid and gas in many applications including HVAC, sanitary processes, heat pumps, solar water heating systems and more. Materials that are in direct contact with measured medium are approved for the use in applications

with drinking water, permitting the sensor to be used in water delivery, purification and filtration applications as well as beverage applications. The robust design of the "Megapascal" sensor can withstand high overload pressure of 26 bar (377 psi) and high burst pressure of more than 42 bar (609 psi).



The slope and offset of the analogue output signal as well as parameters like measuring range, supply voltage, mechanical and electrical connection can be customized according to customer demands.

The "Megapascal" 2066.31xx is produced according to the well-known high-quality standards of Marquardt. Every unit is fully tested and calibrated to ensure the best accuracy and reliability.



## Features

- magnetic pressure sensor with analogue output
- medium temperature range +2°C...90°C (max. 120°C for 10min)
- measuring range 0 – 10 bar / 0- 1000 kPa for model 2066.3101
- measuring range 0 – 4.5 bar / 0- 450 kPa for model 2066.2103
- fully automatic 100% testing and calibration for optimum accuracy

Order no.	Type	Description	Guide price
214304	2066.3101	Pressure sensor 0-10 Bar 0,5V-3,5V 14mA 3-pole SNAP 2,5	13,30 €
237503	2066.2103	Pressure sensor 0-4,5 Bar 1,125V-3,6V 14mA 4-pole SNAP	12,40 €



# Traco Power TEN 3

## - proven classic for industry

**TEN 3 series is our real „classic“.** Since we introduced it to our offer, we have already sold more than **15 000 pcs** without single complaint. Converters are manufactured solely from **SMD components**, which also help to maintain exceptional quality.

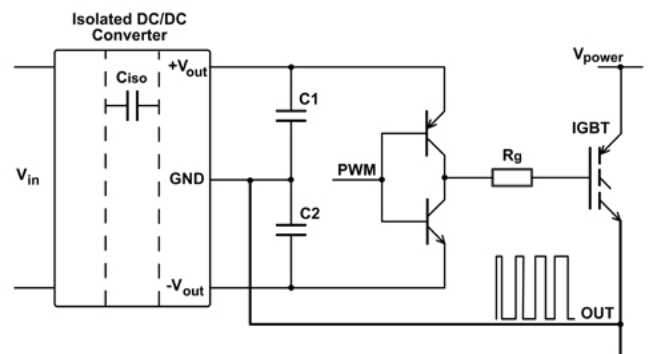
TEN 3 series offers 28 models of 3W DC/DC converters with input voltage range 2:1 and built-in input filter to meet EN 55022, Class A and FCC, level A without additional external components. Series is designed for nominal input voltage 5, 12, 24 and 48V. Input voltage range is 2:1, which means 18 to 36V for

nominal input voltage of 24V. Converter has short-time (1sec) overvoltage reserve, 50V for 24V version, which makes overvoltage protection design easier.

Output voltages are 3.3, 5, 12,  $\pm 5$ ,  $\pm 12$ ,  $\pm 15$ V, standard voltages used in digital and analog circuits. If short circuit on

the output occurs, the converter limits current to 110% of output current. Short circuit duration is not limited. Once it is removed, the converter enters into normal mode automatically.

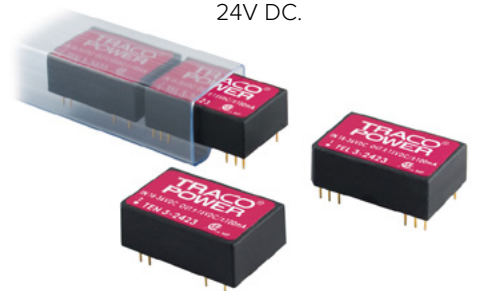
Isolation parameters (1500V DC/60 sec and 65pF capacity between input and output) predestinate TEN 3 series for general purpose, for example for digital panel meters powered from 24V DC.



### Features

- wide 2:1 input range
- efficiency 70 to 84% (depends on the model)
- industrial operating temperature range  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- input filter to meet EN 55022, Class A and FCC, level A without external components
- high reliability, MTBF >1.1 Mio. H
- 3-year product warranty.

