

# THE RED BOOK COMPACT



A Phoenix Mecano Company



**BOPLA**  
enclosures ■ content matters

# BOPLA – Enclosures which provide a home for electronics.

## STANDARD ENCLOSURE

- Enclosures from our catalogue in PC UL 94 V0, ABS, polyester or aluminium up to IP69
- Individual design options
- For use in all industries, medical, railways, process & control, agriculture & more

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**This is how solutions develop** – Take advantage of our services and HMI systems:

### Mechanical processing

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### Surface improvement

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### Integration of electronics

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### Mounting / Testing / Packaging

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## CUSTOM-DESIGNED ENCLOSURES

- Standard enclosures + HMI + services
- Intensive consulting and development
- Everything from a single source

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## SYSTEM INTEGRATION

- Standard enclosures + HMI + services
- Intensive consulting and development
- Everything from a single source

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### Front membranes

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### Touch-/display integration

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### Printed electronics

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### Quick-Finder:

The Quick-Finder gets you there faster!  
Enter the code (e.g. #35) into the search box  
on our website or add it to the address  
(e.g. [www.bopla.de/35](http://www.bopla.de/35)).



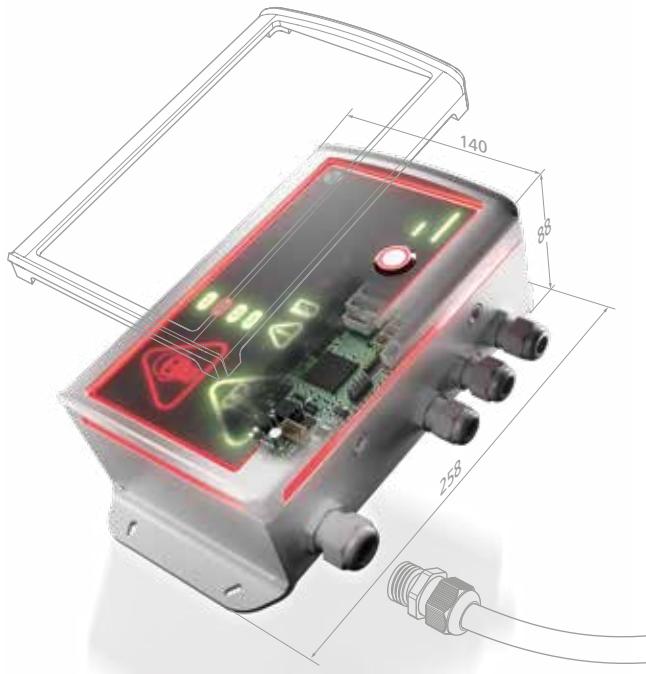
### Our website contains the following details of all our products:

- Technical drawings (PDF, DXF, STP)
- Article numbers
- Material data and factory test certificates
- Assembly Instructions
- Fast quote request thanks to shopping basket function
- ... and much more

# Application areas at a glance.

Your electronics are unique and valuable, so their packaging must be of the highest quality: BOPLA enclosures protect internal components from damage and give your devices a distinctive look thanks to a wide variety of designs.

Take a look at our extensive range of enclosures and make your initial selection here.



## Industrial enclosures



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## Custom-designed enclosures

## Manufacturing processes 30–33 and applications

# At home in every sector



## Fire protection technology

Modern technology helps to minimise the risk of fire and to take protective measures. Flame-retardant and self-extinguishing polycarbonate enclosures in a UL 94 V-0 version are a good choice.



## Environmental technology

Intelligent technology in controllers for refuse collection vehicles, particulate measuring equipment or toxicity testers plays its part in protecting our environment against pollution.



## Sensor technology

The connectivity of the machines is very important for production. Our compact enclosures provide space for sensors, radio modules and the power supply.



## Measurement, control and instrumentation applications

Where devices are used for data capture, voltage tests or system control, the electronics must also be securely protected.



## Water technology

The technical features of our enclosures, for example separable terminal compartments, guarantee high operator friendliness for water quality measuring devices, pump or filter control units.



## Laboratory technology

Electronic measuring devices and vacuum apparatus are important appliances in a laboratory, and they require a reliable enclosure.



## Renewable energies

Electricity cannot get into the network without electronic control systems. In many cases, these systems are exposed to difficult weather conditions and UV radiation, which is why they need a high protection class.



## Agricultural technology

Modern agriculture without electronics? Inconceivable! Enclosures used in this sector must exhibit a good protection class and impact resistance.



## Audio, video and lighting technology

Controlling lighting systems and pyro technology, or the integration of audio amplifiers, require application-specific electronics enclosures.



## Medical technology

Hygiene is the top priority in medical technology. For this reason, diagnostic or analysis devices used in operating theatres must have surfaces which are easy to clean.

# Services



**Our enclosures are machine-finished on the premises. At BOPLA, we have an experienced workforce as well as state-of-the-art machine and systems. A combination that ensures you affordable production runs at a consistently high standard of quality.**

We offer you a complete "All-round carefree package" with a wide range of intelligent services, tailor-made for your application.

For more than 50 years we have been your partner for sophisticated solutions, and we have constantly expanded and perfected our range of services. Form your own opinion of our know-how: machining service, membrane keypads / HMIs and system integration. We look forward to seeing you!

# Machining service

## Milling, drilling, countersinking and thread-cutting

Our highly qualified employees carry out processing for you on modern CNC machines and equipment. This ensures constant and even quality of work. In addition, the overall solution consisting of the enclosure and customer-specific processing results in optimal delivery times while reducing both the risk of rejects and transport costs.



Quick-Finder:  
[www.bopla.de/14](http://www.bopla.de/14)



### Standard milling contours

Do you want to fit components such as Sub-D connectors or cable glands into your enclosure? Our website has a DXF file with ready-to-use milling contours for this.



On request we manufacture individual enclosures using the stamping and bending process.



We adapt extruded aluminium profiles to the required length in accordance with your specifications.

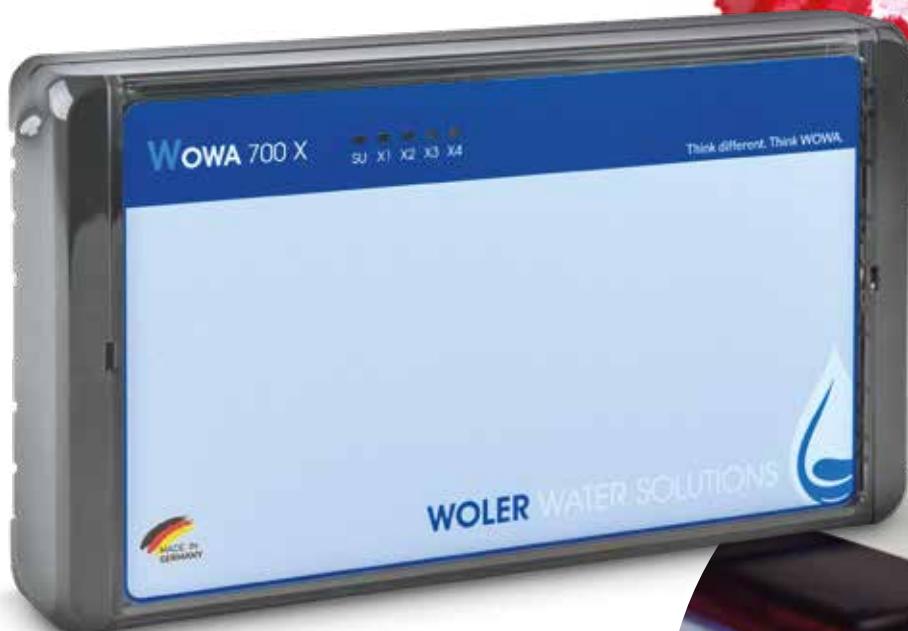
### Ultrasonic welding

We use a special ultrasonic welding method to join the screw domes to our enclosures.

All our plastic enclosures are equipped with screw bosses made of plastic to fasten the mounting plates or PCBs. If you would like additional fasteners in another position, then we can carry out this requirement by welding in customized screw domes.

# Services

By "surface improvement" we mean all the technical processes used during production of a part in order to improve the surface characteristics. These characteristics maybe functional or decorative, or a combination of both.



