Specialized addition
SOSnews eXtra:

How to properly choose a *Thermal Camera*

Content

Erika Kačírová
Sales manager

Autumn brings changes

Dear friends, I believe every one of us once thought – is change a good thing? Is it necessary? If everything works the way it should, why change it? Admit it... How many of us have already asked this question, either with regards to our families, our jobs, well-established product...

Well, we all have different opinions, our own experience regarding the need for change. One thing is certain – it is the change that drives us further and further.

When I joined the marketing department over 20 years ago, I joined a well-prosperous, young company. At that time, there were seven of us; we had a warehouse full of components about the size of your living room, regular customers, and a well-run system of work. And back then, twenty years ago, I said, "Wow, I really want to work in such a company!" For me, SOS electronic was perfect at that time. I realized I wanted to be part of this company, I want to contribute, and I want to be part of it during its growth.

And step by step, I also started to change things. We have released our first catalogue that was created literally "on our knees". Even now, I smile when I recall how I ran to the printing office with tracing papers under my arm... And then didn't stop there... we launched our new website, we negotiated contracts with prospective suppliers, our old customers became our good friends, we had more and more new employees...

Back then, twenty years ago, I did not even think that one day we are going to be an international company with more than one hundred employees and that a "living room warehouse" will change to a sophisticated logistics and distribution system. Marketing is now handled by young, progressive colleagues who are recognized not only in our company, but they are also teaching other important companies how B2B marketing works. We are a VIP partner for our suppliers, and we cooperate with companies like Telekom, Vodafone, Orange, and we are even preparing a workshop along with Microsoft.

And as our company was growing, I wanted to grow and improve myself as well. I have accepted new and new challenges. I changed marketing to build a branch in Hungary, gained experience in building business relationships, I was learning to understand the needs of small but also multinational companies, I was communicating with owners, purchasers and developers. But what's important - I listened a lot. I listened to what is important to them, what problems and challenges they come across, what their real needs are.

Dear friends! My career has changed again. I appreciate the opportunity I got and I am very pleased to be a part of our largest sales department as a sales manager for Slovakia. I know that this is a department that is already running really well, with a positive development, a growing tendency. But I also believe that thanks to our honest approach, through which we try to make our customers satisfied, we will now have new opportunities to improve. And I'll be very happy if you help me with that. Because as we say, "change is life".

And my final note? Do not stagnate! Let's change – ourselves, our company, our products. Try to adapt to the current market, try to develop ourselves according to the current situation, stay up-to-date... I will definitely do that.

I hope we will be helpful you with your changes.

Latest news on SOS electronic...

We have strengthened the SOS team

Dominika Marglarczyk
sales assistant

" I am Dominika Marglarczyk and I have been working as sales assistant in SOS electronic since april 2018. I am responsible for the south region of Poland. After graduating in Poland, I moved to Slovakia, where I decided to start my professional career. I am interested in psychology, ecology and modern literature. I am looking forward to cooperate with customers of SOS electronic.

Ing. Martin Vajdík
junior sales assistant

" After graduating from the Secondary Technical School of Electrical Engineering in Stropkov, I decided to study at the Technical University in Kosice where I then stayed and lived with my wife. I previously worked within business sphere, whether as a salesperson or a sales representative. I joined the Slovak sales department in SOS electronic in 1.6.2018, where I am in charge of new customers. I like to spend my free time with my wife and son who is currently filling every free moment of my life.

Róbert Rosol
sales assistant

" Shortly after graduating from the Secondary Technical School of Electrical Engineering in Michalovce with a focus on telecommunication technology, I have strengthened the SOS team in the warehouse as a materials expeditor. After eleven years full of experience, I decided to change my position and from September 17 I joined the Slovak sales department. My hobbies include hiking and a good book. I spend all my leisure time with my family and especially with our 6months old daughter.

SOS blood donation

In September, we again decided to support a good thing and donate blood to those who need it most. In agreement with the National Transfusion Service, they sent their mobile blood collection team. Not only our staff, but also our customers, friends and acquaintances decided to donate their blood. Our reward was not only the sweet treat but especially a great feeling that we did a good thing. Thanks to all donors.

Successful NB-IoT workshop in Slovakia

Three leaders in their field presented at our workshop in Kosice. Representatives from the 2J antennae, Slovak Telekom and Quectel Wireless Solutions could be approached by the workshop participants directly.

We would like to thank Mr. Tencer and Mr. Zavadsky for up-to-date information regarding the network in Slovakia. Both gentlemen are from Slovak Telekom and arrived at a workshop with the latest information on coverage in Slovakia.

When we started with the organization of the workshop, we took the words of Mr. Dančišn, sales representative from 2J antennae, to the heart: "You can have good coverage, perfect IoT module, but if you do not have a good antenna, you're doomed!", and thus, just to be sure, we invited people from the field to the workshop. The tips and information from the technical engineer from 2J, Martin German, were particularly appreciated by the participants who already plan the introduction of the technology.

The gist of the day was, of course, the practical testing of the BC66 BC IoT from Quectel Wireless Solutions. Since we only make "hands-on" workshops in SOS electronic, all participants could try out the kits with modules and SIM cards from the operator. Quectel's Regional Representative, Michal Gadaj, has advised and shared his experience all the time.

Our colleagues could enjoy the workshop enthusiasm again the next day in Bratislava. At the Slovak Telekom headquarters, we organized a similar NB-IoT workshop for the "network" employees of the company.

Trainings directly at your facility – another benefit for our customers

The long-term strategy of the SOS electronic company is not only to sell but to provide an adequate pre- and after-sales support to our customers. Therefore, on demand of one of our customers we recently started to provide a next form of support - training taking place directly at the facility of one of our VIP customers. To be more concrete, it was a training about soldering and soldering equipment. The training took about 2 hours, there were around 20 participants and the feedback was very positive. We believe that this step could also contribute to the better satisfaction of our customers.

The next successful meeting of SOS electronic sales representatives

In the end of September, the traditional SOS electronic sales representatives' meeting took place. This time, it was in Hungary, near the capital city Budapest. Sales-technical trainings were focused on Quectel and Sensirion products, where factory representatives introduced us the latest products and the perspective of their technology for the future. Practical demonstrations were not missing, for example the particular matter sensor from Sensirion, or the NBIOT module from Quectel. Among the newest trends in technologies, we also learnt about newest trends in the field of marketing. To be more concrete, about using the artificial intelligence. There was also a session about the current state and direction of the company and we participated in an interesting teambuilding.

PizzaWorkshop - Android Things on Technexion modules

We organised a series of workshops about the Android Things system and processor modules Technexion in October. In Brno and also in Bratislava we tested how simple it is to create a graphic user interface, for example access point for the attendance system.
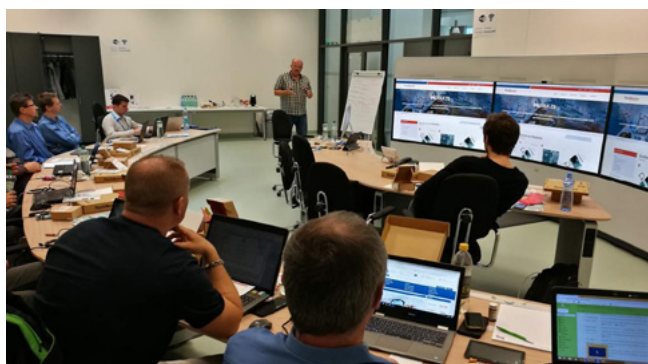
Our colleague František Nejezchleb, technical consultant at SOS electronic, pointed out to the simplicity of electronic construction and programming of this system. We used it for the efficient processor modules iMX7 of company Technexion.

Pico-Pi and LCD Panel TTL MultiTouch were the basis for programming in the system Android Things. We wrote the program within a few minutes, which smoothly logged into the development kit.

On the attached display we created a graphic user interface on the graphic level for mobile phones and with the help of WIFI we communicated with the environment.

Are you interested in the topic? Would you come, too? Are you working on anything similar? Register for our newsletter and be informed about all our events.

You found us at the fair:

Profesia Days
Košice, Slovakia

27. 9. 2018

Among more than 100 exhibitors, you could find also our stand. After the B2B marketing presentation of our colleague, Rastislav Talárovič, some of you have managed to speak with him directly in the hall. Thank you for your praise, opinions, and especially the time you gave us.

Evertig Expo
Krakow, Poland

4. 10. 2018

At the beginning of October, our two sales representatives visited the fair in Krakow. Within this day, they met you, our customers, as well as acquired new contacts. Thank to all of you for being a part of this exhibition and see you in May 2019 in Warsaw.

Electronica
Munich, Germany

13.–16. 11. 2018

Together with CONRAD we took part in a world fair Electronica in Munich. The fair has extended and fulfilled 17 halls. We met and had a nice talk with lots of customers from all around the world that visited our Stand. We will see you again in 2020.

Price Offers
and Ordering From Them

**We prepare many price offers for you on a daily basis. We communicate with our suppliers, seek out the delivery dates and prices. We recalculate the weights and calculate postage charges. We then send you the final offer via e-mail. But you can see it in our e-shop, too.**

If you see such a notice in the e-shop, it means that we have already processed your request for price offer and you can now view it.
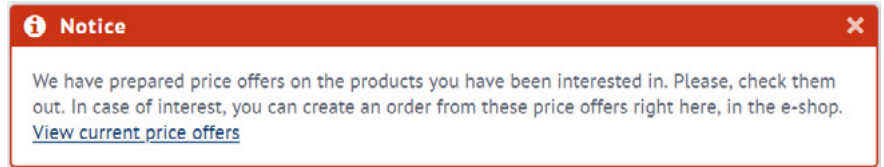
Did you know that you can also accept price offer directly in the e-shop? Using the e-shop in this case has several advantages:

- You do not have to wait for an e-mail order confirmation from our referent.
- Your order will be processed faster. It means, for example, faster ordering of non-stock items by our purchasing department.

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.

Adrián Lipták
webteam manager

Latest articles to read...

WE 1010 education kit – soldering station with a bonus

Extraordinarily affordable WE 1010 station is now available in an even more attractive set with practical accessories, ready for the immediate use.

Weller

Rugged, ultra-compact platform for AI

The BOXER-6405 and BOXER-6405(M) are compact embedded computers for smart factory applications. With their only 37mm thickness, they can be deployed almost anywhere, and their -20°C to 60°C operating temperature range means that they can handle harsh, factory environments.

AAEON an ASUS assoc. co.

Do you use the optimal cable in an aggressive environment?

Not only high temperatures but also oils, solvents and other chemical agents can easily damage common cable. We´ll advise you how to choose correctly if you have an application in harsh conditions.

LAPP GROUP

Small and Rugged 40W Converters for Railway Applications

The TEQ-40WIR series is a family of isolated high performance DC-DC converter modules with ultra-wide 4:1 input voltage ranges and operating temperature of up to +92°C and it comes in a rugged metal case.

TRACO POWER

TE Connectivity. Leader in Crimping Quality

Anyone can make a tool to crimp terminals onto a wire. But not everyone can manufacture a tool to crimp the terminals properly. Crimping isn't easy. Minimally, doing it right isn't easy. In TE Connectivity they know it. They started with it. TE Connectivity developed the technology of hand crimping over 70 years ago.

TE connectivity

Simple Fuse. Really?

Every electric circuit should be protected against overcurrent. Fuses are the most frequently used solutions. Understanding how they work simplifies choosing the optimal fuse for the application.

Buy One, Get Three

You can get relay Interface Modules of 38 and 48 series from Finder already ready to be used, perfectly matching your application. You do not have to assembly the socket, the relay and EMC/indication modules and thus you save time and money.
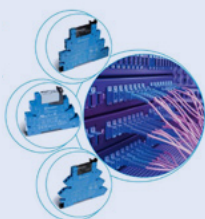
finder SWITCH TO THE FUTURE

Flexible Replacement of On-board Memory

Onboard memory offers great immunity against shock and vibration, but repairing is difficult and upgrade in the field is impossible. XR-DIMM memory module solves these shortcoming.
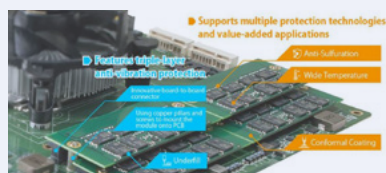
Apacer

Variolab+ laboratory furniture can help also to you

Highly variable tables and furniture Variolab+ are suitable for education and also for production/ service. Thanks to a wide range of various modules, it´s possible to arrange a configuration that perfectly suits your needs.