Order no.	Type	Description	Guide price
5431	TEN 3-0513	DC/DC module 3W 4,5-9VDC/15VDC 200mA	13,40 €
5723	TEN 3-2413	DC/DC module 3W 18-36VDC/15VDC 200mA	13,40 €
7139	TEN 3-1211	DC/DC module 3W 9-18VDC/5VDC 500mA	14,90 €



## Terminal block or connector? Yes. euroclamp

**Patented 2in1 solution for power and signal connection from Euroclamp. Euroclamp has announced the combined MDX154-5-PZ terminal block.**

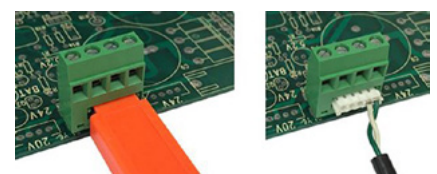
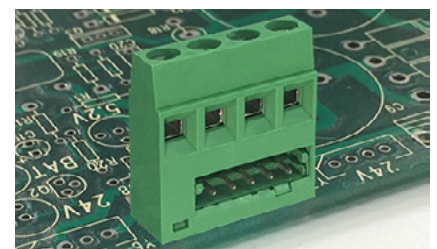
This product is suitable for those applications where the programming of electronic devices is required. Practically, it is a 4-pole screw terminal block with pitch of 5mm with integrated 5-pole male connector with pitch of 2,5mm. The recommended counterpart for connector is the one from JST – EHR-5. The terminal block has two rows of solder terminals to the printed circuit. Rear leads are connected to terminals that are suitable

for conductors with a cross section of 1.5mm<sup>2</sup>. The first row of terminals is connected to the connector on the front of the terminal box where it is possible to connect the counterpart of the connector or some programming key.

#### Basic parameters:

- maximum current: 17A
- maximum voltage: 250V
- wire section: 1,5 mm<sup>2</sup>

- operating temperature:  $-40^{\circ}\text{C}$  ÷  $+130^{\circ}\text{C}$
- housing height: 21,1mm



### Features

- simple installation
- improved equipment design
- one connection point instead of two connectors allows the use of a smaller portion of printed circuit board
- improved logistics, as well as the warehouse management

Order no.	Type	Description	Guide price
237497	MDX154-5-PZ	Combined Terminal Block 4xPower + 5xSignals	0,87 €



# Would you also use an extra long enclosure?

**New series of aluminium enclosures 1590BX can be a solution, if you have a relatively longer PCB.**

Terms like “standard sizes” and “standard shapes” have most likely already bothered you, if you started searching for enclosure for your device. Relatively big offer of enclosures from various producers gives the impression that you’ll certainly find the right one for your device.

But it doesn’t have to be always that easy, as something like “common shapes” of enclosures can be observed. After reviewing various producers’ offers, you’ll find that for some sizes and shapes there are a lot of suitable en-

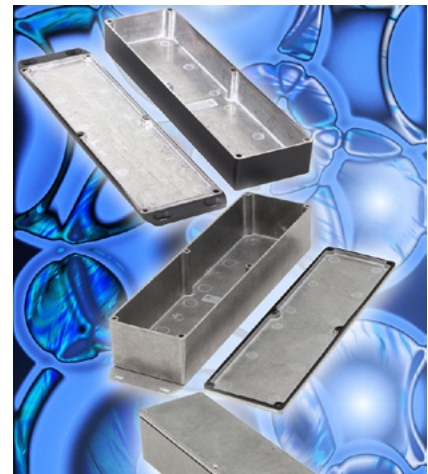
losures but for some shapes, the offer is significantly smaller. That is also the case of relatively thin but long PCBs, as well as relatively small (in plan view) but high devices that require an enclosure almost in a shape of a cube.

The new series of enclosures Hammond 1590BX and 1590BX is intended right for relatively thinner and longer PCBs:

**1590BX** - 254 x 70 x 51mm

**1590BX2** - 254 x 70 x 35mm

Enclosures are also intended for audio devices for various guitar effects, but in



general these are universally usable enclosures. Joint of a lid with a bottom part is designed in a way that it reaches IP54 rating even without sealing (lap joint) and at the same time - conductive joint creates very good shielding (EMI, RFI).

Optionally there’s also sealing available for IP66 rating. Enclosures are in basic version without surface treatment or in a black version (powder colour). Upon request also other colour versions are available.