## Digital printing

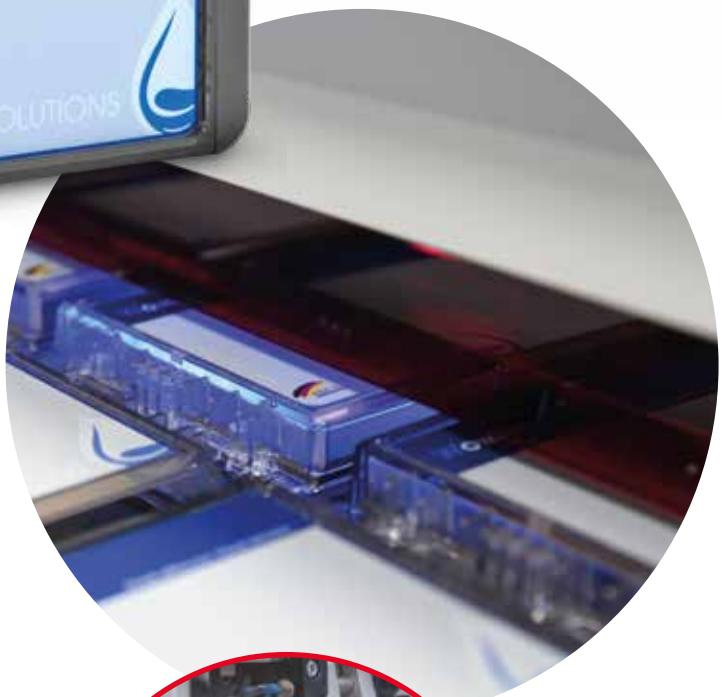
In principle all types of enclosures can be designed using digital printing. The digital printers which we use allow the printing of enclosures up to a weight of 8 kg and maximum dimensions of 690 x 490 x 150 mm (L x W x H). Depending on their size and weight, multiple enclosures can be printed at the same time.

## Silk screen and pad printing

We use silk screen and pad printing in accordance with your specifications in RAL, Pantone or HKS colours. Our modern machinery and high-quality ink guarantee optimal print quality.

Your advantages:

- High level of coverage
- Special colours are available, e.g. gold, silver, etc.
- Extremely tough and durable



# Surface improvement

## Laser marking

Flexible, scratch resistant and environmentally friendly. Thanks to the innovative laser process, even changing layouts during every marking procedure is not a problem. In addition, the method is extremely precise, including with narrow line thicknesses and small symbols, and it also offers absolute abrasion resistance to chemicals.



## Engraving

Engraving involves the cutting of letters or images in aluminium and plastic components, for example in enclosures, part front panels, plug-in front panels and profiles.

Classical engraving takes place using a graver or a cutter on the surfaces. During this process, the rotating tools remove material, creating a visual contrast to the background.



## Lacquering

Lacquering is an additional method of refining our enclosures and components. Lacquers are liquid or powdery coating materials which can be applied thinly to our enclosures or components and, by means of chemical or physical processes such as the vaporisation of the solvent, result in the building up of a continuous, solid film.



## Powder-coating

Powder-coating is a process in which powder is applied to our metal enclosures. As part of the process, the enclosures are transported by a conveyor system. Powder-coated enclosures are extremely tough mechanically, and have better mechanical characteristics (impact and scratch resistance) than the untreated metal enclosures.



## EMC coating

BOPLA is your competent partner when it is necessary to protect electronics against external interference. We provide three processes which offer you the necessary protection.

### Plastic enclosures:

- Copper-chrome-nickel evaporation
- Aluminium evaporation
- Lacquering with conductive copper lacquer



### Aluminium enclosures:

Even without any additional screening measures, the electrically conductive base material used for the aluminium enclosure provides good basic screening, and optional accessories can be used to optimise this.

# Services



# Integration of electronics

## The heart of your product

We offer the full range of services, from development support for the electronic module to materials management and production up to complete assembly of your individual enclosure. A comprehensive end-of-line test is also one of our services.

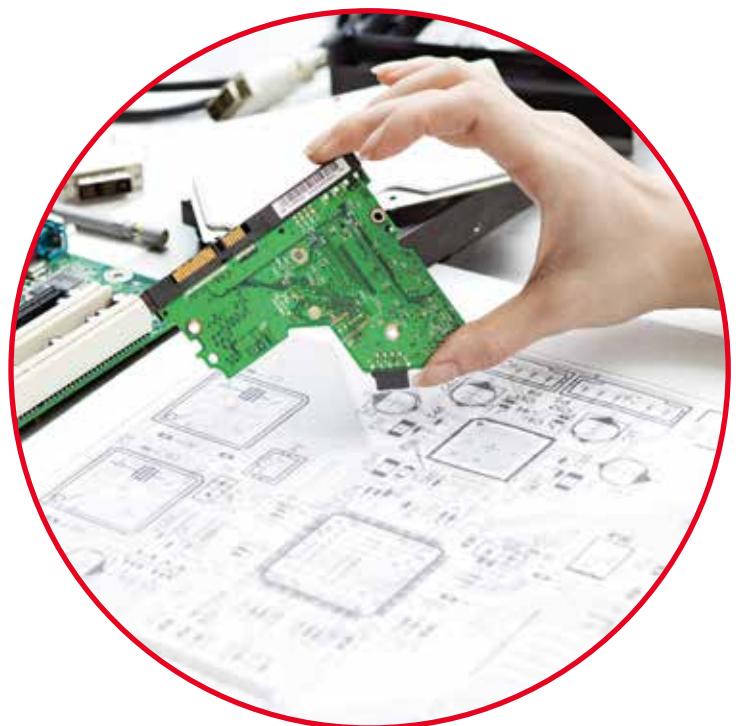


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[www.bopla.de/90](http://www.bopla.de/90)

### Development support

Every project starts with a detailed concept phase in which we provide comprehensive advice and then define the tasks, requirements and workload. On the basis of these factors, we prepare a cost overview for your end product.

Your Bopla contacts accompany you reliably during the entire process.



### Manufacturing

You benefit from our electronics services as a result of economic efficiency and short delivery times. In addition, consistent quality management in order production ensures the constant high standard of the modules.

#### Extract from our services:

- SMD and THT insertion of all design shapes
- High-precision and performance automatic machines for all batch sizes
- Various soldering processes
- Conventional assembly of all designs
- Separate area for small and special series production

### Completion / Testing

Following your instructions, we will gladly carry out the integration of:

- Electronic modules
- Electromechanical components
- Touch screens / display units
- Membrane keypads and decor foils
- Cables and connection leads
- EMC screening

# Services



# Mounting / Testing / Packaging

## The perfect result

For mechanical processing, mounting of the enclosure parts or additional mechanical mounting of membrane keypads – this is how you minimise the amount of your in-house work, and we take over the risk of manufacturing faulty products.

### For example, we take care of the following for you:

- Mounting of subracks
- Installation of cable glands
- Installation of DIN rails
- Soldering and bonding work
- Completion

If there are special demands in respect of particle-free mounting of your optical, electronic and precision components, a work table is available which operates with a vertical flow of air and is assigned to purity class 6 according to DIN EN ISO 14644-1.



## Protection type testing

Many of our enclosures already provide high levels of protection as standard. If these levels are not adequate for your application, we test the feasibility of a higher level of protection in our in-house laboratory.

## Individual marking & packaging

In recent years there has been a considerable increase in the requirement for tailor-made packaging, especially in the integrated complete solution sector. We have worked hard to deal with these enquiries, and we offer our customers the necessary technical competence in order to meet their specific wishes.

We will be happy to work closely with you as early as the offer phase of a project in order to define your requirements in detail with our logistics experts.



Quick-Finder:  
[www.bopla.de/102](http://www.bopla.de/102)

# Membrane keypads



**The front membrane is the visual and tactile interface between your membrane keypad and the user. It can be labelled and surface-finished using a number of different printing and embossing methods.**

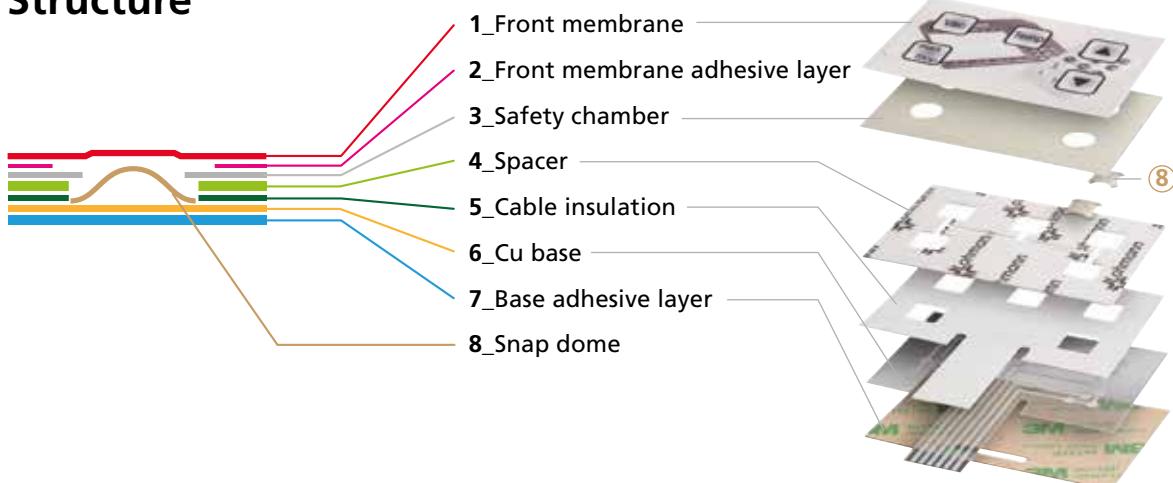
The visual impression made is also of decisive importance for the appeal of your device! Various materials, including polyester and polycarbonate, combined with geometrical flexibility, colour and design, permit ergonomically rational flat membrane keypads for electronically controlled devices.