DIAMETRAL

WINSTA
Perfect in Details

Winsta is the pluggable connection system from WAGO. The system has been particularly developed for building installations and offers connections for virtually any building requirement from power supply to bus lines.
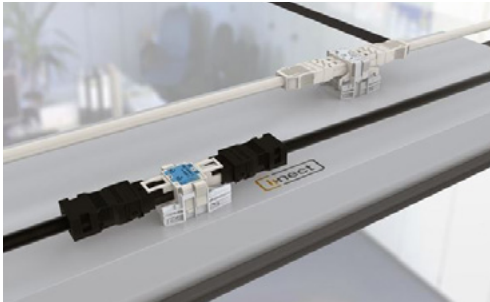
The name **WINSTA** comes from words **W**ago and **INSTA**llation, but it seems that words **WIN**ning and **STA**r are more likely its base - the winning star among connectors.

The system is built on **Push-In Cage Clamp** contact system (except for IDC variants), thus enabling maintenance free connections (no screws). All connectors are coded to protect against mismating. Number of poles is 2-7. Big advantage of Winsta is the variety of cable assemblies in lengths from 1 to 8 metres in 1m steps.

The installation can be very fast and easy. And this is true not only for buildings but for other industries as well (ships, rail vehicles, industry factories).

The system consists of families WINSTA® MINI, MINI special, MIDI, MIDI special, MAXI, RD, KNX and IDC. Each family has its own role within the building installation.

Winsta Mini (Series 890/891)
- For applications where space is limited
- For sensors, switches, servo motors
- Up to 1,5 mm², 250V, 16A

Winsta Midi (Series 770/771)
- For majority of applications
- For buildings, ships, rail vehicles, caravan cars
- Up to 4 mm², 250/400V, 25A

Winsta Maxi (Series 831)
- For high performance
- Up to 6 mm², 250/400V, 32A

Winsta RD (Series 774)
- Connectors with outer diameter 17,5 mm
- For cable ducts, furniture lights, wall or ceiling openings

Winsta KNX (Series 893/894)
- For standardized buses in building automation
- KNX/EIB, LON, Ethernet - Up to 50V, 3A

Winsta IDC (Series 772/893/895/896)
- For a high degree of flexibility
- System for flat cables up to 16 mm²

- Supply or tap-off is possible anywhere in the flat cable. No cutting, no outer insulation removal
- Very fast connection to flat cable by simple 120° rotation per pole

Winsta Mini special and Midi special
- Especially designed for specialty applications (measurement, control, regulation)
- B-coding protects against mismating with other series
- Special variants can be easily differentiated according to colour and pole marking (grey, light-green, pink)

Selected products from the Winsta Midi, Maxi, RD and KNX series can be found in our stock. All other Winsta family products are available upon request.

Features

- Maintenance free, protected against mismating
- Push-in CAGE CLAMP® system - direct pushing of solid wires, no tools
- High level of variability - different plugs and sockets (panel, cable, PCB) and many cable assemblies
- Small dimensions
- Clear marking and colour coding
- Many accessories and tools

Order no.	Type	Description	Guide price
207006	770-123	Plug with strain relief housing 3-pole 4mm2 white	2,37 €
107242	770-713	Plug snap in type 3P 25A black WINSTA	1,28 €
139634	770-503/023-000	Relief Housing 3P, Wire Diameter 4,5-8mm	0,92 €

This is a short version of the article. The whole article can be found at web. Decode the link in QR code. **SOSnews**

This DC/DC converter survives even Armageddon. Don´t you believe?

II TRACO POWER

The TEQ 300WIR meets the demanding requirements for quality, reliability and safety for use in railway applications. The TRACO Power converters of this series contribute to the creation of simple and reliable solutions.

The TEQ 300WIR models have been approved according to safety standards IEC/UL 60950-1 and UL508. They also comply with EN50155 and EN61373, which are a condition for the use in railway applications.

Converters of this series have a very wide input voltage range between 18-75 and 43-160 VDC, the nominal input voltages of 48, 72, 96 and 110 VDC, which means ±40% deviation of nominal input voltage is allowed. This is a very important feature, which means that the converters can withstand brownouts (0.6 x Vnom x 100ms) and transient voltage (1.4 x Vnom x 1s) defined by EN50155 not only for a limited period but permanently.

The TEQ300WIR models are equipped with internal filters to conform to demanding electromagnetic interference requirements.

The requirements for electromagnetic field resistance, fast transient burst immunity and surge immunity correspond with the highest level for "railway rolling stock equipment" under performance criteria A (continuous operation within specified datasheet limits).

The converters are also designed and approved to endure shock and vibration requirements for rolling stock equipment according to EN 61373. Solid flanges allow an easy fixation on the mounting surface. The modules are equipped with vibration proof spring clamps for secure electrical connection.

With an excellent efficiency and highest grade components, they reliably operate in an environment temperature range of -40°C to +80°C. They pass cyclic damp heat and dry heat tests without developing any physical damages. In addition, the products are qualified for the fire behavior of components according to EN 45545-2.

The TEQ 300WIR models provide a reinforced I/O insulation for an isolation voltage of 3000 VAC (1 min test voltage). They are available with output voltages of 12, 15, 24, 28 and 48VDC, which are adjustable within the range of ±20%. The output characteristics is "constant voltage to constant current" (CV/CC), which means that the output voltage is stable up to a load current of about 110% of nominal current. At this point, the voltage will be decreased while the current stays stable.

This feature is useful to start motors, charge lead acid batteries or pull up capacitors of unlimited capacitance. Protection against overheating, overload, short circuit, reversed input, overvoltage and input under-voltage are other features that make these TRACO POWER converters very reliable and fail-safe.

Moreover, the TEQ300WIR series converters have the so-called "sense" line inputs that are used to compensate for voltage drops caused by long wires. They also have a load distribution function for parallel operation of up to three units or for a real redundant operation.

Order no.	Type	Description	Guide price
208693	TEQ300-4812WIR	DC/DC module 300W 18-75VDC/12V/25A with heatsink	592 €
208696	TEQ300-4818WIR	DC/DC module 300W 18-75VDC/48V/6,5A with heatsink	592 €

Technological Breakthrough in Optical PM Sensors

SENSIRION
THE SENSOR COMPANY

Sensirion's SPS30 particulate matter (PM) sensor uses innovative technology that keeps the dust away from all sensitive parts and prevents its accumulation. This technology, along with high-quality and long-lasting components, enables accurate measurements for more than eight years while operating continuously for 24 hours/day without cleaning and/or maintenance.

Atmospheric Aerosol Particles

Also known as particulate matter (PM), aerosol particles consist of a complex mixture of solid particles and liquid droplets of organic and inorganic substances in the air.

The major components of PM are sulphates, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water.

PMx Classification

x stands for particle diameter that is equal to or smaller than **x** μm. PM2.5, for example, defines particles with diameters that are smaller than or equal to 2.5 μm.
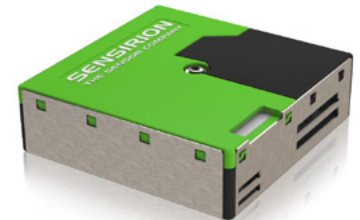
Health Risks

The most health-damaging particles are those with a diameter of 10 μm or less, as such small particles can penetrate the human lung barrier and enter the blood system.

What Makes SPS30 Unique?

1. Sensirion developed an innovative technology that keeps the dust away from all sensitive parts and prevents its accumulation. This technology, along with high-quality and long-lasting components, allows SPS30 lifetime of more than eight years while operating continuously for 24 hours/day without cleaning and/or maintenance.

2. Laser-based scattering principle and advanced algorithms allow accurate measurements of mass concentration (μg/m3) and number concentration (No. of particles/cm3) for different types of dust and other particles. Lower limit of detection is 0.3um only.

   a) Mass concentration: PM1.0, PM2.5, PM4 and PM10

   b) Number concentration: PM0.5, PM1.0, PM2.5, PM4 and PM10

3. Fully calibrated sensor with UART and I2C interface

4. Dimensions of 40.6 x 40.6 x 12.2 mm enable easy integration into device

Order no.	Type	Description	Guide price
304234	SPS30	Particulate Matter Sensor PM1.0, PM2.5, PM4, PM10	25,20 €

Are you ready for the new generation?

WIZnet

WIZnet has just launched a new W7500 & W7500P-based Serial to Ethernet modules (S2E modules), which are pin-to-pin compatible with WIZnet's existing S2E modules – WIZ1XX series.

Same HW Platform, Same SW Scheme

Although the existing S2E modules were used in various fields, they were based on different MCU platforms; and thus different configuration tools & configuration messages for setting had to be used, and moreover, it also resulted in complicated technical support. To minimize complications, Wiznet standardized the command sets and used the same software module for the new WIZ750SR & WIZ752SR series.
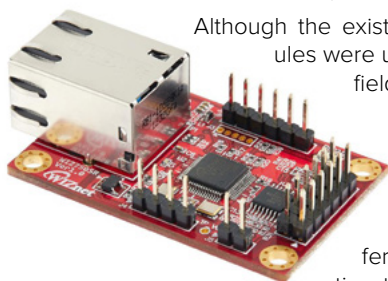
Pin-to-pin replacement, common and enhanced configuration

For the new WIZ750 & 752 series, WIZNET also released a CLI (CommandLineInterface) based configuration tool because they registered some complaints about the GUI configuration tool, which runs only on Windows OS. The new config tool is implemented in Python and can operate on any OS that Python can run on. Batch tasks can be performed from now on.

Manufacturer's services when modifying HW or SW

Wiznet´s new S2E modules support various serial interfaces: 3.3V TTL signal, RS-232 / 422 / 485 and the manufacturer provides hardware customizing service upon review.

Developers from WIZNET also posted the firmware source codes on their Github page. You can download and customize source codes according to your own needs, or you can request SW modification directly from WIZnet.

Order no.	Type	Description	Guide price
293444	WIZ750SR-100	Pin header Typee Serial to Ethernet Module	19,50 €
293452	WIZ752SR-125	xPico 240 Evalution Kit, Emb IoT GW Wi-Fi, Eth, Dual-band	39,50 €

This is a short version of the article. The whole article can be found at web. Decode the link in QR code.

Small but Powerful Internal Antenna

Things are getting smaller (except for cars) and this is true also for antennas. 2JE18 is a small surface mounted antenna with dimensions of only 40x7x3mm. It is designed for a surface mounting directly on PCB- and thanks to its excellent parameters, it is intended to be used in IoT devices.
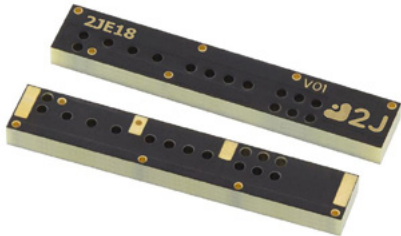
Designed to meet customers' requirements for connected wireless nodes, 2JE18 covers a wide range of frequencies in 698-960MHz, 1710-2170MHz and 2500-2700MHz bands.

The B20 (800MHz) is widely used for the NB IoT networks in Europe.

Because of flexible design this antenna covers also frequency bands used for 2G and 3G networks, which makes it suitable also for „upgrades" in already running projects.

The radiation pattern is very smooth and consistent for all covered bands and VSWR is specified in the whole frequency spectrum. This parameter is often omitted by customers or only an average value is specified in the datasheet.

Parameters	CELLULAR / LTE Antenna		
Standards	2G,3G and 4G		
Band (MHz)	700/850/900	1700/1800/1900/2100	2600
Frequency (MHz)	698-960	1710-2170	2500-2700
Return Loss (dB)	~-6.6	~-15.5	~-12.6
VSWR	~2.8:1	~1.5:1	~1.7:1
Efficiency (%)	~54.8	~67.5	~70.1
Peak Gain (dBi)	~1.2	~4.1	~4.2
Average Gain (dB)	~-2.6	~-1.7	~-1.5
Impendance (Ohm)	50		
Polarisation	Linear		
Radiation Pattern	Omni-Directional		
Max. Input Power (W)	25		
Antenna Measurement			

Order no.	Type	Description	Guide price
287600	2JE18	Embedded SMT antenna LTE Surface Mount, Fiberglass, Brick 40x7x3mm	5,30 €

Design enclosures which stand out of the row

The Fischer Elektronik series of aluminum enclosures excel in the competition with others. With its design, a wide range of sizes and shapes, but also thanks to its shock resistance...