## Features

- aluminium enclosures with a big length/ width ratio • 254x70mm plan size
- available in 2 heights - 35 and 51 mm • rigid aluminium enclosures • good EMI/ RFI properties

Order no.	Type	Description	Guide price
254161	1590BXBK	Enclosure AL 254x70x51 Black	23,60 €
254163	1590BX2BK	Enclosure AL 254x70x35 Black	21,60 €

# Don't give the “Silent Killer” a chance

**FIS**  
A Nissha Company

**Carbon Monoxide (CO), is often called the “Silent Killer” because of its ability to poison human and animals quickly and quietly when its victims never even knew they were at risk. FIS CO sensor SB-500-12 or factory calibrated FIS3051 module can protect you from dangerous levels of CO.**

## Short information about Carbon Monoxide

Carbon monoxide is colorless, odorless, and tasteless, but highly toxic gas.

## Common Sources of CO

CO is produced by the incomplete burning of carbon based fuels (for example wood, coal, oil, kerosene, gasoline, diesel fuel, natural gas, or propane).

## How to detect CO

The SB500-12 is a semiconductor CO sensor. Sensor uses a tin dioxide mini-bead (0.3x0.5mm) type sensing element with a periodic temperature change. In presence of CO sensing element decreases its resistance. Platinum heater



coil is used to heat sensing element. To heat sensing element coil requires only voltage 0,9V/5sec and 0,2V/20sec, which translates into typical average power consumption 25mW only. Sensor is suitable for CO concentration range 30 to 600ppm which is optimal range for gas alarm devices.

Sensor itself is not calibrated, its resistance varies from 4.5 to 40KΩ at 1000ppm CO. It is up to producer to calibrate his device.

FIS also offer FIS33051-00NC, factory

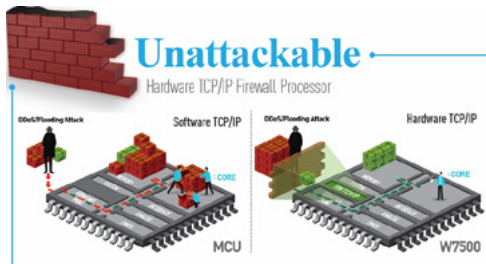
calibrated module with built-in compensation for temperature and humidity changes. It provides 5V CMOS and open collector alarm output. Output is active if CO concentration > 300ppm. Threshold is set by manufacturer, but can be customized on request.



# Why use Wiznet products for your next IoT project?



**Security and reliability are two key parameters when talking about IoT. In comparison with any software based solution, Wiznet's Hardwired TCP/IP technology provides the best possible performance and the highest security. Hardwired TCP/IP is unattackable, fast and reliable.**



## Hardwired TCP/IP Chip

WIZnet provides IOcP (Internet offload co-Processors) and HW TCP/IP chips, which are well-suited for low-end Non-OS devices connected to the Ethernet for the Internet of Things.

## The most important advantages of Hardwired TCP/IP solution are:

- better performance and stability than any other software Internet connectivity solutions.
- internet offload co-Processors for the

"Internet of Things". The Internet Offload co-Processor consists of a Hardwired TCP/IP and an Ethernet PHY.

- the Internet Offload co-Processor easily adds Internet capability to any application. It works with any MCU and does not require an OS

as Hardwired logic from Ethernet MAC Layer to TCP/IP Layer is able to protect IoT system against network attack under excessive number of flooding packets by making discard flooding packets detected.

## High-Throughput

Hardware TOE shows a superior performance compared to the software TCP/IP stack solutions. All chips support high speed Serial Peripheral Interface, maximum 8 independent hardware sockets support. More stable than software TCP/IP stack under SYN flood attack.