Watch live now: [www.bopla.de/72](http://www.bopla.de/72)

# Individual and high-quality

## Structure

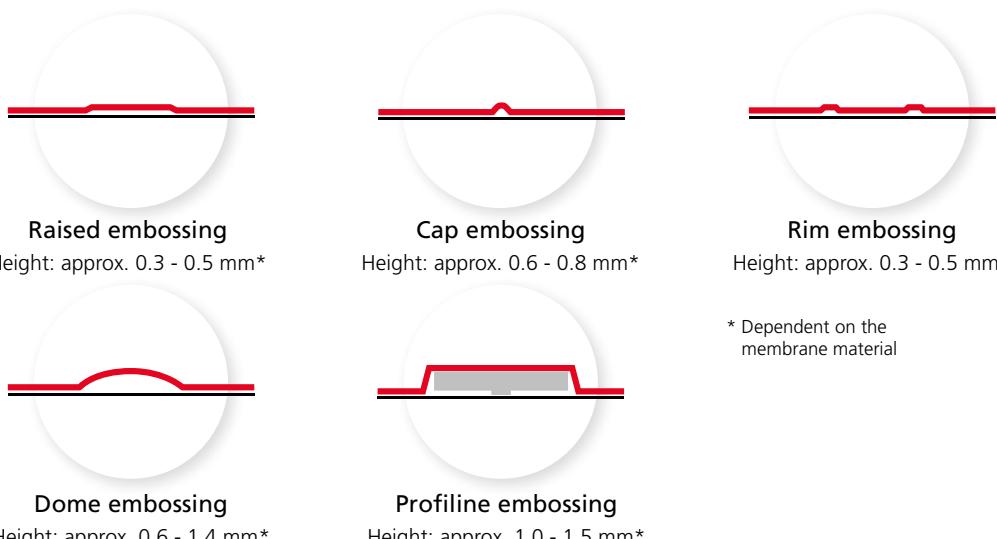


Quick-Finder:  
[www.bopla.de/72](http://www.bopla.de/72)

## Embossing

Membranes are embossed primarily to improve ease of use.

Series of keys are made "feelable", while the membrane effect of the embossing improves tactile feedback from the actuating elements.



## Printing methods



### Screen printing

Industrial screen printing is the most widely-used process for manufacturing all types of especially high-quality membrane keypads / HMLs. Digital printing can supplement or replace screen printing.

### Digital printing

Previously unachieved flexibility in front membrane design.

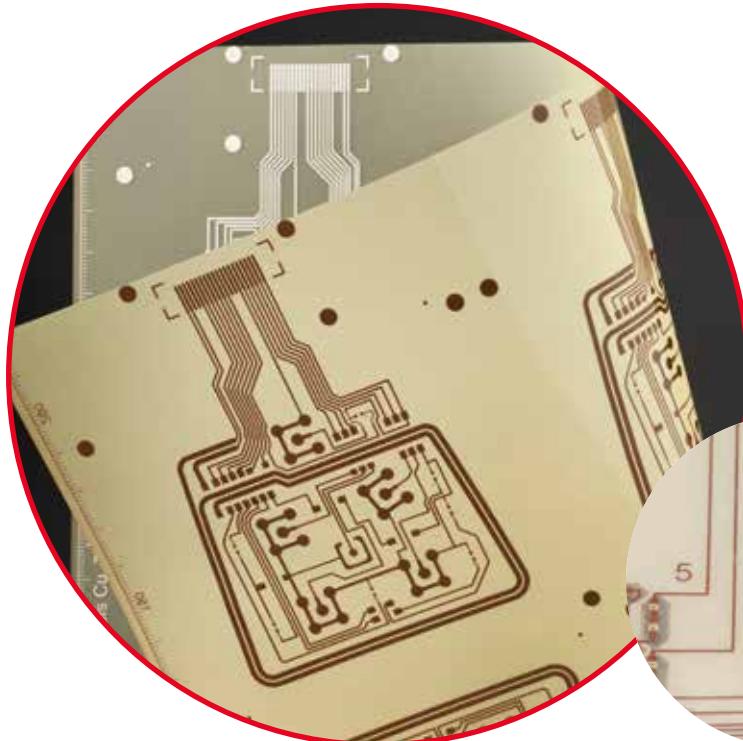
- High-quality photos and graphics
- Various colour gradients and graphics possible
- Fast and flexible
- For short runs and individual printing
- Prototypes

### High-gloss technology

The design can be considerably upgraded by using a smooth membrane and a special textured lacquer in order to create glossy effects in the area of the keys.

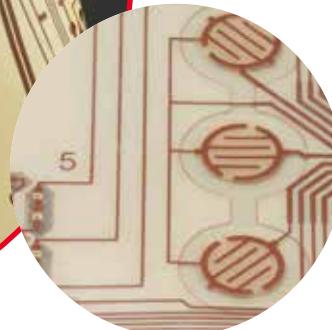
# Membrane keypads

## Membranes with copper conductors



For demanding applications, we also create exclusive high-quality membrane keypads that incorporate the outstanding properties of surface-treated copper conductors.

Instead of using adhesives, as with printed silver technology, we can securely and permanently solder LEDs, photo diodes or other components. These are advantages which in practice frequently give our customers the necessary security when using membrane keypads.



## Profiline membrane keypads

This technology succeeds in providing outstanding data-entry operation for a large range of industrial requirements. Customised design for every keypad!

### Profiline embossing

Profiline embossing combined with an inlay generates the so-called "short-stroke feeling" to assure unequivocal tactile feedback. Can be executed in a range of different forms.

#### Improved user-friendliness thanks to:

- Unequivocal tactile feedback
- Exceptionally good key feel
- Freedom of design for key geometry
- Clearly designed key shaping, can also be implemented as a rocker switch and/or oversize key



Profiline membrane keypads  
Height: approx. 1.0 - 1.5 mm\*

\* Dependent on the membrane material

# The technologies

## Profiline illuminated

**In poor light conditions, our illuminated membrane keypads simplify operations, and this ensures that operating errors are minimised.**

### Profiline illuminated

The use of special LEDs and special treatment of the inlay provides homogenous illumination, with long-lasting functionality naturally assured. The light from the LED passes through the aperture in the snap dome and into the integrated acrylic inlay, where it is correspondingly scattered.



**Profiline embossing illuminated**

Height: approx. 1.0 - 1.5 mm\*

\* Dependent on the membrane material

## USB keypads

**Plug & Play – the membrane keypad for immediate operation using the USB port. We use printed electronics to integrate configurable keypad controllers into the membrane keypad.**

The ribbon cable can be connected directly to USB A sockets, so there is no need for additional hardware to operate traditional membrane keypads.

### Advantages of a USB keypad:

- Cost, space and time-savings
- Optimum for connection to PC or embedded system
- 188 functions thanks to three control levels (FN keys)
- 19 macros, mouse function, multimedia keys
- Other bus interface possible



# Touch / display integration

**As a result of their widespread use in mobile telephones and tablets, many electronic devices are now also operated in industrial applications by means of a touch screen or a display. Convince yourself of the advantages of this versatile technology.**

We support you in developing cost-effective, user-friendly devices with touch operation by integrating capacitive and resistive touch screens in standard and customers' own electronics enclosures.

The combination of a touch screen with a conventional membrane keypad is also possible. In addition, we offer solutions with a continuous front membrane (resistive touch screens) or a continuous cover glass (capacitive touch screens) for every application in which there must be no dirt-collecting edges – examples include the medical technology and foodstuffs sectors.



# Reliable and unique

## Capacitive touch screen

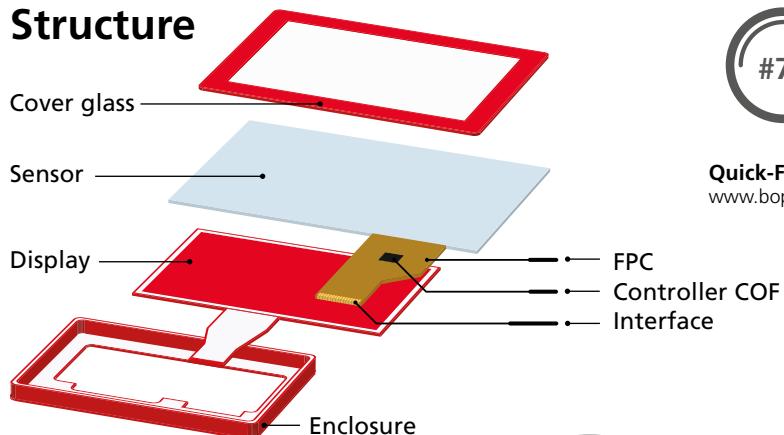
Until recently, membrane keypads and conventional resistive touch screen solutions have been used in the industrial environment, but capacitive touch screen technology is now increasingly taking over. Capacitive technology, definitely shaped by the consumer market, now meets the high demands made in all sectors of industry.

This technology is noted for its exceptionally high reliability, intuitive operation and unique functionality.