Design enclosures from Fischer Elektronik are in fact "common" enclosures into which your devices can be incorporated. The only difference is their attractive (and colorful) design.

Series of Fischer design enclosures are not a brand new novelty, but the producer continuously enhances these series with further sizes and accessories. As a result, a very wide scale of sizes and shapes can be found among them.

Five main series belong here - **Secco, Frame, Chac, Eurotainer and Rail**.

Main Features

SECCO (SEC)

• elegant enclosures with shock-resistant plastic covers and integrated sealing (enabling to reach IP 67 without additional sealings)

• guide slots inside the enclosure enable usage of less-standard PCBs with 1.6 and 2 mm thickness

• possibility to use foil keyboards

• custom modifications and colors upon request

FRAME (FR)

• intended for desktop devices in combination with shock-resistant plastic frame and sealing

• wide possibilities of PCB and components placing inside the enclosure

• electrically conductive surfaces and sealings (EMC versions) upon request

• wide possibilities of color combinations and sizes

• versions with integrated heatsink (FR K) are also available

CHAC (CC)

• modern design with oval side walls and integrated anti-slip feet

• horizontally and vertically variable

• EMC compatible versions

EUROTAINER (ET) a RAIL (RL)

• aluminum enclosures for 100mm Eurocards with integrated guide rails with 5.08 mm pitch (1 HP)

• various possibilities of assembly (also stacking) by means of a rigid plastic frame

• ergonomic enclosures suitable for mobile and desktop usage

• EMC compatible versions

How to easily mount an enclosure on a pole?

Canadian manufacturer Hammond offers a complete solution. With the Pole Mount Kit PMB it goes fast, reliably and securely to any pole.

Measuring, signalisation, control these are the typical examples of applications where a bigger or smaller enclosure needs to be mounted on a pole (or other usually vertical rod).

As we know, to mount a common right-angle enclosure on a round pole is not quite trivial thing, especially when we also want to secure it against twisting. It's not that easy even in case of a square-shaped pole as it is usually narrower than mounting opening of enclosures. And you can't afford to drill new holes to the bottom of the enclosure to maintain its IP rating. Perhaps the last factor, which can possibly complicate mounting is the fact that it's usually also

not possible (or desirable) to drill into a given pole.

Company Hammond newly offers an elegant solution, so-called "Pole kit" of the PMB series. It is a set, which may recall you of a typical way of antenna mounting.

Its main elements are 2 brackets, 2 strap clamps and screws/nuts – all from a stainless steel. Together 5 sizes are available (for various enclosure sizes), enabling to mount enclosure to poles with diameter of 38 to 178mm/ 381

mm (Kit1/Kit2). All together 10 versions.

That's a quite wide range, which will probably cover majority of needs in a praxis. Shape of the bracket enables to mount enclosure to a round but also square-shaped pole.

Hammond Pole kit is intended for Hammond enclosures series 1554/1555 IP 65 (ABS and polycarbonate) and 1590Z/1590ZGRP (heavy duty aluminium or GRP). The PMB data sheet will help you choose the right type.

Features

• set for a reliable and fast mounting of enclosures to a pole (round or square-shaped) • for poles of a 38-178mm/ 381mm diameter (Kit1/Kit2) • all stainless steel construction including clamps and hardware • suitable for Hammond 1554/1555/1590Z/1590ZGRP series enclosures

Order no.	Type	Description	Guide price
300889	PMB-110127KIT1	Enclosure Pole Mounting Kit Dmax178mm, 110-127 mm	23,70 €
108506	1590Z062GY	Enclosure AL 98x64x36 mm Grey IP65	15,60 €

WT2 - More Channels, More Flexibility

Thanks to an extra wide portfolio of tools compatible with the new double-channel soldering station, WT2 is an ideal choice if you need to solder miniature as well as very big joints.

The single channel **WT1** station, launched on the market some time ago, attracted a lot of attention since it offers significantly higher user comfort and same reliability at the cost of its predecessor – WSD81i (WS81 etc.) as it's designed for demanding industrial usage (WT = „technology line").

This time, Weller introduces the double-channel version named **WT2** with practically same great features like WT1, which we introduced recently in our article Weller WT– a station in the „GT" version for the price of a basic version, but it comes naturally with higher power (150W) and even with one extra bonus.

The bonus is that the new WT2 station is also compatible with the micro-soldering tool **WMRP** as well as micro-desoldering tweezers **WMRT**.

Advantage of the WMRP micro-tool and the WMRT tweezers is that they use the so-called active tips (active tip technology) of the RT series (or RTW for WMRT) where the heating element is integrated with the tip and together they have a very small overall diameter. This solution enables a very precise temperature control and an excellent heat transfer resulting in a comfortable soldering also on very dense PCBs.

Features

• user friendly • compatible with a wide range of Weller tools • also compatible with the WMRP micro tool and the WMRT tweezers • cost effective, designed for industrial use • several useful functions (Window, offset, standby,...) • new returnable stand for wet and dry wetting (2in1) • cooperates with several Weller ZeroSmog fume extraction stations

Order no.	Type	Description	Guide price
301500	WT 2M (T005344369	Digital Soldering Station 2-Ch. ESD 150W 50-550°C	375,90 €
301501	WT 2010M (T005344469	Digital Soldering Station 2-Ch.ESD 150W WT-2M+WTP90+WSR200	598,10 €

This is a short version of the article. The whole article can be found at web. Decode the link in QR code.

The Most Reliable Memory for Industries

Bold statement, right? Apacer offers two series of industrial DRAM modules that use fully-tested world-class chips, providing full technical support with 3 years warranty but also a fixed BOM and other benefits.

DRAM chips from tier-one manufacturers

Both series use fully tested DRAM chips from Samsung, Micron Group or SK Hynix.

Series 75 uses chips rated to temperatures from -40 to +95°C, 1% resistors, 125°C rated capacitors and 30um gold fingers plating.

Series 78 uses chips rated to 0 to +95°C, 5% resistors, 85°C rated capacitors and 3um gold fingers plating.

100% Reliability

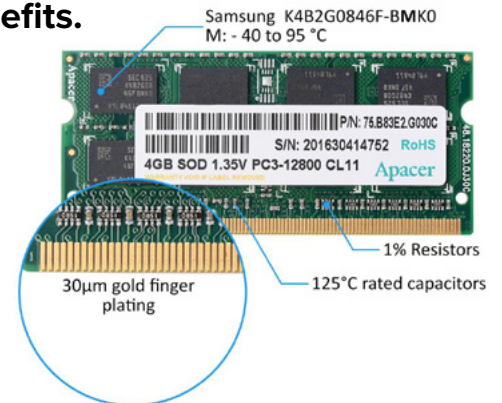Apacer tests all DRAM modules. Test procedure includes power cycle test (multiple warm and cold boot), high and low temperature test, temperature cycle test, humidity test and vibration/shock test.
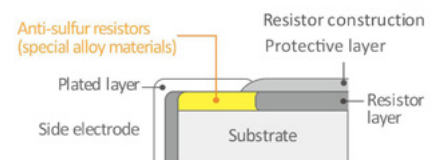
Fixed BOM

Chip revision also applies to series 75. If chip manufacturer changes chip revision, Apacer changes product number. For 78 series chip manufacturer is fixed. If chip revision changes, product number remains the same.

Warranty and Support

Both series offer 3 years warranty. Apacer provides full FAE support and RMA procedure.

Samsung K4B2G0846F-BMK0 M: - 40 to 95 °C

1% Resistors
125°C rated capacitors
30µm gold finger plating

Apacer's anti-sulfuration resistor technology

Anti-sulfur resistors (special alloy materials) — Resistor construction / Protective layer
Plated layer — Resistor layer
Side electrode — Substrate

Apacer awarded patent for anti-sulfuration memory solves sulfur corrosion problems effectively.

Order no.	Type	Description	Guide price
260073	75.B93E2.G040B	SODIMM DDR3L 1600 4GB CL11 Tc=-40...85°C	67,00 €
287722	78.B2GCZ.4000C	SODIMM DDR3L 1600 4GB CL11 Tc=0...85°C	51,40 €

New PRO thermal cameras using Delta-T function

Fluke Ti 480 PRO and Fluke Ti 450 PRO are new thermal cameras surpassing their predecessors with a number of improvements. Intuitive user display, higher temperature range, better sensitivity or a novelty - Mark Delta-T - analysis of temperature differences.

Fluke celebrates its 70th anniversary (1948-2018). On this occasion, the **Ti 450 PRO** and **Ti 480 PRO** thermal cameras were introduced. Sensitivity is improved to 0.025 ° C at 30 ° C (25mK). We must not forget the more intuitive menus with a new design.

The resolution complemented by SuperResolution moves the "**Professional**" series of thermal cameras even higher. Thermocouples are thus more than suitable for measuring on PCBs, switch boards or other electronic applications. Full functionality of cloud-based memos and communication with colleagues over a given application at the time of measurement (IR-Photo-Notes™, FlukeConnect™, Share-Live™) became commonplace.

As with the Ti 450 and Ti 480 versions, the PRO series also offers the option of telephoto lens and a wide-angle lens.

New function **Mark Delta-T (ΔT)**
Mark Delta-T is a feature for quick analysis of temperature differences, for example, between temperature of interest (hereinafter referred to as reference) and ambient temperature for better readability of differences between these two values. It works simply. You have 3 moving points. One of them is defined as a reference. The other two points will show the difference between the following values relative to the reference point.

Features

• resolution: 320x420 pix. (Ti 450PRO) 640x480 pix. (Ti480PRO) • Super Resolution: 640x480 pix. (Ti 450PRO) 1280x960 pix. (Ti480PRO) • temperature range up to 1500 ° C • function Mark Delta-T (ΔT) • more intuitive on-screen display • 9 color palettes • FlukeConnect

Order no.	Type	Description	Price
288932	Fluke Ti450-PRO 9Hz)	Thermal Imaging Camera 9Hz 320x240pix -10°C...+1500°C	Price on request
288933	Fluke Ti480-PRO 9Hz	Thermal Imaging Camera 9Hz 640x480pix -10°C...+1000°C	Price on request

Can you handle mounting OLED display within 2 seconds?

Mounting of a small graphic display EA OLEDS102 which is mounted only by soldering into PCB or plugging into a socket is not only fast and reliable but also cheap.

Are you also dissuaded by relatively laborious mounting of common display modules by screws or tapes/glue? Solution is a well-known series EA DOG. In addition, company Electronic Assembly also introduced 2 types with the same mechanical advantages but in OLED technology.

You are probably familiar with the **OLEDL128-6GGA** module from our recent article and newly it has a new sibling.

It is the **OLEDS102-6LGA** which, as a younger member, is naturally also smaller :)

It is only 2.4 mm thick. Resolution of 102x64pix enables to display 8 rows with 17 characters or 4 rows with 12 characters of a bigger format. Control is handled by SSD1306B controller and it enables to control the display via SPI or

I²C interface. The content is yellow and as we know it from other OLED displays, the black is really "black".

OLEDS102-6LGA maintains mechanical compatibility with EA DOGS series. Pins usage is however naturally different.

An alternative in a form of an OLED display brings another benefits, mainly:

- great contrast of approx. 2000:1
- extreme viewing angles on the border of physics laws
- reliable operation and fast response (microseconds) even in frosts

Although OLED displays don´t technically belong to displays with extremely low power consumption, they still have advantages in comparison to standard LCD displays with backlight, because only pixels which are ON consume power. In case of standby operation of your device when only a few characters/icons will be displayed, overall power consumption of the display is also relatively very low.