## Safer and more stable

WIZnet hardwired TCP/IP chip is the Unattackable hardware network engine for preventing network attacks such as flooding, spoofing, injection. The hardware TOE (TCP/IP Offload Engine) technology which is implemented

Order no.	Type	Description	Guide price
72288	W5100	Ethernet Controller 10/100 Base-T/TX PHY SPI 25Mb/s LQFP80	3,86 €
151325	W5500	Ethernet Controller 10/100 Base-T/TX MAC PHY SPI QFP48	2,58 €
172785	W5500-EVB	Evaluation Board for W5500 w/ Module	45,50 €

## SBC-A62-J, the low cost SBC for industrial use

**Building on the UDOO success, SECO has developed the SBC-A62-J series of industrial SBC which shares some features with UDOO, adds new ones and guarantees long term availability. Series also includes versions for working ambient temperature range -40 to 85°C.**

SBC-A62-J series comes with Solo, Lite, Plus or Quad configuration which corresponds to i.MX6 Solo, DualLite, DualPlus and Quad application processors. Board provides adequate RAM capacity, which can be extended up to 2GB. Board can boot from internal 4GB eMMC or microSD memory card but root file system (everything except /boot) can be placed on external SATA SSD.

The fastest way to start exploring SBC-62-J is using Flashing\_SD.sh script, which creates bootable micro SD card with minimalistic Debian Linux based distribution.

Other software can be installed by standard way through APT (Advanced Package Tool). Other option is to use commu-

nity supported binary images.

SECO provided distribution contains customized version of U-Boot bootloader, which provides useful configuration utility seco\_config. For the use of seco\_config, it is necessary to pause boot process.



## Features

- i.MX6 Solo, DualLite, DualPlus or Quad running at 1GHz with 512MB to 2GB RAM
- 4GB eMMC
- working ambient temperature range 0 to 60° or -40 to 85°C

Order no.	Type	Description	Guide price
234814	SBC-A62-J-QUAD-C	SFF NXP i.MX6 Quad 1GB RAM 0...60°C	122,70 €
234824	SBC-A62-J-QUAD-I	SFF NXP i.MX6 Quad 1GB RAM -40...85°C	145,00 €
234830	KIT-WIFI-3M08-1	WiFi Module IEEE 802.11 b/g/n for SBC-A62-J	8,10 €



# FOX adapters with higher efficiency



**Safety and high efficiency - these features predetermine the FOX series of FRIWO brand for the use in industrial and medical area. These adapters already meet the very strict DOE level VI standards.**

FRIWO's FOX line (FRIWO one click x-change) offers highly efficient power supplies for challenging environments. The units meet the most stringent energy efficiency standards such as DOE Level VI or Code of Conduct (CoC), even for medical technology. In addition to the units' high efficiency, the minimum standby losses are crucial. Maximum safety is guaranteed by double locking of the housings, minimum leakage currents of  $\leq 10 \mu\text{A}$  and protection class 2x MOPP.

Thanks to interchangeable adapters and a wide range input of 90 to 264

VAC, the units can be used worldwide. Interesting is the optional adapter with IP 42 protection for the FOX products, which is absolutely unique feature for power adapters with exchangeable primary connector. In practical terms, this means that the units can be damp wiped and cleaned - an extra advantage in sterile environments. Since the units are optionally available with white housings, the FOX line perfectly fits in medical applications or clean rooms.

The individual units of the FOX line provide power ratings of (FOX6), 12 W (FOX12), 18 W (FOX18) and 30

Order no.	Type	Description	Guide price
181366	FOX 12 Office 12V/1000mA	AC/DC Adaptor 12W 12V/1A	10,20 €
186437	FOX Adapter/EURO	AC/DC DIN Rail Power Supply 480W 23,5...28V/20A	0,70 €
186443	FOX Distribution DC-Cord	FOX Distribution DC-Cord	1,99 €

Certified Safety for your Application:  
Medical-, Household- & IT-Approvals



W (FOX30) and cover voltages of 5 to 48 VDC in the standard portfolio. The product line also includes solutions with USB output, which are also available with medical approval according to IEC 60601-1, as well as variants with fixed bottom for country-specific use.

Different secondary connectors are available to fit your application needs.



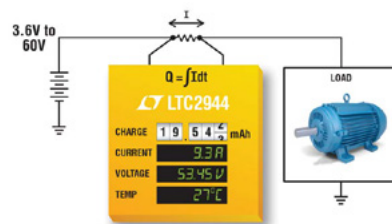
## How to easily monitor the battery state of charge



**The LTC2944 is a battery monitor that measures charge, voltage, current and temperature to 1% accuracy, the essential parameters required to accurately assess battery state of charge (SoC).**

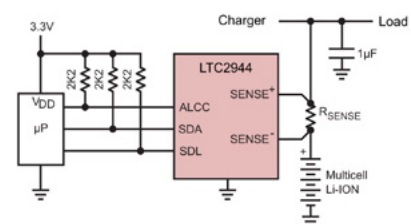
In the present time, more and more devices are using rechargeable battery as a backup source during a power supply failure. These devices should monitor battery state of charge. For certain types of devices, such as remote alarm on passenger goods lifts, monitoring is mandatory (EN81-28, §4.1.3. Battery check).