### Additional advantages of a PCAP (projected capacitive) solution:

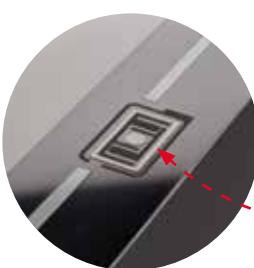
- Vandal-proof
- Easy cleaning
- Can be operated wearing gloves
- Temperature resistance
- UV resistance
- Operation in wet environments no problem
- Extremely high service-life

## Structure



Quick-Finder:  
[www.bopla.de/77](http://www.bopla.de/77)

Depending on the requirement, printed silver conductors can also be created, for example in the form of an additional key.



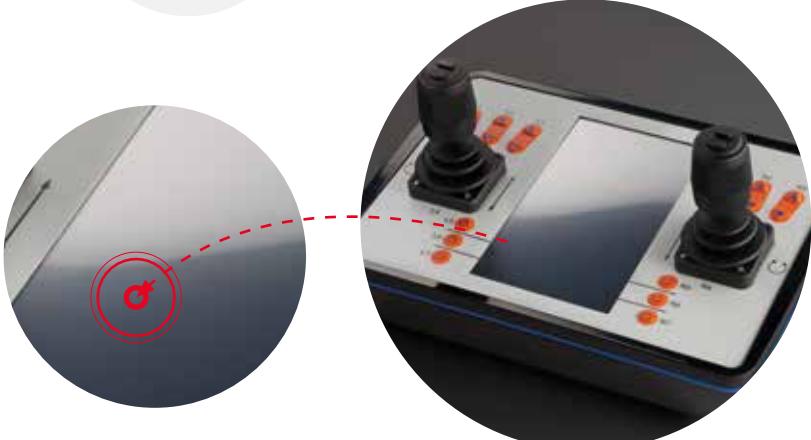
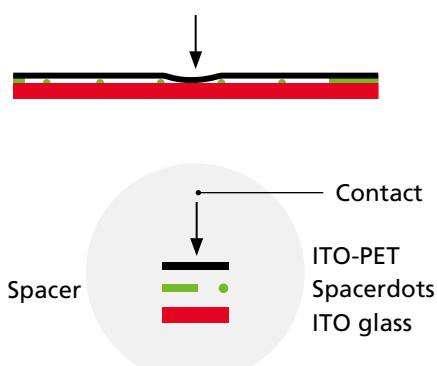
## Resistive touch screen

Our flexible and rationally-priced touch screen solution for your product!

Selection of the optimum technology is of decisive importance, especially in the field of touch screen systems. We supply resistive and capacitive touch / display solutions, with their differing technical requirements, in numerous standard formats, or developed specifically to meet your individual needs.

This is why detailed analysis of the operating requirements, covering all mechanical components, is a vital necessity at the very start of device development. We are at the side of our customers' technical departments to provide support on all of these items.

## Structure



### Selection of our possible implementation routes:

- Full-surface lamination on a decorative foil
- Viewing windows cut out in the decorative foil
- Partial lamination on the decorative foil
- Rear installation in the enclosure
- Combination of touch screen with membrane keypad

# Printed electronics

## Printed antennas

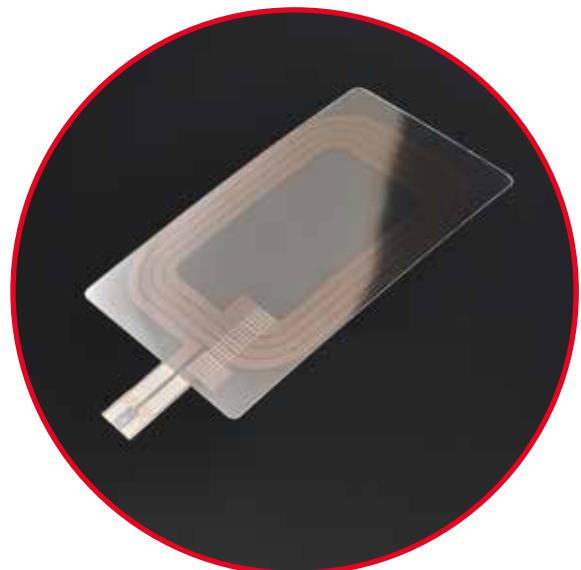
Antennas of various geometries are needed for RFID products, depending on the particular application – we design the antenna geometry needed for your application.

### Ready to receive

We design the antenna geometry needed for your application and can print it using our tried-and-proven copper technology. Copper technology provides greater range, faster read potentials and higher data-transmission rates compared to conductive silver.

In addition, we use NFC and RFID chips to integrate a passive digital identification feature into the membrane for you.

- Range up to 7 cm thanks to copper technology
- Direct integration into front membranes and membrane keypads
- Password-protected memory contents
- Easy and cost-efficient integration into existing systems, even in small production runs



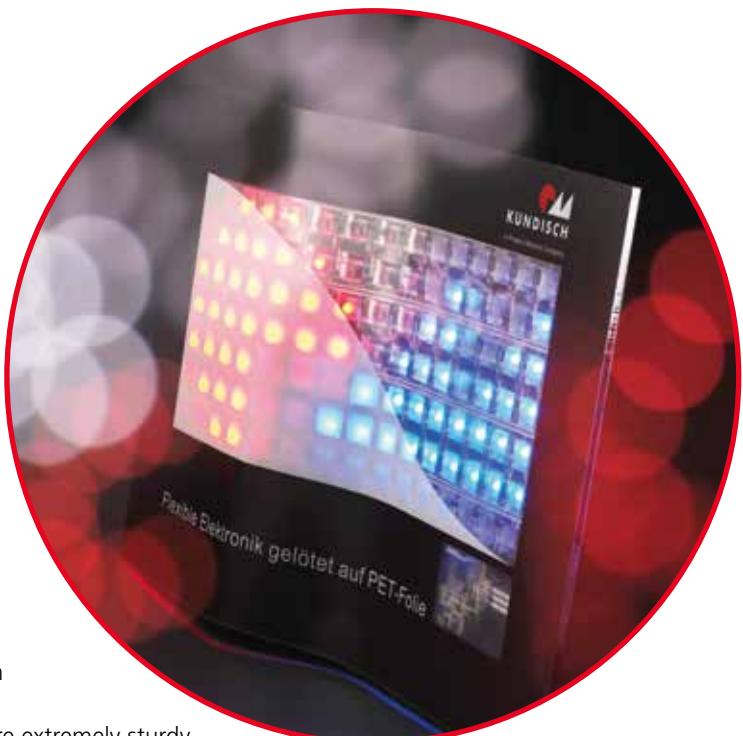
## Flexible electronics

Innovative technologies are increasingly popular in a large number of very different industrial sectors.

Printed, flexible electronics make possible intelligent products in areas of application where conventional electronics are too big and/or too rigid and also too expensive.

Electronic functioning materials are printed on flexible or rigid base materials. These include PET membranes, copper laminates or flat glass. Conductive structures, applied using a soldering or adhesive process designed specifically for the carrier material, are connected to electronic components. In this case, the carrier material retains its electrical or also smart function.

- Thin & light: the material thickness is in the micrometer range
- Flexible & elastic: they can be printed on flexible substrates which adapt to the subsurface
- Robust: the flexible characteristics ensure that the components are extremely sturdy
- Any format: no limits to size and shape
- Low-cost & fast: fewer manufacturing steps and resources
- Sustainability



# Custom touch sensors



Quick-Finder:  
[www.bopla.de/74](http://www.bopla.de/74)

**Touch sensor membranes convert non-conductive surfaces such as membranes, glass plate or even enclosures into a membrane keypad/HMI.**

## Touch-sensor membranes

A touch-sensor membrane can, for instance, be bonded behind non-conductive surfaces in order to convert these surfaces into a membrane keypad. Direct printing of enclosure parts with touch-sensor systems makes it possible to efficiently combine production operations, save resources and reduce consumption of materials.