Features

- only 2.4mm thick • simple mounting by soldering of pins or plugging into a socket • no screws or glue necessary • fast response time - 10 us • wide operating temperatures range -40...+80°C • lifetime of at least 50 000 hrs • SPI + I2C interface

Order no.	Type	Description	Guide price
291087	EA OLEDS102-6LGA	OLED Graphic Module 102x64 Dots Yellow 3V	22,30 €
259511	EA OLEDL128-6GGA	OLED Graphic Module 128x64 Dots Yellow 3V	38,90 €

Screwless connection quickly and reliably

euroclamp

Practically every terminal blocks' manufacturer already took over the technology and produces screwless terminal blocks and connectors. Our long-term partner, Euroclamp, is not an exception. In addition to the dominant range of traditional terminal blocks and plug-in connectors with screws, they also offer a basic range of screwless terminal blocks and screwless plug-in connectors.

Screwless terminal blocks are from the MG1 series.

They are produced in four pitches - **5 mm/5,08 mm and 7,5 mm/7,62 mm** and in two versions - with and without button. All models are 45°angled.

Versions with button need no screwdriver, but an unwanted push can release the wire. Versions without button need screwdriver, but there is no risk for unwanted re-

lease of wires. However, we have to admit that it is much more comfortable to push the spring with a screwdriver, especially at small pitch.

If you need to bring many signals to a small PCB, we recommend using the multilevel terminal blocks. Euroclamp produces 2-, 3- and 4-levels versions (these are, however, only in 5/5,08 mm pitch and without buttons).

Order no.	Type	Description	Guide price
124448	MG101-5-DI	PCB Term.Block Spring P5 1,5 mm² 16A 1P 45°	0,111 €
64316	MG101-5-P-DI	PCB Term.Block Spring P5 1,5 mm² 16A 1P 45° Lever	0,136 €
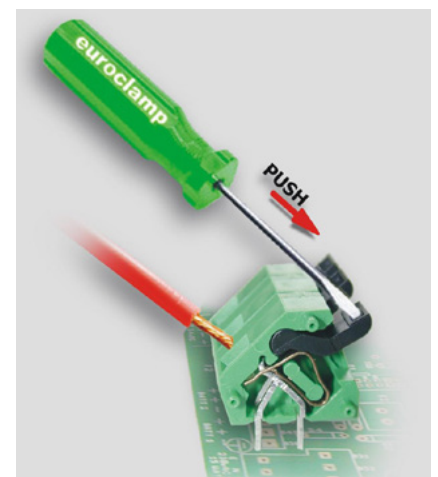
Security in the Age of IoT?

LANTRONIX®

Majority of IoT devices are nowadays secured the same way as regular e-mail. That means, nowise. Data misuse can be, however, very harmful to end users of the device.

Probably, no one will risk and steal information about the mileage of a neighbour's car or a number of components produced in a competitor's factory. However, the target of attack is not necessarily the user of the device but the company whose data leaked.

Connected devices in IoT bring limitations, security challenges, but also different approaches to their solution. The development of new technologies brings new risks and requirements for security and protection of personal data. **Original equipment manufacturers** (hereinafter referred to as **OEMs**) **are extending existing systems by innovative technologies**. Mostly, for example, by sensors, computing and storage devices for large data applications and streamingedge analytics for cloud.

Businessmen increasingly rely on intelligently connected devices in all aspects of their business. **Switching from private networks to enterprise-wide networks over the public Internet reveals the security risks that were not previously observed.**

It is expected that the worldwide adoption of IoT and cloud technologies will reach more than 20 billion devices by 2020. **More online devices mean more devices that need protection.**

Legacy industrial devices and devices based on brownfields, which are critical to country infrastructure, are becoming an **easy target for attacks**. We are talking about electrical networks, communications infrastructure, and so on. The amount, diversity and age of these devices will greatly simplify the possibilities for potential attacks.

How is it then possible to ensure that the connected devices remain safe in the complex IoT ecological system?

OEMs, solution providers, system integrators, and end-users need to **create a comprehensive multi-layer strategy** that provides end-to-end protection for their deployed IoT devices. Traditional solutions that use network firewalls and protocols only provide protection against the high level of Internet traffic.

The first layer of the IoT security strategy begins with the **protection of the hardware and software of the connected device itself**.

One of the most often overlooked layers of IoT is device security **LIFECYCLE**. Security needs to focus on:

- the initial design by the device manufacturer,
- the operational environment handled by the end user or a system integrator,
- the final decommissioning.

Order no.	Type	Description	Guide price
236145	XPC240100B	xPico 240 Emb GW, Wi-Fi, Eth, Dual U.FL, LGA, BULK	30,25 €
236147	XPC240200B	xPico 240 Emb GW, Wi-Fi, Eth, Module Ant, LGA, BULK	30,25 €

Gold medal for silver for Marquardt

MARQUARDT

Renowned German manufacturer optimizes the offer of preferred rocker switches.

Marquardt offers models with minor differences (e.g. only different contact materials) for many years. Now they use their experience for rework of the stock program. Marquardt has decided to prefer versions with **Ag/Ag** contact system instead of **Cu/Ag**.

Models with Cu/Ag contact system have silver only on the moving part of contacts (blue area on red part). Models with Ag/Ag contact system have silver on the fix part of contacts and on the terminal too (blue area on yellow part). Marquardt thus reduces the quantity of models with lower demand and by focusing only on Ag/Ag versions, it maintains high stock availability.

The silver on contacts makes the electrical rating better. For example, at 180x Series, Ag/Ag improves the rating from 10(4)A 250Vac to 12(4)A 250Vac and the inrush current from 50Amps to 70Amps.

Optimization concerns 180x and 183x series rocker switches. Original Cu/Ag models are being sold out but can still be ordered (respecting the minimum order quantities and the lead times).

Some of the new Ag/Ag types can now be found in our stock together with detailed datasheets.

Features

• different kind of rocker switches • single pole or double pole • with single throw contacts or with changeover switching function • with or without print • different kind of terminals - plug-in or solder

Order no.	Type	Description	Guide price
81367	1801.1121	Rocker Switch 19x13 1-0 SPST 12(4)A 250VAC Black F4,8	1,10 €
485	1835.3108	Rocker Switch 30x22 1-0 DPST 10(4)A 250VAC Black/Green illum. F6,3 - O	2,82 €

Why Use AAEON Rugged Tablets

AAEON
an ASUS assoc. co.

They are reliable, robust and can also be used with working gloves. They are designed for work in the outdoor environment such as industrial field service, construction, public transport, logistics and warehousing.

AAEON offers 5.7"RTC-600A, 7" RTC-700B, RTC700-RK and 11.6" RTC-1200SK series. Mass production of the latest series, a little brother of RTC-1200SK, 10" RTC-1010AL is scheduled for October 2018.

Reliability / Durability

AAEON tablets fulfil MIL-STD-810G drop and vibration requirements. They are dust tight and can withstand water jets from any direction -IP65. RTC-600A series offers even IP67, i.e. it is dust-proof and can be submerged up to 1 m deep in water. Tablets work in ambient temperature range -20 to 60°C (RTC-700B, -20 to 50°C). Display is protected by Gorilla Glass version 3, H9 hardness.

Battery Life

Battery hot swap is priceless in case when you can't interrupt the running action and internal battery is near to depletion. RTC-600A and RTC-700 series have one internal and one hot-swappable battery. RTC-1200SK series has both 2 batteries hot-swappable. Batteries offer up to 8 hours of operation.

Batteries can be charged by connecting to AC/DC power adapter, vehicle DC/DC charger or in 4-bay battery charger.

Connectivity

Industrial equipment often uses RS232 instead of USB, and Ethernet instead of wireless connectivity. RTC700 series provides optional COM + Ethernet module PER-A152. Assembly is simple, you can do it yourself. RTC-1200SK has both interfaces default.

All AAEON tablets have Wi-Fi 802.11 b/g/n, Bluetooth, GPS, Glonass navigation and NFC/ RFID (13.56MHz) in default configuration. Each series also offers models with 3G or 4G LTE module.

Order no.	Type	Description	Guide price
285559	RTC-1200SK3-TASD-WB-GHR-1101	Rugged Tablet 11,6" 1920 x 1080 CTP Intel Core i3 6100U -20...60°C	2050 €
285563	RTC-700B-TAD-WBGRLE-1102	Rugged Tablet 7" 1280 x 800 CTP Intel Atom X5 Z8350 -20...50°C	1158 €
285564	RTC-600A-TAD-WBGLR-6101	Rugged Tablet 1280 x 720 CTP Rockchip RK3288 -20...50°C	899 €

Connect your sensor reliably

lumbergautomation
A **BELDEN** BRAND

Using the single-ended overmolded Lumberg Automation cords for actuators and sensors will save half of your work.

The sensor connectors and cables from Lumberg Automation and Hirschmann feature the exceptional variety of available standard and special types. The portfolio provides a wide range of **M5, M8, M12, M23** and 7/8" plug-in connectors for each application including single- and double-ended, male and female, straight or right angle versions and manifold cable options and lengths.

For EMC-sensitive applications, we recommend using shielded connectors and cables that effectively suppress both interference radiation from external sources and local emissions. Shielded connector assemblies and cables are especially necessary for high-speed data transmissions and sensitive signals.

All connectors rated **IP67** and higher offer particularly good protection against penetration by dirt or moisture. Continual testing of their compatibility with chemicals, coolants, lubricants and cleaning materials mean that these connector assemblies always comply with the latest standards.

Flexible Wiring with Cordsets for Actuators and Sensors

These actuator and sensor cordsets are preassembled and are traditionally single-ended cordset assemblies.

Features

• IP rating: IP67 • temperature range: -40°C to +90°C (mind cable) • contact resistance: less than 5mOhm • body material: TPU • contact material / Plating: CuSn / AuNi • maximum current: 4A (for 3-5 pins) • max. volt.: 230VAC/DC (for 3-4 pins)

Order no.	Type	Description	Guide price
81327	RKT 4-07/2M (11348)	Cable Socket M12 4P Female PVC orange 2 m	6,95 €
81531	RKWT 4-07/2M	Cable Socket M12 4P female angled PVC orange 2 m	6,94 €
219765	RST 4-07/5 M	Sensor Cordset, Single Ended, M12 M 4P, orange PVC 5 m	8,49 €

Reliable WiFi connection and kits with ESP32

ESPRESSIF

Espressif designed and manufactured several WiFi/BT modules and development boards to help users evaluate functionality of the ESP32 family of chips. The chip itself and modules based on ESP32 chip gained huge popularity and the number of applications built on ESPRESSIF modules grow exponentially.

WROOM and WROVER Modules

This is a family of small modules that contain ESP32 chip on board together with some key components including a crystal oscillator and an antenna matching circuit. This makes it easier to provide an ESP32 based solution ready to integrate into final products. Such modules can be also used for evaluation after adding a few extra components, like a programming interface, bootstrapping resistors and break out headers.

Newly introduced WROVER modules include a 4MB pSRAM chip, thus targeting a wide variety of applications.

To speed up development process, Espressif offers a Devkit with ESP32 chip and USB/UART converter embedded for easy programming. The ESP32-DevKitC has signals break out on two headers. There are 38 pins available in total including 3,3V power supply, I2C, UART and GPIO signals.

The ESP32-DevKitC is breadboard friendly and developers can start to play with ESP32 module virtually immediately after unpacking.
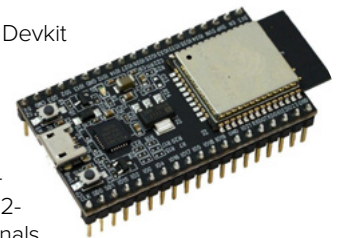
Features

• two independently-controlled CPU cores with adjustable clock frequency, ranging from 80 MHz to 240 MHz • +19.5 dBm output at the antenna ensures a good physical range • classic Bluetooth for legacy connections, also supporting L2CAP, SDP, GAP, SMP, AVDTP, AVCTP, A2DP (SNK) and AVRCP (CT) • support for Bluetooth Low Energy (BLE) profiles including L2CAP, GAP, GATT, SMP, and GATT-based profiles like BluFi, SPP-like, etc.

Order no.	Type	Description	Guide price
236729	ESP32-DevKitC	Development Board WiFi, BT 4.2	9,91 €

LexSystem SUPER Series Panel PC

LexSYSTEM

Outstanding connectivity, fanless cooling, ambient temperature working range -20 to 60°C, wide range of power input 9 to 36V DC, IP65 waterproof front panel protection. Simply SUPER.