LTC2944 is suitable for all battery chemistry and voltages in range 3.6 to 60V.



External current sense resistor and programmable pre-scaler allow using a wide range of battery capacities.

LTC2944 measures battery voltage, cur-



rent flowing through sense resistor and chip temperature by 14-bit no latency delta-sigma ADC. Host reads measured values over an I<sup>2</sup>C/SMBus-compatible 2-wire interface that is also used to configure chip. The host can program high and low thresholds for all measured parameters, which if tripped, signal an alert using either the SMBus alert protocol or by setting a register flag.

LTC2944 is pin and function compatible with LTC2943 and LTC2943-1 with integrated sense resistor.



### Features

- 3.6V to 60V operating range without external level shifting circuitry
- suitable for all battery chemistry and a wide range of capacity
- 1% voltage, current and charge accuracy
- I<sup>2</sup>C/SMBus interface
- configurable alert output/charge complete input

Order no.	Type	Description	Guide price
259446	LTC2944IDD#PBF	60V Battery Gas Gauge DFN-8	6,20 €

# TFT display Winstar WF50B with HDMI interface can be connected to (almost) anything



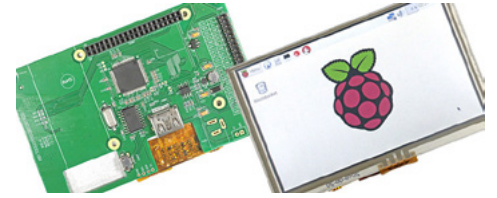
**New HDMI-interface display can be easily connected to Raspberry Pi or other mini computers.**

HDMI (high definition multimedia interface) can be nowadays found on the output of every PC and mainly – also on the output of several industrial mini PC and embedded systems.

Display can be usually connected to a small SBC (single board computer) in various ways, but why not use the sim-

plest one? SBCs with Android OS usually contain HW and SW resources to make a display connected through HDMI work by the Plug'n'Play method.

From this point of view, it's only gratifying that the display producers' offer is getting better in this field as shown by the new display WF50B from company Win-



star. It is a 5" display with HDMI interface (TFP401 controller), decent 800x480 px resolution and a resistive touch panel (with USB interface). Version with a capacitive touch panel is in development.

The display WF50BTIFGDHTX has a 40-pin connector (header), HDMI connector and it's also possible to buy optional HDMI connector WWHDMI-00# for a direct connection to Raspberry Pi.

The good news is also the fact that Winstar will soon release other types of bigger displays (7" and 10,1") with HDMI interface.

## Features

- 5" display with HDMI interface • easily connectable to Raspberry Pi • with a mini PC, it can function as a monitor • resistive TP with USB interface

Order no.	Type	Description	Guide price
236045	WF50BTIFGDHTX	TFT-LCD Module 5,0" 800x480 24Bit RGB RTP HDMI	49,80 €



## Power of ten...



**New product RTB2000 from Rohde&Schwarz is a digital oscilloscope, which is a perfect tool for university laboratories, troubleshooting embedded designs during development and for production and service departments.**



The 10-bit A/D converter provides up to a fourfold improvement when compared to the conventional 8-bit A/D converters. You get sharper waveforms with more signal details.

10 Msample memory depth is available for each active channel. When interleaved, even 20 Msample are available. That is 10 times more than comparable oscilloscopes offer. This captures longer signal sequences for more analysis results.

The R&S®RTB2000 gives users more than just an oscilloscope. It also includes logic analyzer,

protocol analyzer, waveform and pattern generator and digital voltmeter.



RTB2000 has the largest display (10.1") with the highest resolution of 1280 × 800 pixel in its class, a capacitive touchscreen to quickly navigate in pop-up menus and a touch function to easily adjust scaling, to zoom in or to move a waveform – it works just like your smartphone.