- Cost-savings
- Plug & Play sensor-surface and controller solution
- Reduced risk of failure
- Direct printing of alternative surfaces
- Good optical transparency
- No mechanical wear
- Easy cleaning thanks to sealed surfaces



# Transparent foil heaters

**Transparent foil heaters ensure clear visibility and targeted heat – perfect for cameras, sensors, displays or glass surfaces.**

## Benefits:

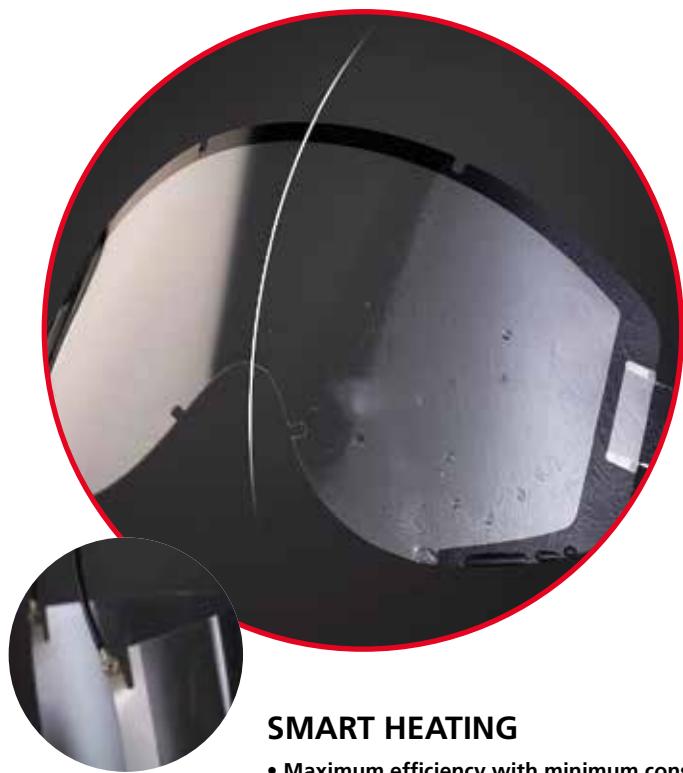
- More uptime – 50% defrosting time
- Energy savings – 30% of energy required compared to conventional solutions
- Maintenance-free – no moving parts
- Fast heating thanks to metal mesh technology
- Cost-efficient thanks to smart heating
- Suitable for permanent outdoor use
- Flexible and easy to integrate, freely configurable
- Foil finishing by screen printing possible

## Technical highlights:

- Up to 3000 W/m<sup>2</sup> and 85 °C
- Up to 93% transparency
- Specific resistance of only 1 Ω/square

## Use cases:

- Camera, lidar and radar systems
- Intelligent traffic monitoring and control
- Areas with defined temperature levels



## SMART HEATING

- Maximum efficiency with minimum consumption
- Even, targeted heat distribution only in areas where it is needed
- Energy-saving

# System integration

**System integration allows us to deliver the perfect end product – developed together with you and expanded to series readiness.**

For you, system integration means a complete "All-round carefree package" with a wide range of intelligent services tailor-made for your application.

For more than 50 years we have been your partner for sophisticated solutions, and we have constantly expanded and perfected our range of services. Form your own opinion of our know-how: machining service, membrane keypads / HMI and system integration. We look forward to seeing you!



# Here are the solutions!

**All the components are brought together at this stage of the process, and your individual device is created!**

## Our range of services includes:

- Procurement and warehousing of all necessary components
- Insertion (THT / SMT)
- Module test (AOI / ICT)
- Function test
- Labelling and packing



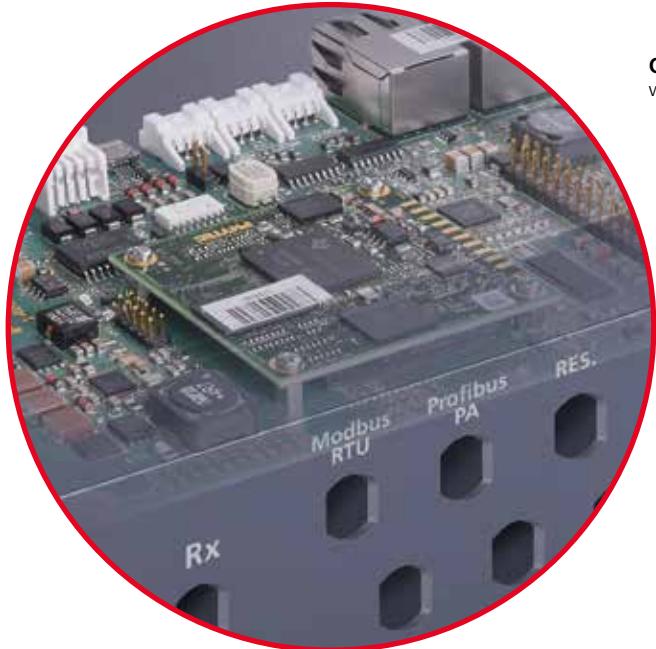
## The enclosure

BOPLA's enclosure sector product range is incredibly diverse and ranges from hand-held, desktop, console and wall-mounted enclosures to 19" applications. Select the suitable enclosure from our comprehensive product range.



## The processing

We excel in all standard processes: milling, drilling, countersinking, thread-cutting, sawing, ultrasonic welding, and many more. These include engraving and laser engraving, printing and lacquering, powder and EMC coatings.



**Quick-Finder:**  
[www.bopla.de/75](http://www.bopla.de/75)

## The electronics

From procurement of all necessary components to insertion to the module test – it's what we do.



## The HMI solution

We create HMI devices for every application. From simple membrane mounting to the complex integration of touch screens – all in impressive quality and with an appealing design!



## Mounting / function test

The integration of highly-sensitive components / modules and the final check of the device by means of a function and end test is carried out by our qualified and expert personnel in our in-house laboratory.

# Individual enclosures



You are looking for ways to implement one of your own designs? Or do you want to develop your own individual enclosure in order to integrate specific functions?

We will gladly manufacture your individual enclosure. Make use of our many years of experience – we have already created many successful special solutions for a range of sectors. You benefit from our high levels of specialist knowledge, excellent product quality, and our experienced employees!



Watch live now: [www.bopla.de/60](http://www.bopla.de/60)

# The manufacturing processes



## Plastic injection-moulded

- Very high level of design freedom
- Integration of function elements
- Radio-permeable
- Perfect coordination possible between material and application
- Corrosion-resistant
- Low weight
- Low unit cost for large quantities



## Profile technology

- Variable lengths (easy to create a 'family' of enclosures)
- Ideal for use in difficult environments (high levels of chemical and temperature resistance)
- Good options for EMC screening and conductive connections
- High level of heat dissipation
- Low tool costs
- High levels of stability and impact resistance

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[www.bopla.de/60](http://www.bopla.de/60)



## Die-casting technology

- Reliability even under extreme conditions
- High levels of impact resistance, stability and ingress protection
- Resistance to chemicals and temperature
- High level of heat dissipation
- Good EMC screening



## Stamping and bending technology

- Often no need to invest in tools
- Good options for EMC screening and conductive connections
- Ideal for use in difficult environments (high levels of chemical and temperature resistance)
- Low-cost changes to enclosure design are possible
- High level of stability



# Custom designed.

## Control of decentralised video surveillance.

Modified standard enclosure (Bocube) with customised lower section. Internal plastic covers with mounting contours for connecting fibre optic cables.

Screwless closure using integrated hinge closure technology.



## Safety control for process control technology.

In these modular control enclosures, the modules can be arranged in series and connected to each other.

Individual modules can be expanded with intermediate parts and assemblies can be mounted on support rails.



# That's what we do best!



**Peristaltic pump control with a modern design.**

Welded Enclosure body with screw-on base and flush-mounted glass panel including touchscreen.

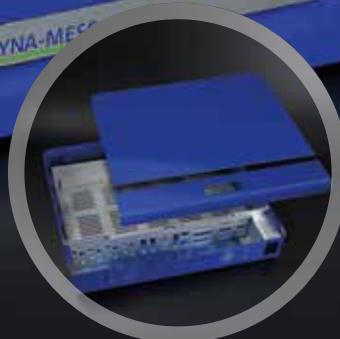
The L-shaped lower section contains most of the electronics.



**Multi-part housing for use in materials testing.**

Enclosure construction made of welded and folded sheet metal-surface finished with high-gloss powder coating. Two-piece cover design for mounting plugs.

Screen-printed stainless steel design strip recessed into a recessed surface; additional gill embossing for indirect lighting.





Explanations  
of all icons  
see page 65.



## BoVersa

### Colours:

- Black, similar RAL 9005
- White, similar RAL 9003

Special colours on request.

### Protection class:

IP66 / IP68

### Material:

Plastic parts: PC UL 94 V-0 suitable for outdoor use;

f1 listing according to UL 746 C

Aluminium parts: GD Al Si 12

Seal: PU foam or silicone

(transparent and translucent functional lids)

Materials according to requirement set R1 or R7 according to DIN EN 45545-2 of the risk level HL3.



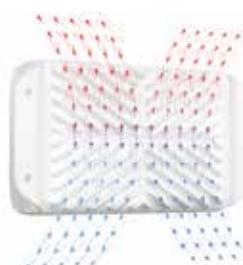
The three-part enclosure assembly base, function lid and design cover. These three elements can be combined in any way required. With various base sizes, heights, tops and bottoms, endless combinations are possible. The enclosure sizes fit with standard (touch) display formats.



A metal base and a plastic lid create the perfect combination for wireless applications which require cooling.



An enclosure base made of diecast aluminium with moulded-on cooling fins and fixing brackets.



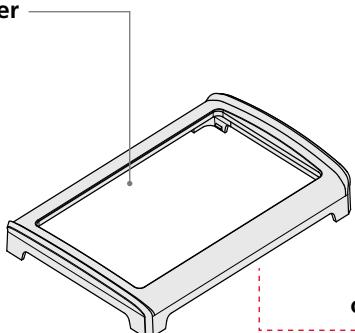
The symmetrical design of the cooling fins makes possible an optimal flow of air in both the horizontal and vertical mounting positions.