15.1" (1024 x 768) display with 5-wire resistive or optionally PCAP multi-touch touch panel. Display brightness is 300 to 500 cd/m2 depending on the model. Front panel is dustproof and immune against water jets (IP65). Resistive touch panel is more immune against electromagnetic interference (EMI) than PCAP, therefore it is more appropriate for industrial environment but it detects only single touch. If your application requires multi-touch support similar to smartphone, choose PCAP touch panel.

Under the Hood

SUPER series Panel PCs are based on LexSystem 3I385CW single board computer with 4-core Intel Celeron J1900 processor. You only need to add RAM, mSATA SSD or 2,5" SSD and install operating system of your choice.

Display

SUPER series provides 7" (1024 x 600), 10.1" (1280 x 800), 10.4" (1024 x 768) and

Features

• fanless cooling • IP65 waterproof front panel protection • optional high brightness display, 1000 cd/m² • internal antennas support • wide range of temperature operation: -20°C to 60°C, with 0.5 m/s air flow • wide range of power input: 9 to 36V DC

Order no.	Type	Description	Guide price
264261	SUPER-10,1-3I385CW-D90-CTP	Panel PC 10,1" 1280 x 800 CTP Intel Celeron J1900 w/o RAM -20...60°	899 €
264282	SUPER-10,4-3I385CW-D90-CTP	Panel PC 10,4" 1024 x 768 CTP Intel Celeron J1900 w/o RAM -20...60°	669 €
264315	SUPER-15,1-3I385CW-D90-CTP	Panel PC 15,1" 1024 x 768 CTP Intel Celeron J1900 w/o RAM -20...60°	742 €

Fans with radically reduced noise and consumption

ebmpapst

Think economically. Try a radial fan with the modern GreenTech EC engine from the RADICAL series from EBM-Papst.

In electronics, majority of cooling tasks can be excellently performed by axial fans. But in cases when, for example, the cooling airflow has to be deflected at an angle of 90°, or if even greater pressure increase is necessary, centrifugal fans are more effective.

If it is your case, we definitely recommend you Radical series from manufacturer EBM-PAPST. We have extended the stock offer to the popular **K3G190-RC05-03** from the **RADICAL series**. We have chosen a model with support bas-ket because of easier fastening and positioning within the machine.

For RADICAL, the impeller styling has been optimized using complex simulation models adjusted to perfection by checking against prototypes.

The result is an optimal, low-loss flow of air through the impeller and so there are no drastic cross-sectional changes anymore - a well-known source of losses in the impeller. A uniform flow profile without separations also means fewer noise sources and thus better acoustics. This has been combined with the new GreenTech EC high-efficiency engine, resulting in a compact fan with significantly lower noise and half-power consumption compared to standard AC motors.

Features

• sizes ranging from 133mm up to 630mm • impeller with backward curved blades made from glass-reinforced plastic • high efficiency GreenTech EC motor • perfectly matching components - controller-motor-impeller • EC fans with 2 speeds or continuous control • available models with both, EC and AC motors • significantly reduced noise

Order no.	Type	Description	Guide price
172066	K3G190-RC05-03	Fan Centrifugal RadiCal 225x85,5mm 230VAC 765m³/h Ball	320 €

Measures up to 400A DC – wirelessly and at a good price!

VOLTCRAFT

Clamp meter can be advantageously used wherever you need to measure current without necessity to interrupt measured circuit.

To measure current "non-invasively" or for example to find a given lead in a net of other leads is an ideal task for a clamp meter.

Yes, in many cases it is possible (less or more laboriously) to disconnect the measured lead and to connect it into a series of a classic multimeter. It is even a more accurate measurement as there´s no risk of magnetic field influence but you´ll probably agree – it´s a far less comfortable solution and in many cases laborious, if not even impossible.

On the other hand, to catch the de-sired lead into a clamp meter is usually a breeze – for example in distribution boxes or other, not extremely dense installations.

A clamp meter can be usually very helpful for example also in one relatively frequent requirement – for identification of a lead through which a known current flows. There are situations when we know that, for example, through one of 100 leads flows a known current but we don´t know which lead it is.

The clamp meter is absolutely invaluable when when searching for a cause of a too frequent RCD (residual current disconnector) switching off. Already a resolution of mA or tens of mA is usually sufficient to identify which lead is responsible for those "lost" tens of mA, and also which is responsible for switching off the whole section connected the given RCD.

The VC-521 can replace a common multimeter as it´s able to measure voltage, current by means of jaws (even the DC!), frequency, duty cycle, capacity (already from nF), resistance, temperature, diodes and continuity.

A useful additional feature is also a non-contact detection of AC voltage (100-600V).

Features

• compact jaw multimeter with auto range selection • compact jaw multimeter with auto range selection • AC/ DC current measurement, 10mA resolution • AC/ DC voltage, 0.1 mV resolution • measurement of resistance, capacity, frequency, duty cycle and temperature • contactless AC voltage detection (NCV) • max. reading 3999 • high safety, CAT III/6000V • 30 mm jaws opening • functions Data Hold and REL • auto power off • powered by 2x AAA cell

Order no.	Type	Description	Guide price
151463	VC-521	Digital Mini AC/DC Clamp Meter	60,50 €

Control the laboratory power via Wi-Fi

100% equivalent output power, high efficiency with combination of low ripple, separate output channels. A user-friendly, high-performance resource from Rohde&Schwarz is affordable and also features a number of support functions for better work.

R&S sources NGE100 can be included in a group of basic laboratory sources with many surprises in the form of simple controls with a brief and clear graphic display, silence, PC connection and control, galvanic separation of all channels and much more.

Compared to comparable sources, NGE100 has up to 100% electrically equivalent output power, which can also

be understood as 2 sources in one (for 2 channel versions of NGE102). Each channel works completely independently, it has the already mentioned galvanic isolation.

Serial connection is a matter of course, so we can get a voltage of up to 64V from a 2-channel version and a 96-volt 3-channel version. Parallel connection can achieve a current of up to 9A.

For each channel it is possible to set the current and voltage separately. Assistance for the set value and no exceedance of the set value are electronic fuses for maximum overcurrent protection (OCP) and over voltage protection (OVP).

PC control is possible via USB (standard), LAN (NEC-K101 R & S package) or Wi-Fi wireless network (NGE-K102 R & S package). Therefore, this resource is suitable for the use in laboratory environments with a connection directly to your application. For example, R & S recommends installing in mounting racks, and so with other devices, create a measuring station according to the specifications.

Features

• max. output power 33.6W per channel. 66W (R & S NGE102) and 100W (R & S NGE103) • max. output voltage 32V per channel (64V to 96V at serial connection) • max. output current 3A per channel (6A to 9A with parallel connection) • electronic OCP fuse • overvoltage protection OVP • protection of the OPP • overtemperature protection OTP • interface: USB, LAN, Wi-Fi • optional digital I / O (4-bit)

Order no.	Type	Description	Guide price
237323	NGE102 (5601.1414.02)	Labor. power supply 2x32V/3A 66W 280 x 222 x 88 mm	612 €
237324	NGE103 (5601.1414.03)	Labor. power supply 3x32V/3A 99W 280x222x88mm	744 €

High-Voltage, High-Current DC Contactor

Have you ever seen 500 Amps? Have you ever tried to switch them? The DC ones? You can try it now with Kilovac's EV200HAANA from TE Connectivity.

Since 1964, **Kilovac** product line has been a synonym for high voltage switching under demanding climatic conditions, even in an explosive environment.

It is designed to be the smallest, lightest weight, lowest cost sealed contactor in the industry with its current rating (200A at 900Vdc, 500+A carry at lower voltage,

2000A interrupt at 320VDC).

If you really need to switch such huge currents, e.g. to switch batteries in backup system or to switch power module in solar system, it is time to tryEV200HAANA. It is also suitable for automotive or marine applications.

Features

• contact arrangement: One normally open Polarity Dependent (SPST-NO-DM, double-make) • continuous current:200A carry, up to 500A possible with busbar 150mm2, 250A - 60mm2 (1 wire) • rating switching voltage: 12 to 900V dc • Switching power: 200kW • auxiliary contact rating: 2A at 30V dc, 3A at 125V ac

Order no.	Type	Description	Guide price
154608	EV200HAANA (1-1618002-8)	Relay Contactor 500A/12-900VDC, SPST-NO, Screw	114 €

Try Professional Products for All Industries

We have enriched our portfolio with adhesives, a wide range of cleaners, lubricants, anti-corrosion products, welding products, jam release devices, and many other CRC Industries manufacturing, maintenance and servicing products.

Electronics and production of electronics is not only about soldering anymore. We know that many of our customers, apart from electronics, often need to solve mechanical aspects of the construction.

That´s why we´d like to highlight the fact that besides well-known popular Kontakt Chemie sprays (a member of CRC group), we can also supply almost any product of its mother company – CRC Industries.

We can find here for example adhesives, a wide spectrum of cleaners from mild to heavy duty ones, lubricants, anti-corrosive products, jam release devices and many others. Many products also meet demands for usage in food industry – "FPS"(Food processing safe) as well as a

stamp ecological/ biodegradable and on a water basis.

We can supply the following products directly from our stock:

Citro Cleaner – heavy duty cleaner with a pleasant citrus smell, based on natural orange terpens for safe cleaning of machines during maintenance.

Fast Dry Degreaser – fast drying and fast acting non-chlorinated cleaner

FPS Eco Foam Cleaner – heavy duty multi-purpose foam cleaner and degreaser on a water basis.

FPS 3-36 – multi-purpose agent, readily displaces humidity and preventing corrosion.

Order no.	Type	Description	Guide price
292551	Citro Cleaner 500ml	Heavy duty cleaner for safe cleaning of machinery and equipment	5,74 €
292537	Fast Dry Degreaser 500ml	Fast drying cleaner for heavy contaminants on mechanical parts, suitable for most plastics	5,89 €

More power for demanding applications

Myrra extends its product range of AC / DC converters by 20, 40 and 60W models that can be soldered directly to PCBs. Their technical parameters ensure high reliability and insulating durability.
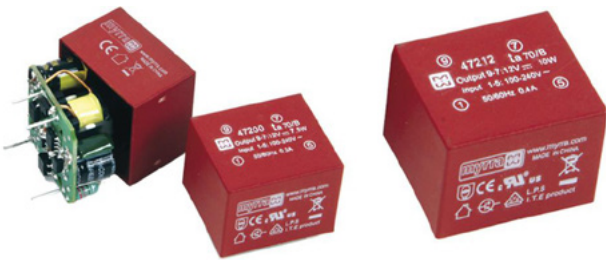
To meet customer requirements for higher power PSs, Myrra comes with

three new families of 20W (4722x), 40W (4723x) and 60W (4726x) compact-sized switched mode power supplies with output voltages of 3.3, 5, 9, 12, 15, 18 and 24VDC. Input voltages are in range of 85VAC-264VAC/47-63Hz or 120VDC-370VDC.

The very low Stand-by Power Consumption of only 0,1W meets the requirements of Energy Star and EC

Code of Conduct. Encapsulated design ensures high reliability and isolation strength.

All used materials for encapsulation are UL94-V0 compliant, which is an important requirement for electronic equipment. With very low level of conducted and radiated emissions, these power supplies conform to EN55014 CLASS B, EN55032 CLASS B and FCC Part 15.

Wide operation temperature range allows using 472Xx family of power supplies in harsh environments of up to 50°Cwithout derating and up to 80°C with power derating.

DC Output characteristics are also exceptional with ±3% output voltage accuracy, ±3% output voltage line regulation accuracy and max 20mV p-p ripple and noise figure.

Other characteristics include overcurrent protection, output short circuit protection and MTBF at 200k Hours minimum. Dielectric strength (Primary to Secondary) is 4kVac/5mA, max 3sec.