Order no.	Type	Description	Guide price
236774	RTB2002	Digital oscilloscope 2ch 70MHz 2,5 GSa/s 20MSa mem	1100,00 €
236778	RTB2K-COM4	Oscilloscope RTB2004 4ch. 300MHz Promotional Package	5500,00 €





## TOPJOBS is not only the name of Wago series



In various industrial applications and modern building installations, rail-mounted terminal blocks are expected to provide more than just reliable electrical connections. Time-saving features and industry-leading performance of the TOPJOB®S Rail-Mounted Terminal Blocks are backed by the renowned Push-in CAGE CLAMP® technology.

This is WAGO's spring pressure connection technology that accommodates all conductor types; what's more, there may be no need to prepare the conductor before termination. TOPJOB®S serie also features a wide and flexible product line.

### For all conductor types

Push-in CAGE CLAMP® offers the possibility of connecting solid and stranded conductors, as well as fine-stranded conductors with gas-tight, crimped ferrules by simply pushing them in – no need for tools. With a cross-section range from 0,14

mm<sup>2</sup> to 25 mm<sup>2</sup>.

- The clamping unit is held open for hands-free wiring
- Because the operating tool identifies which clamping unit is open, wiring is expedited

### Range of multifunctional jumpers

For example, delta jumpers are available for delta motor connections. Pluggable vertical jumpers can easily connect all the levels within multilevel terminal blocks and so on.

### The fastest marking system

Continuous marking strips allow TOPJOB®S Rail-Mounted Terminal Blocks to be marked in the shortest time possible. Multi-line marking simplifies terminal block identification by labeling them according to their functions.

### Safety first

All single-deck TOPJOB®S Rail-Mounted Terminal Blocks can be loaded with the nominal current of the used conductors. TOPJOB®S Rail-Mounted Terminal Blocks pass shock tests up to 500g and vibration tests up to 20g. Always get a reliable connection that's not dependent on operator's skills.

Order no.	Type	Description	Guide price
54316	2001-1401	4-cond. screen terminal block 1,5mm <sup>2</sup> 18A grey	0,81 €
54320	2002-1201	2-Cond.terminal block 2,5mm <sup>2</sup> 24A grey	0,63 €
54321	2002-1204	2-Cond.terminal block 2,5mm <sup>2</sup> 24A blue	0,67 €



## Programmable DC power supplies TDK-Lambda Z+ series in 2U height

TDK-Lambda

The first Z+ series models have been available since 2012 and are still under warranty today. TDK Lambda continually adds new models to this successful series. Currently, the series includes 33 models with output power 200 to 800W and output voltages up to 650V.



All models carry a five-year warranty, UL, TUV GS safety certificate and CE mark. Z+ series power supplies have been designed to meet the demands of a wide variety of applications like test and measurement, automatic test equipment, semiconductors burn-in, supplying laser diodes, heaters, RF amplifiers and mag-

nets as well as for general laboratory and industrial use.

Z+ series provides models with output voltages from 0 to 10, 20, 36, 60, 100, 160, 320, 375 and 650VDC. 200, 400, 600 and 800W models are available.

### Parallel and Serial Output Connection

Up to six identical units can be connected in parallel with active output current sharing.

### Safe-Start and Auto-Re-Start

Extensive safety features include user-selectable Safe-Start and Auto-Re-Start.

### Waveform Generator

All Z+ models include built-in arbitrary waveform generation and storage for up to 4 pre-programmed waveforms; making them ideal equipment for test and simulation tasks in the Automotive, Solar Panel and LED/Laser industries, to name a few.

All Z+ models have built-in USB, RS232, RS485 interfaces and analog control interfaces. Up to 31 sources can be connected to the RS485 bus. Optional LAN, GPIB (IEEE488) and isolated analog programming interfaces are also available.





# Speed-Up your Development with SHT31 Humidity and Temperature Sensor

The SHT31 Smart Gadget is a reference design and development kit which demonstrates the outstanding performance and ease of use of Sensirion's humidity and temperature sensors.



SHT 31 Smart Gadget helps developers to kick-start their own projects with an SHT31sensor, Bluetooth module and corresponding apps.

The Smart Gadget not only shows humidity and temperature values on the

display, but can also communicate with a Bluetooth 4.0 capable device like a smartphone.