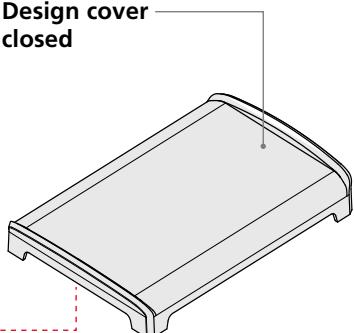
The frame-shaped design cover is perfect for integrating keypads and displays, while the closed variant makes possible a clean look or individual designs.

## Enclosure combinations

Design cover  
open



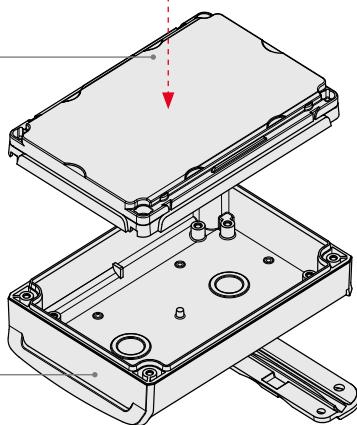
Design cover  
closed



or

Funktional top  
plastic, available in:

- Black
- White
- Translucent
- Crystal clear



Plastic bottom section

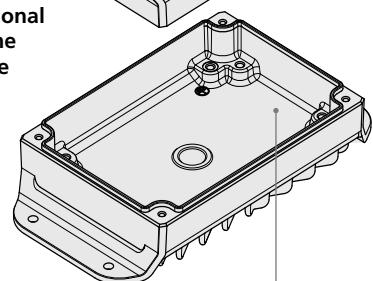
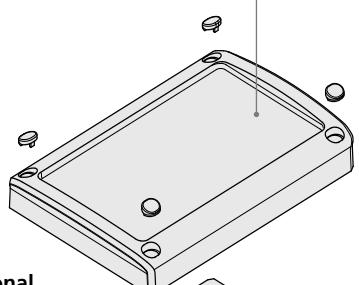


Wall brackets



The two-part plastic cover (functional upper part + design cover) and the one-piece aluminium cover can be mounted on either a plastic or aluminium base.

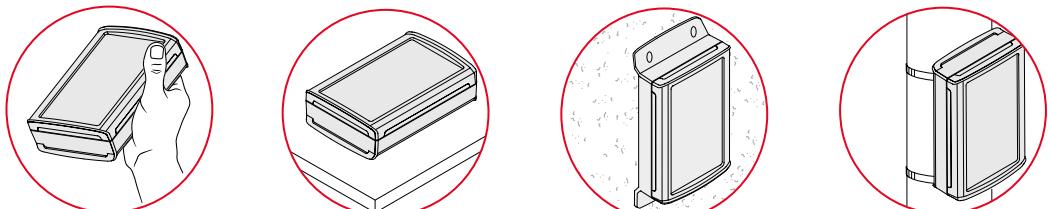
Lid in aluminium



Lower part aluminium  
with heat sink

## Applications

The enclosure can be used for applications in the **hand**, on the **desktop**, on the **wall** and on the **mast**.



The transparent function lid provides a view of the enclosure interior or built-in displays.



The enclosure parts are combinable using different colours. Photometric design accents can be created by the use of the transparent and translucent function lids.



The base has a moulded-on insertion opening for a pressure compensation membrane which can be factory-activated.



The mounting brackets are moulded-on directly to the aluminium base. They can be retrofitted separately to the plastic base.



# Bocube

## Colour:

- Light grey, similar to RAL 7035
- Graphite grey, similar to RAL 7024
- Special colours on request.

## Protection class:

IP66 / IP68 / NEMA 3; Depending on the model up to NEMA 4X; IK07 (PC variants)

## Material:

ABS or PC UL 94 V-0; PC V-0 material is suitable for outdoor use. With slightly reduced outdoor suitability, the highest flammability rating of UL 94 5V is also achieved. Seal: PU foamed



The enclosures in 2 basic colours (optionally with a transparent lid) can be combined with coloured hinged catches as required. Alternatively, manually operated catches are available.



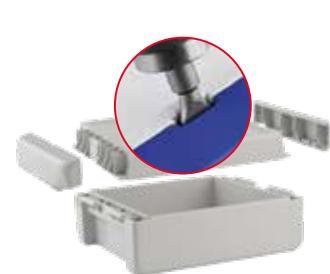
On request, the enclosures can also be screwed. The hinged catch conceals the screws.

## Product advantages:



The unique, patented hinged catch has a double function:

- Fast, easy lid fitting – without tools
- Swiveling of the lid – free choice of hinge side
- Standard hinged catches, alternatively manually-operated hinges



Bocube has very few parts, so it is very light and easy to mount – toolless. Use a size 3 slotted-head screwdriver to open it.



The blanking plug allows selection of the side to be hinged. In this way, connections between the base and the lid can be protected against damage when the lid is opened.

## Example of use:





Example of use:



Example of use:



## Euromas II

### Colour:

Light grey, similar to RAL 7035  
Special colours on request.

### Protection class:

IP65 / NEMA 3

### Material:

Enclosure: ABS or PC (UV stabilized)  
Seal: CR

### Characteristics:

- 2 lid variants: smooth or recessed with membrane keypad area
- Plug-in slots for PCBs
- Separate bosses for clamping rectangular PCBs

## Euromas ABS | PC | F05

### Colour:

Light grey, similar to RAL 7035  
V 215: Black, similar to RAL 9005  
Special colours on request.

### Protection class:

IP66 / IP68 / NEMA 3;  
IK07 (PC variants)

### Material:

ABS, PC (UV-stabilised) and selected sizes in PC UL 94 VO (additional UL 94 VO versions on request). With slightly reduced outdoor suitability, the highest flammability rating of UL 94 5V is also achieved.  
F05 Variants; Vestamid  
Seal: CR



## Euromas X

### Colour:

- Light grey, similar to RAL 7035
- Special colours on request.

### Protection class:

IP66/68 / NEMA 3;  
Depending on the model up to  
NEMA 4X;  
IK07

### Material:

Enclosure: ABS or PC (UV stabilized)  
Seal: CR

### Characteristics:

- 2 material variants: ABS or PC
- Numerous designs with moulded-on wall bracket
- Lid with membrane keypad area in two variants: grey or crystal-clear
- Captive lid screws

### Example of use:



## Euromas Polymas

### Colour:

- Silver grey, similar to RAL 7001
- Special colours on request.

### Protection class:

IP65 / NEMA 3

### Material:

Enclosure: PA 6-GB 30  
Seal: CR

### Characteristics:

- Versions with or without cable glands
- Quick-release fastener variants
- Transparent lid on request
- Terminals and mounting on request

### Example of use:







## Bocube Alu

### Colour:

- Light grey, similar to RAL 7035
- Graphite grey, similar to RAL 7024
- Special colours on request.

### Protection class:

IP66/68/69 / NEMA 4X;  
with SIL-/HF-seal: IP66 / NEMA 3;  
IK08 (max. IP66/68) resp. IK07 (IP69)

### Material:

Enclosure: GD Al Si 12; Seal PU foamed  
Hinges / covers: Al Mg Si 0,5  
powder-coated or natural-coloured anodised

### Product advantages:



With its modern design, Bocube Aluminium sets new design trends in the diecast enclosure sector. If required, the colour of the powder coating can be selected to match the application. Bocube aluminum – protects your electronics even in particularly harsh environments.  
NEW: discover the screwable version now!



The high protection class of IP69 is achieved with only two lid screws. As with all others, they are mounted invisibly under the design covers.



The integrated hinge ensures easy access to the interior, and wiring between the modules in the lid and base is perfectly protected.



The base has a moulded-on insertion opening for factory-activated pressure compensation membranes.

All the enclosure components are made of metal, so they are ideal for use in harsh environmental conditions.

### Example of use:





## Euromas Alu F05

### Colour:

• Silver grey, similar to RAL 7001  
Special colours on request.

### Protection class:

IP66 / NEMA 3;  
Depending on the model up to NEMA 4X;  
Depending on the model up to IK09

### Material:

Enclosure: G Al Si 12  
Seal: PU foamed

### Characteristics:

- Listing under UL file no. E 196 706
- Materials correspond to R1/R7 set of requirements acc. to DIN EN 45545-2 of hazard level HL3
- Optionally with silicone lid seal with higher temperature stability (approx. 200°C)
- Crystal-clear lid and EMC package on request

### Example of use:



## Mast brackets

### Many sizes for our huge industrial enclosure portfolio

The modular system consists of a mast bracket, a set of screws and a sleeve. Many different mast bracket variants are required for BOPLA's entire industrial enclosure portfolio, which consists of several hundred enclosure sizes and versions. The alignment of the enclosures is unimportant – mounting can take place both vertically and horizontally.



This flexibility is achieved by means of an intelligent arrangement of the drill hole diameters and positions, in addition to the partial use of slots.

Specially-matched mast brackets are also available for our enclosure series BoVersa and Polysafe.