Features

• power ratings: 20W, 40W and 60W • single output • output voltage range: 5 – 24VDC (20W model also 3.3VDC) • input range: 85VAC-265VAC/47-63Hz, 120VDC-370VDC • very low stand-by power consumption • encapsulated design, PCB mounted • UL94-V0 certified materials • direct PCB mount • overcurrent protection • output short circuit protection • MTBF >200khours • Uiso = 4kVac• small dimensions: 20W: 65x35x25mm, 40W: 81x40x26,5mm, 60W: 95 x 47,5 x 29,5 mm

Order no.	Type	Description	Guide price
305728	47223	AC/DC Power Supply for PCB 20W 12V/1,7A Regulated	9,22 €
305734	47233	AC/DC Power Supply for PCB 40W 12V/3,3A Regulated	13,30 €
305740	47263	AC/DC Power Supply for PCB 60W 12V/5A Regulated	16,30 €

This is a short version of the article. The whole article can be found at web. Decode the link in QR code. **SOSnews**

VOC Sensor with 65uA Consumption Only

SGPC3 is designed to measure the volatile organic compounds (VOC) concentration in the indoor environment. As is usual with Sensirion products, the sensor is calibrated and the signal processing is integrated directly on the chip.

SGPC3, as well as SGP30, is based on the SGP multi-pixel platform and MOXSens® siloxane-resistant technology.

Why Measure VOC?

30% of new buildings have poor indoor air quality (IAQ), 20% of individuals complain about temporary or chronic pains due to poor IAQ (Sick Building Syndrome), increased VOC values have a significant negative effect on cognitive abilities like strategic thinking and decision making etc.

Current Consumption

After power-on or reset, the sensor goes into sleep mode with consumption 2uA.
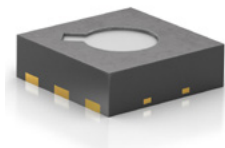
Before the first measurement, it is necessary to warm-up the sensor for 16 to 184s depending on the sensor downtime. For details, see section 3.9 of the Driver Integration Guide Hardware Gas Sensors SGPC3. During this time, the sensor has a consumption of 48mA.

After sensor warm-up, it is possible to start the measurement. Measurement typically takes 40ms, consumption is 48mA. Once the measurement is completed, the sensor enters sleep mode. For proper function of the dynamic baseline compensation algorithm, the measurement must be run every 2 seconds.

If we neglect initial sensor warm-up and consumption during I2C bus communication, the average consumption will be: (40ms * 48mA + 1960ms * 0.002mA) / 2000ms = 0.98mA.

SGPC3 allows reducing the average consumption to 65uA. In this mode, you have to run the measurement every 30 seconds.

Features

• outstanding long-term stability, siloxane-resistance • current consumption only 65uA • accuracy: typ. ±15% of meas. value in range 0.3 ppm to 30 ppm • easy-to-integrate: I2C interface; 2.45 x 2.45 x 0.9mm DFN package; 1.8V power supply.

Order no.	Type	Description	Guide price
289254	SGPC 3	Volatile Organic Compounds (VOC) sensor	5,46 €
289256	SEK-SGPC3	Evaluation Kit for SGPC3, SHTC1, SHTW2, SHT3x	90 €

Have you ever verified the authenticity of banknotes in your wallet?

New Kingbright UV LEDs are suitable for this and many other applications. Even though it may seem that they do not glow at all at first sight, they are the genuine UV light sources.

It´s not very common to promote LEDs with relatively low brightness (at first sight), when their light is unusually violet – almost invisible and moreover, they are relatively expensive. Then why are they so interesting? You can already probably guess the answer – the main spectrum of these LEDs lies in an invisible UV area.

There are a lot of applications using UV light. Let´s mention at least counterfeit money detection, curing of UV sensitive materials, check of used materials (for example transparent lacquers with UV tracer), etc.

Kingbright brings right two series of UV LEDs in SMT packages on the market:

KTS 2012 - low-power LED with a max. forward current of 30 mA in an SMT package of 2,0x1,2mm size.

KTS 3534 – high-power LED with max. forward current of 500mA (cca 1.7W) in an SMT package of 3,5x3,4mm

Both series are available in several variants based on the dominant wavelength - 365, 375, 385, 395 and 405nm. Emitted light spectrum is relatively narrow – its width is only approximately 10nm for 50% light decrease. Thus, these are the genuine UV light sources, not only a blue light source with a small fraction of UV light.

Higher energy of UV light photons requires higher LED forward voltage than it is for white LEDs (which are in fact blue LEDs with a conversion to a white spectrum) and it´s about 3.4 up to max 3.9V.
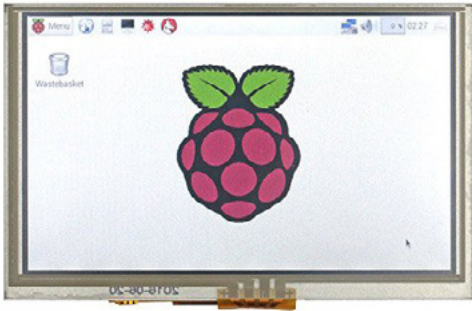
Guide price of these UV LEDs ranges approximately from 0.50 to 7 Euro/pc depending on a type and dominant wavelength; 365nm versions are the most expensive.

TFT display Winstar WF50B with HDMI interface

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 simplest 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 Winstar. 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 • resolution of 800x480 px • operating temperatures range 0 … +70´C • resistive TP with USB interface • resistive TP with USB interface

Order no.	Type	Description	Guide price
236045	WF50BTIFGDHTX	TFT-LCD Module 5,0" 800x480 24Bit RGB RTP HDMI	39,90 €

UCS - enclosure that suits your needs

Phoenix Contact brings a unique series of electronics enclosures to the market. UCS offers a modular design, rich accessories and easy PCB assembly of any shape.

Thanks to the rapid increase in the performance of integrated software and hardware, embedded systems play a key role in many autonomous and also complex complete systems. Reliable, highly flexibility and long-term available enclosure is highly desirable for these devices.

The Universal Case System "UCS"

Device manufacturers use both standardized and in-house developed printed circuit boards, which require a housing that effectively protects them against environmental impacts. The market already offers a very large number of enclosure systems serving this purpose.

The systems are manufactured either specifically for an application, or basic housings are modified for the respective application at additional costs.

Also to stand out of the competition through the sophisticated design of your device and a possibility to respond quickly to customer, specific requirements are quite beneficial. This is where the modular design of the Universal Case System (UCS) is particularly advantageous.

Modularity and flexibility

The UCS housing consists of two identical half-shells, removable side panels and colour-contrasting corner inserts. If more installation space is required for the same area, the Universal Case System offers an interesting solution: side panels and screws are replaced by a 20 mm higher version and supplemented by a height adapter (change from 47mm to 67 mm height). This makes it easy to generate a new housing size.

Features

• high level of flexibility, modular design • flexible PCB mounting for virtually all form factors • various sizes (widths and lengths) are available • 47mm/ 67mm high • reduced logistics thanks to mutually compatible components • elegant, modern design

Order no.	Type	Description	Guide price
304003	UCS 125-87-F-GD 7035 (2203328)	Enclosure PC 125x87x47mm Light Grey	24,70 €
304011	UCS 195-145-F-GD 7035 (2203336)	Enclosure PC 195x145x47mm Light Grey	36,20 €

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.

SCHURTER

Declaration after antivandal button test

I'm a proud vandal. I'm observant. I walk with eyes open and I'm not indifferent to new things. I'm a specialist. Electrician. I'm not afraid of electricity. But like everybody else, I also have a soft spot. It's buttons and switches.

I'm vandal but I'm sensitive. I feel really offended by the recent initiative of authorities to deploy devices that are explicitly directed against me, antivandal devices, to publicly accessible places like offices, lifts, business centres. Why?

Why aren't they anti-fascist, anticommunist? Those are worse after all – they hurt people.

I support technical development, give people jobs. And thanks to my hobby I don't spend time hanging out in pubs or in front of PC. Devices won't come to me. Ok, maybe bus.

I'm vandal but not lout. It's true that I notice even glass. But only when it poses a security risk – when someone is in danger of overlooking it and can hit it. Otherwise, I only do what I know – buttons, switches, circuit breakers.

And I don't even use swear words and vulgar expressions. Only exceptionally when I don't do well.

Like recently. I got so angry.

I was in a new shopping centre and I spotted an ATM in the corner. It seemed like I did not wake up in the morning for nothing. But antivandal was already looking from the distance. Why? Why nobody likes me?

Well ok, today, all ATMs are antivandal. But I'm not the first or the only one. Even my grandpa was vandal. He was the first who broke one loudspeaker in our village. I'm so proud of him – it was in height of 7m.

My ATM had this:

At first sight I can see that it is, as we call it, 18 (mounting hole 18mm). I caress it with my fingertips. Great – no nickel-plated zinc alloy but genuine stainless steel. But what for? It's not raining here.

Is it because of me? Because I can accidentally spill about 1.2 litres from my mineral water bottle right on the button panel?

I'm pushing – everything works. I could think of it - IP68.

I am strong enough, I even start to be nervous so I push really hard and hard and once again and ... NOTHING.

So I try to use a match. It usually works but this is so precisely tight that there is no place to stick it.

So I took a deep breath and then even a deeper breathing out. I pulled the spray from my pocket and sprayed it all over. Just to let them know they should not provoke decent people.
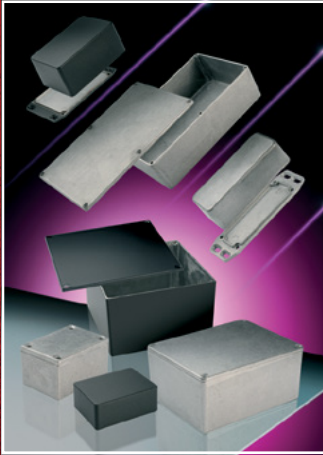
P.S. If my vandal colleagues are reading it, this is what I found at home: 1301-9560

Please, look at it and try to think of something. Technological development cannot stand on one point.

Order no.	Type	Description	Guide price
143232	1301.9560	MCS ES18 Push Button Antivandal D18mm IP65	8,96 €
61965	1241.2800	Push-button on panel IP65 D=19mm 48Vdc/125mA	5,13 €
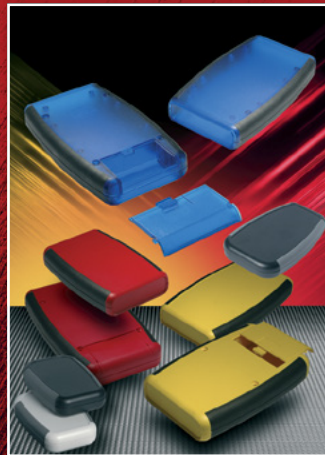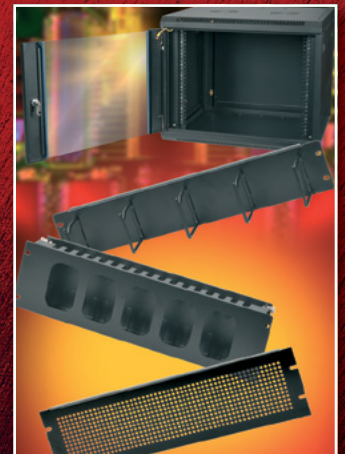
We will advise you
How to properly choose a thermal camera