Programs on the nRF51 and nRF52 series devices NordicSemi prepared step by step tutorial. Proprietary develop-

ment tools like ARMKEIL uVision are also supported of course. Sensirion's demo application can be compiled by using of the free 32kB license of uVision.

## SHT3x Humidity and Temperature Sensor Series

The series consists of a low-cost version with the SHT30 humidity sensor, a standard version with the SHT31 humidity sensor, and a high-end version with the SHT35 humidity sensor. In the present time SHT30(31)-ARP-B, DIS-B, DIS-P, DIS-F, SHT35-DIS-B, DIS-F are available.

Interface option:

- DIS - Digital I2C single shot
- ARP - Analog ratiometric out periodic

## Features

- LCD display for humidity, temperature and dew point in C and F
- Bluetooth Low Energy (BLE) connectivity to iOS and Android smartphones
- iOS and Android apps available
- Data logging capabilities

Order no.	Type	Description	Guide price
101772	SF2 Filter Cap	Filter Cap for SHT2x, SHT3x Sensors	0,59 €
182220	SHT 31-DIS-B	Humidity & Temperature Sensor ±2% RH	2,96 €
217297	SHT 31-SMART -GADGET	Ref Design and Development Kit with Bluetooth 4.0 for SHT31-DIS-B	23,00 €



# Do you need a decent siren? We have it.


**sonitron®**

Sirens from company Sonitron belong to the top class in efficiency and reliability while keeping compact dimensions.



You are probably quite familiar with the Belgian company Sonitron and its top class products from our articles and from our offer in this segment.

As we know, piezo elements usually feature a significant maximum in a certain

frequency range, which is successfully used in the buzzer and siren constructions.

When comparing various sirens and buzzers (as well as from various producers), it's necessary to compare at which distance the given value was measured. Between two sirens with (at first sight) the same loudness – for example „105“ dB, there's a big difference whether this value was measured at 30cm or at 1 meter (105db/ 30cm or 105db/1m).

Less known is the fact that piezo components have its (limited) lifetime. Under

normal circumstances, if a given buzzer or siren is only used for occasional signalisation, this value is not essential. But in applications where frequent and long-term usage of piezo elements is expected, it is good to remember this parameter as well. Sonitron also provides the expected lifetime of its products, and their portfolio also includes types with extra-long lifespan.

When speaking about sirens, it's the standard that they produce a "wobbling" sound with varying frequency. Specifically, Sonitron's offer has types called „Sweep“ (2000-3500 Hz) as well as types working with more narrow frequency range – „Warbler“ (3000-3500 Hz).

For the special requirements, the SUT-2155 transducer type is available, with the same piezo element as the SAS-2155 but "without electronics". This enables to drive a siren by custom tones or by mixture of tones, or to change tone according to what we want to signalise.

## Features

- quality products from producer with long-term experience
- wide portfolio including water/dust-proof versions
- usable even in harsh environment

Order no.	Type	Description	Guide price
64099	SAS-2835-12V-W-MB3	Piezo Siren "SWEEP" 6-15VDC 110dB Cable IP67	14,00 €
64100	SAS-2154-W-W-MB3	Piezo Siren "WARBLER" 6-15VDC 105dB Cable IP67	15,10 €



We can 100% feel your hard work. However we think that when working really hard, you shouldn't forget that we're only people with emotions and we want to have a good mood. Good mood makes the work way better. Articles in this column are about real components but they are written differently, in funnier way. And so, let's not forget: The more we smile, the nicer our lives will be.

# Do you choose *small* or *large*?

**ebmpapst**

SOS electronic extends its stock by 2 compact EBM-PAPST fans for AC power.

## 8556N a 4624N



**One small for high voltage and one big for low voltage.**

Type 8556N with dimensions 80x80x38mm and weight 490g is designed for voltage 230VAC and type 4624N with dimensions 119x119x38mm and weight 550g is for voltage 24VAC.

**The big one has higher speed than the small one.**

Type 4624N has nominal speed of 3100 rpm and type 8556N has nominal speed of 2800 rpm.

**The small one can bear higher ambient temperatures than the big one.**

The temperature range of 8556N is from -40°C to +90°C, which is more than usual. The temperature range of 4624N is from -10°C to +60°C.