Example of use:



## Bocard

### Colour:

- Graphite grey, similar RAL 7024
- Light grey, similar RAL 7035
- Special colours on request.

### Protection class:

Depending on the model up to IP66/68 / NEMA 3

### Material:

Enclosure: ABS  
Seal: CR / PU foamed  
V0 version available on request

### Characteristics:

- UL 94 V0 - versions available on request
- Different fronts
- Optional flexibly positionable terminal compartment, detachable



## Integration of electronics



You benefit from our electronics services through cost-effectiveness and short delivery times.

In addition, consistent quality management in contract manufacturing ensures a consistently high quality of assemblies.



## RegloCard-Plus Combifront

### Colour:

- Light grey, similar to RAL 7035
- Special colours on request.

### Protection class:

Depending on the model up to IP65 / NEMA 3

### Material:

Enclosure: ABS,  
UL 94 V-0 versions on request  
Lid crystal clear: PC  
Seal: EPDM

### Characteristics:

- Pre-punching metric or PG
- Sealable terminal compartment
- Some versions in UL 94 V-0
- F-version front element for control panel installation available separately

### Example of use:



## CombiCard 5000-7000

### Colour:

- Side panels, front and base parts: Light grey, similar to RAL 7035
- Front cover FD...G: crystal clear

### Backs:

- Agate grey, similar to RAL 7038
- Special colours on request.

### Protection class:

Depending on the model up to IP66 / NEMA 3

### Material:

Enclosure: ABS; PC (only FD...G)  
Seal: CR

### Characteristics:

- Variable depth depending on the combination
- Hinge and access point freely selectable in the entire system
- Different fronts
- Optional rear part with separate terminal compartment (also on both sides)
- Definable access protection
- Mounting of 19" components is possible

### Example of use:





# BoLink

## Colour:

- Black, similar to RAL 9005
- White, similar to RAL 9003
- Special colours on request.

## Protection class:

IP40 / NEMA 1; with seal: IP65 / NEMA 3

## Material:

Enclosure: PC UL 94 V-0

PC V-0 material is suitable for outdoor use. With slightly reduced outdoor suitability, the highest flammability rating of UL 94 5V is also achieved with PC UL 94-V-0.

Seal: TPE



Ingress protection IP 65 by means of design seal; available in various colours. This increases the electronics mounting height by approx. 1.7mm.



Other colours can be used depending on the project, for example translucent.

## Product advantages:



Three different versions – with or without wall brackets and screw connection from the front or rear.



Pressure compensation by mounting the DAE-D11 pressure compensation membrane. For this purpose, drill (or punch) a hole in the moulded contour from the inside and glue the membrane in position.



A 1.6 mm thick PCB can be clamped directly between the enclosure parts and optionally hot-caulked via two pins.

## Example of use:





## Element | Universal



## Circum



Quick-Finder:  
[www.bopla.de/05](http://www.bopla.de/05)



Quick-Finder:  
[www.bopla.de/93](http://www.bopla.de/93)

### Characteristics:

- Depending on model, up to IP40 / NEMA 1
- With air vents and/or recessed membrane keypad area
- Version S with quick-release fastener
- Lid screwing from above and quick-release fasteners

### Characteristics:

- IP40 / NEMA 1
- Enclosure screws concealed by a cover panel
- Cover panels in various colours
- Lids available with moulded or plug-in front panels



## Elesett | Eletec



## Elegant



Quick-Finder:  
[www.bopla.de/43](http://www.bopla.de/43)



Quick-Finder:  
[www.bopla.de/32](http://www.bopla.de/32)

### Characteristics:

- Depending on model, up to IP40 / NEMA 1, flame-resistant UL 94 V0
- Connector (CEE 7/7, hybrid connector type E+F), Euro plug (CEE 7/16, hybrid connector type C), protective contact socket
- Half-shell technology ensures easy access to the electronics
- Available on request: different colours, enclosure heights, versions for other countries

### Characteristics:

- IP40 / NEMA 1
- With or without ventilation slots - Various bezels
- Plastic or aluminium front panels (optional)
- Integrated wall mounting



Quick-Finder:  
www.bopla.de/35



## BoPad

### Colour:

- Black, similar to 9005
- White, similar to RAL 9016
- Special colours on request.

### Protection class:

IP40 / NEMA 1;  
with seal: IP65 / NEMA 3

### Material:

Enclosure: ABS  
Seal / impact protection: TPE

### Product advantages:



The BoPad enclosure series offers a high level of user comfort in both hand-held and desktop versions. Square designs are perfect for installing displays in combination with control buttons. Recessed area in the lid for the mounting of membrane keypads or display screens (BOP 500, 700, 900: 1.8 mm; BOP 7.0, BOP 10.1: 2.5 mm).



Enclosure protection by means of optional impact protection in combination with design seal; available in several colours. Ergonomic grip recesses on the enclosure and also on the impact protection.



Versions with a more sloped user interface and recessed side handles offer more installation space and increase ease of use.



Integrated VESA mounting (75 x 75 mm), also used for mounting the optional wall fitting (BOP 7.0, BOP 10.1).



Optimised for the integration of touch screens and Li-Ion rechargeable battery system 18650 (BOP 7.0 or BOP 10.1 respectively).

### Example of use:



# BoPad 10.1

## HDMI-Starterkit

**Realising samples and prototypes in series quality – this means that we provide you with a starter kit and you test the implementation of your requirements on the original.**

### Characteristics:

The starter kit has an HDMI and a USB-C port, allowing countless devices to be connected.

### For example:

- Laptop
- Embedded PC
- Raspberry Pi etc.

### Possible areas of application:

- Control or monitoring monitor,
- Input monitor,
- Machine operation, etc.

**The touch/display unit is bonded to the entire surface of the front screen using the 'optical bonding' process.**

### Advantages of this process:

- No air gap
- No dust or moisture penetration
- Improved touchscreen operation
- Higher contrast and better readability

Integrated mounting domes for various developer boards (Raspberry Pi, etc.).  
Good readability in daylight thanks to strong backlight illumination.



### Scope of delivery

- 1x BoPad 10.1 P (black, similar to 9005) including mounted 10.1" display
- 1 x cable feed-through socket (mounted)
- 6 x enclosure screws
- 6 x screw covers
- 4 x rubber feet
- 4 x mounting screws for Raspberry Pi
- 1 x custom-made shipping packaging



## System Integration



Our system integration provides you with the perfect end product – developed in collaboration with you and refined to series production readiness.

See our expertise for yourself: machining service, input units and system integration.



## BOS-Streamline

### Colour:

- Graphite grey, similar to RAL 7024
- Light grey, similar to RAL 7035
- Special colours on request.

### Protection class:

Depending on the model up to IP65 / NEMA 3

### Material:

Enclosure: ABS,  
Seal: TPE

### Characteristics:

- Inclined arrangement by turning the enclosure half-shells
- Lid optionally with a display screen (DIS) or continuous membrane area (F)
- Versions with or without battery compartment
- Optional impact protection/decor seal in 5 colours

### Example of use:



## BOPLA-Artеб



Quick-Finder:  
www.bopla.de/34



## BOS



Quick-Finder:  
www.bopla.de/33

### Characteristics:

- IP40 / NEMA 1; with seal: IP65 / NEMA 3
- End caps available in 6 colours
- Caps made of infrared-permeable material available
- Many different battery compartment designs
- Definable access protection
- With display cut-out or membrane keypad area
- Wide range of accessories

### Characteristics:

- IP40 / NEMA 1; BOS 9..: IP65 / NEMA 3
- Various designs
- Different battery compartment designs
- With display cut-out or membrane keypad area
- With matching desk and charging station (depending on the model)



## Elegant Pult



Quick-Finder:  
[www.bopla.de/36](http://www.bopla.de/36)



## Ultrapult



Quick-Finder:  
[www.bopla.de/45](http://www.bopla.de/45)

### Characteristics:

- Versions with a display screen or continuous membrane keypad area
- Plastic rear panel
- Integrated wall hanging unit
- Separate wall brackets (optional)

### Characteristics:

- Recessed, closed console area
- Console area open for a separate front panel
- Aluminium or plastic rear panels

## Digital print

The flexible printing process for designing application-specific housing solutions and similar items.



# Alustyle

## Colour:

- Graphite grey, similar to RAL 7024
- Silver, similar to RAL 9006
- Special colours on request.

## Protection class:

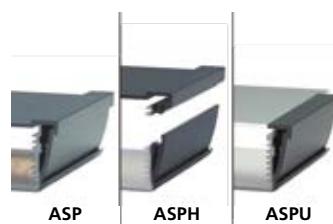
Depending on the model up to IP66/68 / NEMA 3

## Material:

Extruded profiles: Al Mg Si 0,5 powder coated  
Die-cast lid: zinc alloy Z410 / aluminium  
GD Al Si 12 (ASD 1540 / 1835), powder coated  
Seal: TP

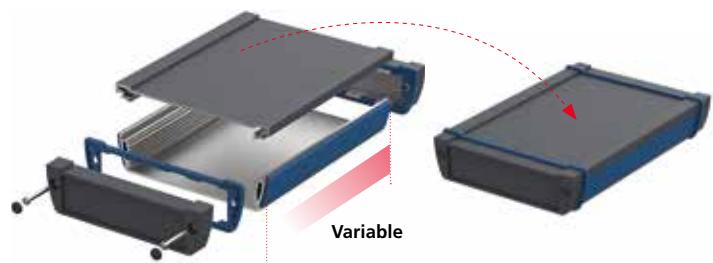


The system groove integrated in the profile allows the mounting of optional design and functional elements such as decor strips, wall fittings, tower and tip-up feet.