Something for the development, industry or for a smartphone?
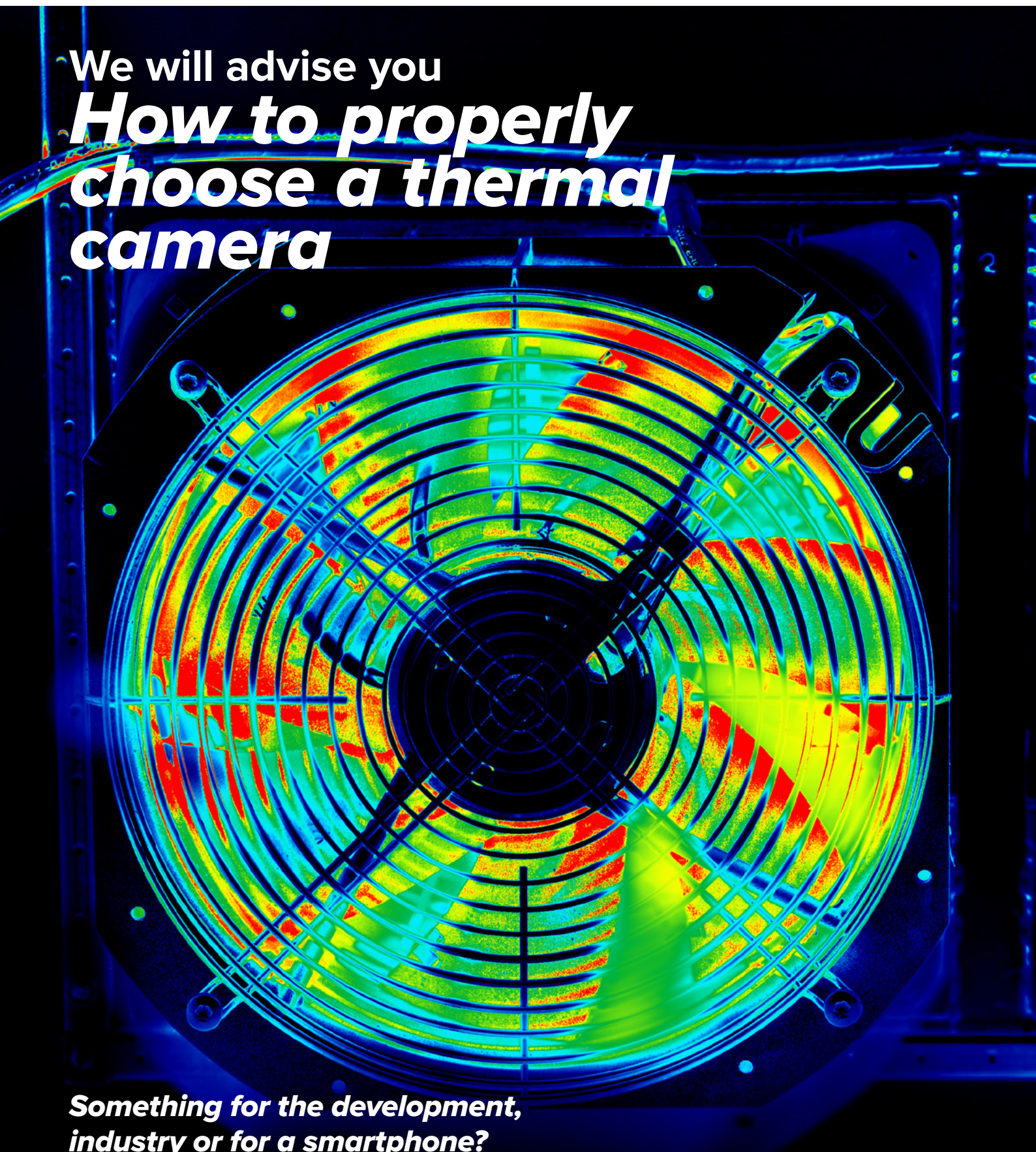
How to properly choose a thermal camera

Something for the development, industry or for a smartphone? 320 x 240 pix or 160 x 120 pix is sufficient? We will give you answers to the most frequently asked questions, parameter specifications, and specific product recommendations by the type of measurement.

Selecting a new thermal camera is just like buying a new regular camera. They have very similar patterns, technologies and the logic of the whole concept. We use thermal camera to take pictures, make videos – same as with the regular camera. Today, many of us use a smartphone for a fast and relatively high-quality photo, but professionals will appreciate the so-called "reflex camera".

What is a thermal camera and related science, infrared thermography and thermogram?

Infrared thermography
It is a new science discipline that deals with the analysis of the distribution of the temperature field on the object surface in a contactless manner. The role of the thermo-graphy is the analysis of the infrared energy emitted from an object. The thermographic measurement system can display the temperature field of the measured object, but only on its surface.

Thermal cameras
They allow you to see the infrared radiation of the object so that it can be seen (visualization). The output from the thermal camera is the infrared picture. It is called thermogram. Radiometric thermal cameras allow the user to determine the temperature at each point of the thermogram. However, determining the temperature is not easy. It depends on several parameters. One of the main parameters is object emissivity. The ideal black object has emissivity 1, polished objects have a very low emissivity (up to 0.1).

Thermogram
Or infrared image is an image crea-ted by a thermal camera. Infrared radiation is invisible to the human eye, and therefore thermal images are visualized using the pallets that assign colour to different temperatures (different amount of heat flux). The same image can be thus displayed in different colour pallets to highlight other places.

Make your work easier with the thermal camera.

How to choose the best thermal camera?

Time goes forward and it is more than good to have an overview of how to make things easier or even leave it to tools or machines. The thermal camera will help you here for sure. Before we start breaking down the technical parameters, two basic things need to be clarified:

1. What I'm going to use the thermal camera for? *Selecting the application is the most important part. Do I work on electronic device installations, on device development, or on PCBs?*

2. What should it and can bring to me? *If we already know, which purpose the thermal camera will serve for, we will share some information thanks to which you can choose the best thermal camera for your needs.*

Shape and design ideal for work
The standard thermal camera is held in one hand, secured by a strap on the hand or attached to the tripod. The selection is huge. Wallet size model, with fixed base, durable industrial thermal cameras or miniature models combined with a smartphone. Some models bring more transporting practicality, another more stable solution.

Distance from the measured object, resolution and temperature range

The most important technical parameters are:

- *distance from the measured object (in meters),*
- *sensor resolution (in pixels),*
- *temperature range (in °C), in which we want to measure.*

Nowadays, you can choose from large amounts of thermal cameras.

**The most frequently used applications are:**

- *measurement of air conditioning units or heat loss in buildings,*
- *measuring on the electrical switchboard,*
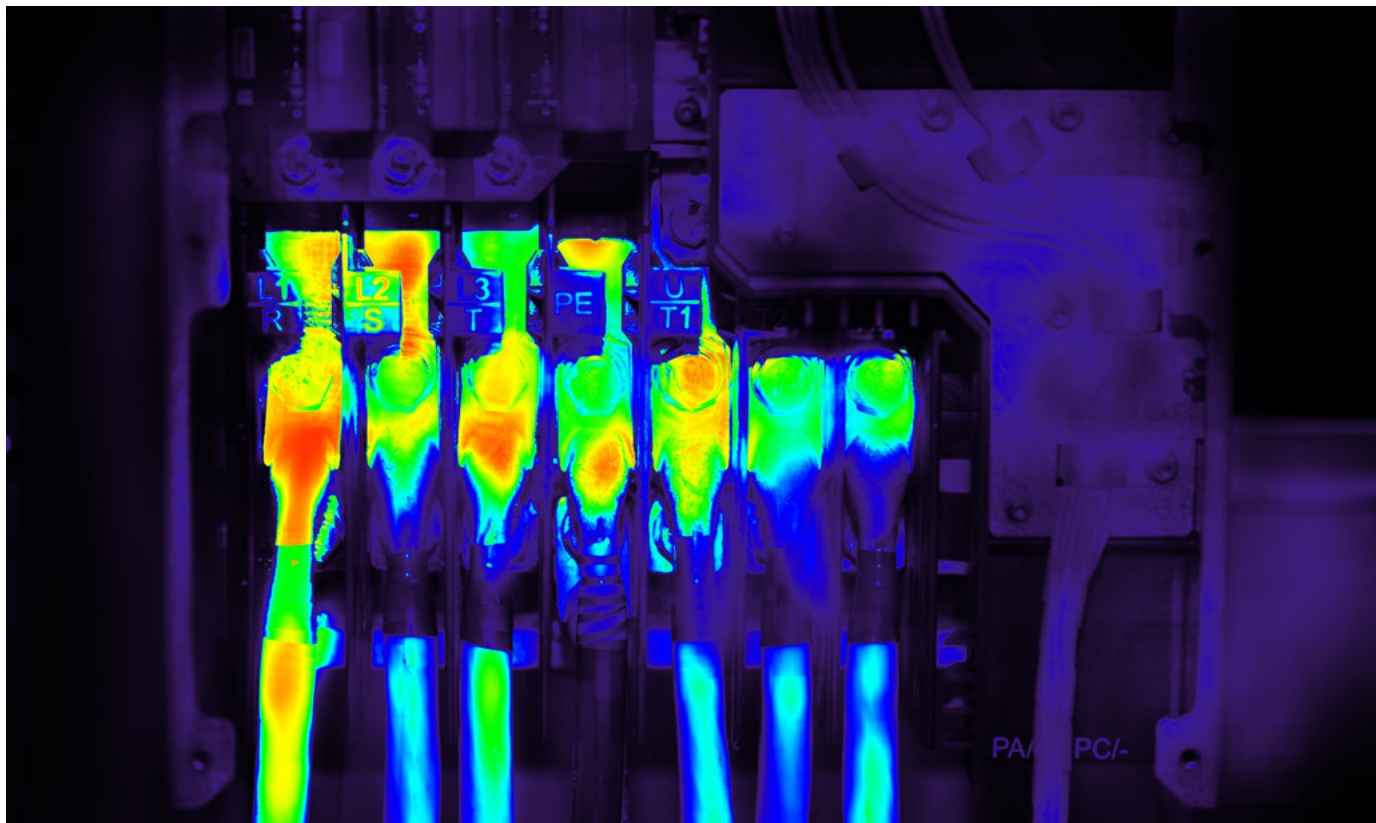- *measuring on the PCBs with SMD components.*

Air-conditioning units or buildings:
Most of these are large devices, from the perspective of today's "mini-electronics", so it will be enough to measure a few meters away from the device. The temperature will be around the room temperature and the resolution requirement is lower than in the other applications listed below. Plus, it's easy to handle the device.

Measuring on the electrical switchboards:
At first glance, there are larger and smaller elements, parts (hereinafter referred to as objects). It is simply not possible to determine whether large or small objects have to be measured for longer or shorter distances. It will require something universal. From the temperature point of view, it is possible to find destructions of the given objects or shortcuts in the switchboard. We think that in this case we can get 100° C or even more. A very valuable feature is the resistance to eventual fall and resistance of the device as such.
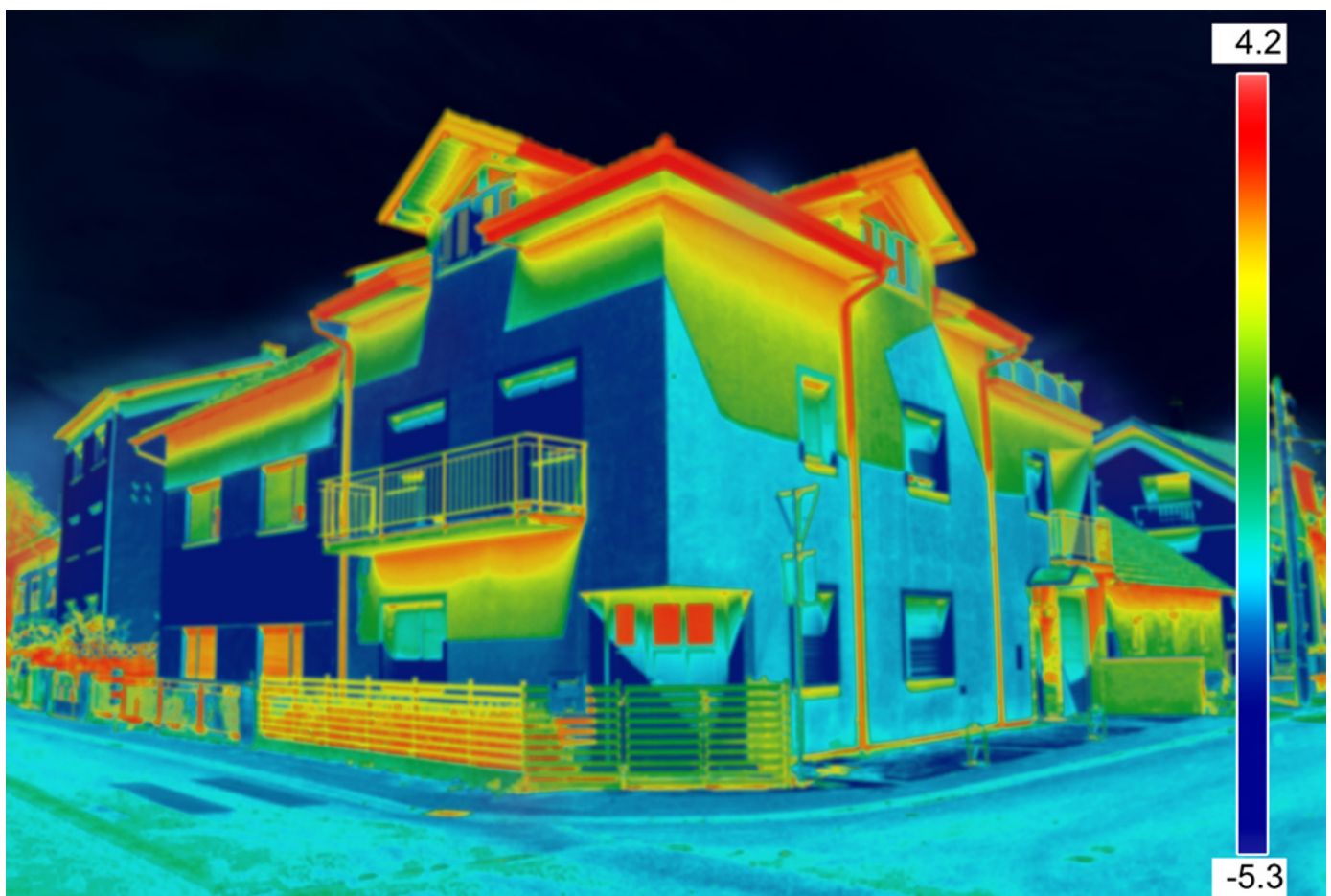
Measuring on the PCBs with SMD components:

Detail and sensitivity are parameters number one. Sharp focus of the SMD component of 1x0.5 mm is a difficult task, but it's not impossible. The measurement will not take place on more than 20cm, unless we want to target the entire PCB. The current values are not in tens of Amps like at the switchboard, so the short circuit will not be so dramatic. But the temperature can reach 100° C even in this case. Again, the large plus is a stable base with the possibility of fixed PCBs and thermal camera.