**The big one is louder than the small one.**

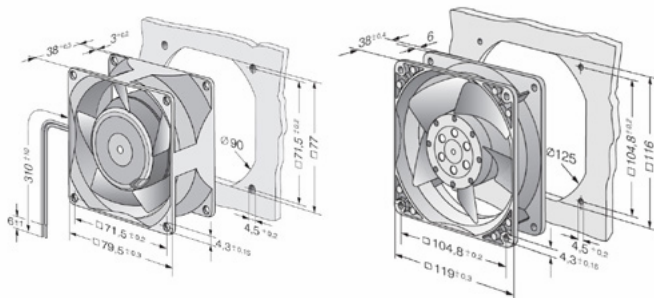
The noise of the 4624N in free air at maximum flow rate is 47dB(A), the noise of the 8556N is only 31dB(A).

**The small one has a ball bearing and the big one has a sleeve bearing.**

Type 8556N has ball bearings with service life of 52500 hours (at 40°C) and type 4624N has patented SINTEC sleeve bearings with service life of 32500 hours (at 40°C).

**The small one has strands and the big one flat pins.**

Type 8556N has two single 30cm strands (AWG22). Type 4624N has two flat 3x0,5mm pins.



**One has better price than the other. Both are available in our stock.**

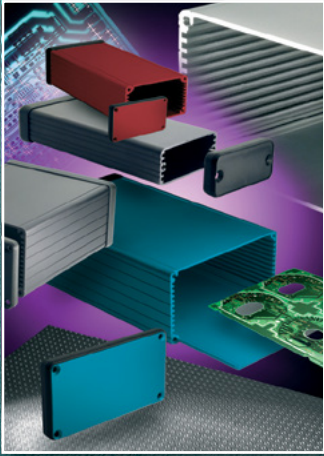
Order no.	Type	Description	Guide price
50354	4624 N	Fan 119x38 24VAC 19W 160m3/h Sleeve Faston	44,10 €
55158	8556 N	Fan 80x38 230VAC 12W 50m3/h Ball	27,00 €







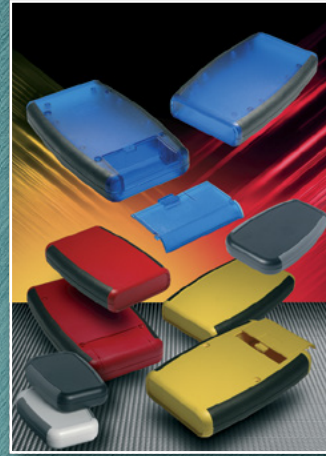
HAMMOND  
MANUFACTURING®



1455



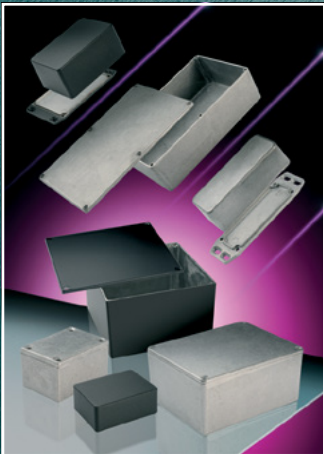
1551



1553



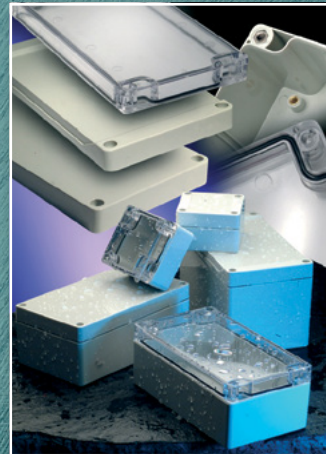
1553 watertight



1550 / 1590



1550Z / 1590Z IP66



1554 / 1555 IP66



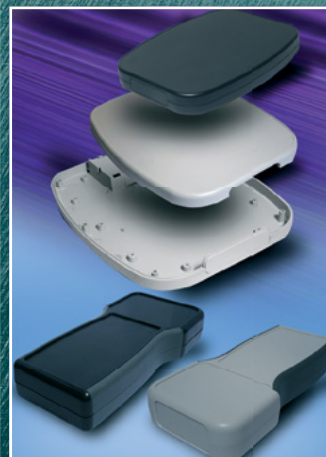
1590 TRP-STP



1591 / 1591XX



1593 Pi and Arduino



1599 Tablet and 1553T



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