Technical parameters

Simple, basic distribution:

Sensor resolution:

The resolution determines how many pixels will the given object capture, i.e., the more pixels, the greater the image accuracy and the quality of the measurement. The subject of resolution, pixels, aspect ratios may be known to us from the areas of video quality or TV selection. The resolu-

tion is typically from 80x60 pixels to 640x480 pixels in a 4:3 ratio. Good resolution for quality images is from 160x120 pixels.

3 groups of resolutions:

- 80x60 pix., 120x90 pix. basic class

- 160x120 pix., 220x165 pix., 240x180 pix. middle class

- 260x195 pix., 320x240 pix. a 640x480pix. professional class

Common resolution can be improved by Super-resolution. It is a software version for professional thermal cameras. All the listed resolutions can be found on our website.

Temperature range:

The range fluctuates from minus temperatures (-25 ° C) to several positive temperature levels. In our e-shop you will find thermo cameras at a positive level from + 150° C up to + 1200° C.

If we divide these temperature ranges into categories, we have again 3 groups:

- up to 250° C base class

- up to 650° C middle class

- up to 1200° C professional class

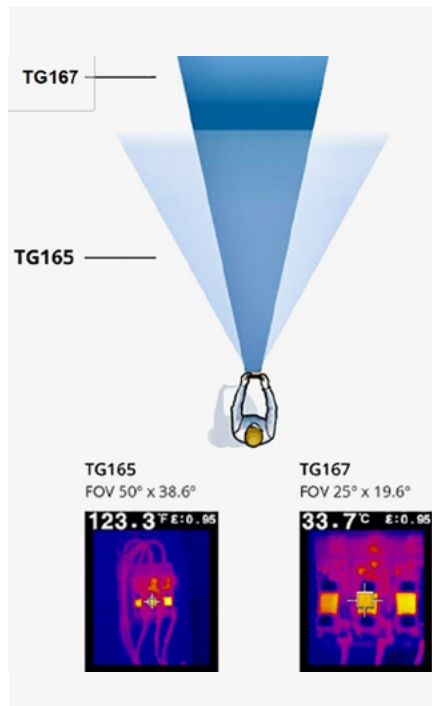### Distance from the measured object, fixed or manual focus:

Focal length is typically 0.15m or 0.45m in basic thermal cameras with fixed focus. With manual focusing, this distance can be set manually (in the same way as for lenses). For high-end thermal cameras, these lenses can be purchased:
Macro lens for the measuring on processor, wide-angle lens for measurement in hard-to-reach places or 2x or 4x zoom telephoto lens for measuring off-grid electricity distribution (in a distribution system).

- Fixed focus - Basic class

- Manual focus 0.15-0.45m - Medium class

- Interchangeable lens and manual focus on each of them - Professional class

Angle of view:

This parameter is closely related to the focal length. The larger the focal length, the smaller the angle of view is. The angle of view is inversely proportional to the distance from the measured object. We are on a scale from 24° up to 55° vertically. We can fundamentally change this value by a series of lenses.

TG165
FOV 50° x 38.6°

TG167
FOV 25° x 19.6°

Infrared Lenses

Model		Field of View	Spatial Resolution (IFOV)	Minimum Focus Distance
	FLK-LENS/TELE2 2x Telephoto	12 ° x 9 °	0.65 mRad	45 cm (18 in)
	FLK-LENS/WIDE2 Wide-angle	46 ° x 34 °	2.62 mRad	15 cm (6 in)
	FLK-LENS/4XTELE2 4x Telephoto	6.0 ° x 4.5 °	0.33 mRad	1.5 m (5 ft)
	FLK-LENS/25MAC2 25-micron macro	36.1 ° x 27.1 °	1.97 mRad	**Optimal Focus Distance** 10.2 mm (0.4 in)

Note: The spatial resolution listed is based on use with a 320 x 240 camera.

Sensitivity:

One of the main parameters for detailed measurements. The theory says: "The temperature sensitivity expresses the smallest temperature differences on the surface of the black body that the thermal camera can record. The higher the sensitivity, the more accurate the measurement is. " This parameter is in proportion to the resolution value chosen by the manufacturer, so it is not necessary to fundamentally deal with it for the initial selection. It is not as decisive as a resolution or temperature range.

Emissivity:

Emissivity is the optical feature of a material that describes how much light was emitted from the material in relation to the amount emitted by the black body at the same temperature. The black body is the ideal body that absorbs all the radiation. At the same time, it is also an ideal radiator - the radiation of the black body is maximal and depends only on temperature. The spectral distribution of the intensity of the black body radiation is given by Planck's law. The emissivity is set on the thermal camera manually. In both, basic and professional thermal cameras, there is no difference.

Sharing your work and other features:

In addition to the high quality result of your measurement, it is necessary to think of the whole application also from the point of view of the "outside the thermal camera". How will the image be processed? Does this result need to be sent to customers? Do I work in the development and want to see the results in real time on my PC?

All of the above questions can be implemented to achieve effective work.

Basic thermal camera is not recommended for SMD devices

List of PC software:

Fluke Connect, Fluke SmartView Flir Tools, Flir Tools+ and others.

The biggest mistake when selecting and operating the thermal camera:

It is not a mistake to take a more powerful device for not too specific measurements. **The mistake is if you choose a device with basic parameters for more demanding applications.** You would surely not use your VGA camera mobile phone at a photo competition. Therefore, we do not recommend you to measure SMD parts with the basic class of thermal cameras as you will not achieve satisfactory results.

Another mistake is the measurement of glass or extremely smooth and glossy surfaces. Here, the user can measure himself with the thermal camera in his hand (image reflection). If the thermal camera is intended to be used to measure these surfaces, it is appropriate to blacken or otherwise roughen the object. If this is not possible, we do not recommend such technology (thermo vision).

For the first experience with the thermal camera, we recommend you to invest at most in the middle class of the thermal cameras. Consider a lot more parameters than just the resolution or the temperature range when selecting the right one for you.

Specific products

Air-conditioning unit or buildings:

A suitable product from our offer is **Flir C3**. It offers a resolution of 80x60 pixels and a temperature range of -10° C ... + 150° C. The focal length is 1m MSX from the measured object, fixed lens. An advantage is the touch screen, easy control, the size of this device, WiFi for connectivity in combination with FlirTools PC-based image processing software.

The competition is **Flir One Pro**. With smaller structure and parameters it leads over Flir C3, but after saving the thermographic image to a PC, it can no longer be processed. Other application areas: solar panels, storage humidity, heat dissipation, heat distribution for solid fuel boilers and others.

Basic line

Temperature range: **-10...+150℃**
Resolution: **80x60 pix.**
Lens: **fixed, non-replaceable**
Other: **touch screen, Wi-Fi, Flir Tools**

Why do we recommend?

- **Small size and weight 130g**
- **Resistance**
- **Wi-Fi + Flir Tools**

Measuring on the electrical switchboards:

It is universal. Golden mean.

Fluke TiS 45 is the first thermal camera with manual focus in this category. With this device, you can easily handle, for example, electrical current distribution, mechanical parts heating control, engine control. The lens is non-replaceable.

Middle line

Temperature range: **-20...+350℃**
Resolution: **160x120 pix.**
Lens: **manual, non-replaceable**
Other: **Fluke Connect**

Why do we recommend?

- **Universal for any measurement**
- **Manual setting of focal length**
- **Extensive accessories including factory calibration**

Measuring on the PCBs with SMD components:

*For detailed measurements, you will definitely need solid base or a tripod. The **Flir ETS 320** delivers great results at a distance of several millimetres. Because of its stability, there is no blur in the final picture. With this thermal camera, you will also appreciate the real-time tracking along with the record. Therefore, it is suitable for applications where we monitor the temperature of the measuring device at a certain time after it is switched on (temperature changes on the PCB and their interaction with each other).*
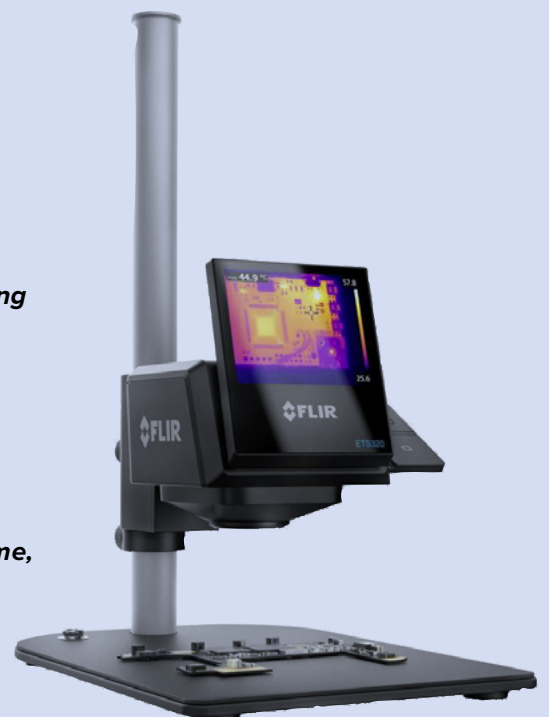
Middle-professional line

*Temperature range: **-20...+250°C**
Resolution: **320x240 pix.**
Lens: **manual, non-changeable**
Other: **Flir Tools, real-time tracking***

Why do we recommend?

- **Fixed base**
- **Image directly on PC in real time, tracking backward**
- **Not dependant on batteries**

What our customers say...

SILICON LABORATORIES HUNGARY Kft.

❝ *When developing applications based on integrated circuits, the thermal camera is an irreplaceable tool. Our department focuses on the design of DC / DC converters with power from 1W up to 60W, using the thermal camera for:*

- *location of damaged components,*

- *optimizing the size of the snubber resistance*

- *optimizing efficiency*

- *optimization of PCB thermal capacity*

MELIS ENDRE - NANOSPACE Bt.

❝ *I usually perform checks in case of new electronic devices - I usually check the temperature of the power semiconductors. The biggest disadvantage of the classic "touch, and if it's hot, shout" test is (except that we should not touch high-voltage electronic devices) that the finger can easily and quickly change the temperature of the small circuit and therefore we can get a wrong result. Not to mention the accuracy of "measurement"! Another problem can occur in the case of a slight temperature change. When we, using our finger, remove as much heat as the change would be we act as a heatsink. But once the finger is off, the device can slowly warm up to the point of failure. In the meantime, with the finger on the chip, we are happy because we think the temperature stagnates.*

Another advantage of the thermal camera is that it is possible to simultaneously watch the heating of all - or at least several - components. It makes it easier to find a heat source and can be used with another PCB design.

Another useful application in the electrotechnical industry is simple and quick temperature check in, for example switch boxes, enclosures, or in the case of damaged and poorly dimensioned cables. "

(but I happened to find myself in a situation when I needed the thermal camera to measure the patient's temperature :-)