The profile variants – closed (ASP), horizontally divided (ASPH) or open on one side (ASPU) – provide a suitable enclosure solution for every installation situation.

## Product advantages:



The enclosure body in the "stylish" asymmetric design consists of a powder-coated aluminium profile and can be designed in length and colour to match the application.



Contact surfaces which contact the lid to the profile guarantee good EMC protection. EMC seals are available if greater protection is required.



Different lid variants with and without a hinge, and coloured seals, ensure a high level of protection and give access to the interior if required.

## Example of use:





Quick-Finder:  
[www.bopla.de/83](http://www.bopla.de/83)

## BOS-Ecoline

### Colour:

Profile: natural-coloured anodised aluminium

### Plastic lid:

- Black, similar to RAL 9005
- Dust grey, similar to RAL 7037
- Special colours on request.

### Protection class:

Depending on the model up to IP54 / NEMA 3

### Material:

Extruded profiles: Al Mg Si 0,5 anodised  
Plastic lid: ABS  
Seal: EPDM

### Characteristics:

- 3 profile variants (closed, split, U-shaped)
- Profile technology provides variable lengths
- End cover also available with moulded-on wall fitting

### Example of use:



Quick-Finder:  
[www.bopla.de/97](http://www.bopla.de/97)

## Filotec

### Colour:

Natural-coloured anodised aluminium

### Protection class:

IP40 / NEMA 1

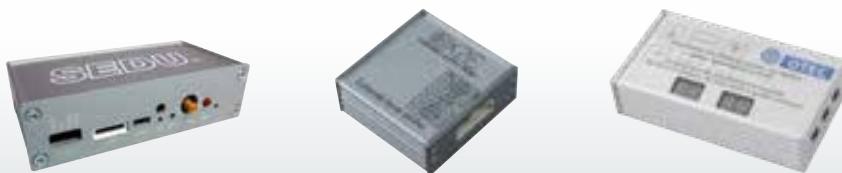
### Material:

Enclosure: Al Mg Si 0,5; eloxiert

### Characteristics:

- 6 widths, 6 heights in various standard lengths
- 3 profile variants: with membrane keypad area, with heat sink, with moulded-on wall brackets
- Anodised aluminium end cover

### Example of use:





# Alubos

## Colour:

● Black, similar to RAL 9005  
Special colours on request.

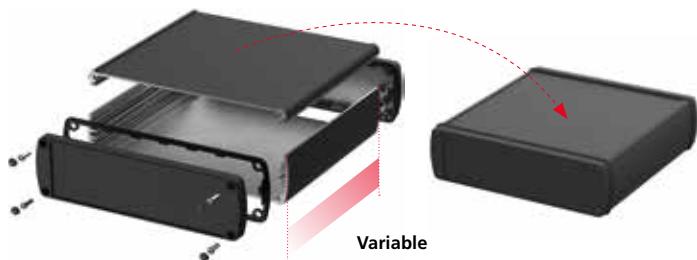
## Protection class:

Depending on the model up to IP65 / NEMA 3

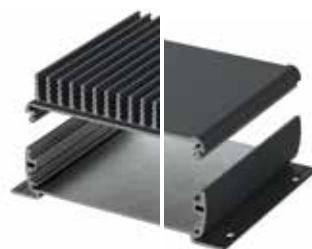
## Material:

Extruded profiles: Al Mg Si 0,5 powder coated  
Diecast lid: GD Al Si 12, powder coated  
Seal: TPE

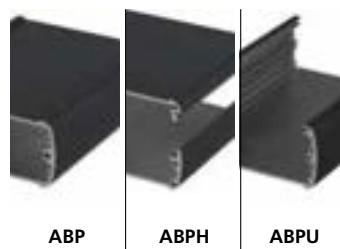
## Product advantages:



The enclosure body consists of a powder-coated aluminium profile and can be designed in length and colour to match the application.



As an option, heat sink fins (ABPH-K) and wall bracket profiles ensure reliable heat dissipation and sturdy wall mounting.



The profile variants – closed (ABP), horizontally divided (ABPH) or open on one side (ABPU) – provide a suitable enclosure solution for every installation situation.



Good EMC protection by means of contact surfaces which connect the lid to the profile.  
Conductive EMC seals are available if greater protection is required.



Different lid variants with and without a hinge, and coloured seals, ensure a high level of protection and give access to the interior if required.

## Example of use:





Quick-Finder:  
[www.bopla.de/92](http://www.bopla.de/92)

## Alu-Topline

### Colour:

Profile: natural-coloured anodised aluminium

### Plastic lid

- Graphite grey, similar to RAL 9024
- Black, similar to RAL 9005
- Special colours on request.

### Protection class:

Depending on the model up to IP65 / NEMA 3

### Material:

Extruded profiles: Al Mg Si 0,5; anodised  
Plastic lid: ABS  
Seal: TPE

### Characteristics:

- Horizontally-divided profiles for simplified assembly
- Recessed membrane keypad area in the lid
- Mounting grooves inside
- "Invisible" wall or VESA fixing as an accessory

### Example of use:



Quick-Finder:  
[www.bopla.de/64](http://www.bopla.de/64)

## Aluplan

### Colour:

- Aluplan 50: Graphite grey, like RAL 9005
- Aluplan 100: Light grey, like RAL 7035
- Special colours on request.

### Protection class:

IP65 / NEMA 3

### Material:

Extruded profiles: Al Mg Si 0.5; powder-coated  
Diecast corners: zinc alloy Z410, powder-coated  
Corner caps: PA-GF 15  
Corner seal: TPV / TPE  
Seal in profile groove: EPDM

### Characteristics:

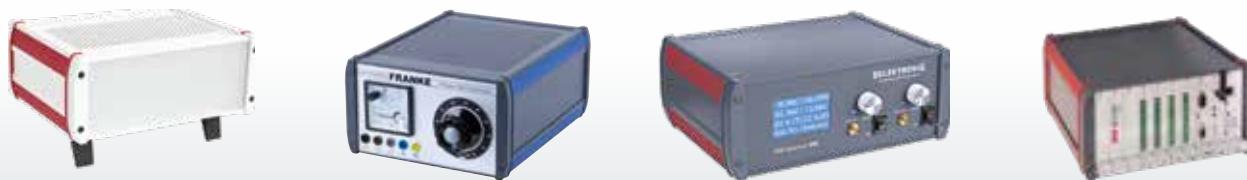
- Length and width individually adaptable
- Aluminium baseplates and top covers
- Good EMC characteristics
- Wide range of accessories

### Example of use:





Example of use:



Example of use::



## Intertego

### Colour:

● Graphite grey, similar to RAL 7024  
Special colours on request.

### Protection class:

Depending on the model up to IP40 / NEMA 1

### Material:

Profiles: Al Mg Si 0,5,  
Diecast corners: zinc alloy Z410  
Decor elements: TPE

### Characteristics:

- Length and width can be customised
- Aluminium base and cover plates
- Good standard EMC properties
- Higher shielding values can be achieved with accessories
- 19" components can be installed
- Can be used as a 19" plug-in unit

## Botego

### Colour:

● Light grey, similar to RAL 7035  
Special colours on request.

### Protection class:

Depending on the model up to IP40 / NEMA 1

### Material:

Enclosure: ABS

### Characteristics:

- For horizontal or vertical use
- Additional heights possible by using extension sets
- Version with or without air vents
- Detent or screwing of the enclosure parts
- Good stackability
- Flat wall mounting is possible
- Design elements and caps available in 6 colours
- Angled operating front (optional)
- Aluminium front/rear panel, pluggable and screwable



Quick-Finder:  
[www.bopla.de/551](http://www.bopla.de/551)

#### Example of use:



## Ultramas

### Colour:

Enclosure:

Light grey, similar to RAL 7035

Screw covers, tabs, feet:

Agate grey, similar to RAL 7038

Special colours on request.

### Protection class:

Depending on the model up to IP40 / NEMA 1

### Material:

Enclosure: ABS

### Characteristics:

- Aluminium or plastic front/rear panels
- For horizontal or vertical use
- Different heights possible by using extension sets
- Version with or without air vents
- 19" internal constructions available on request
- Flat wall mounting is possible

## Mechanical processing



Your machining requirements are carried out to a high standard on CNC-controlled machines and systems.

This guarantees consistently high quality, ensures optimal delivery times and significantly reduces waste and transport costs.



# Interzoll Modul

## Colour:

Profiles: natural-coloured anodised aluminium

## Protection class:

Depending on the model up to IP40 / NEMA 1

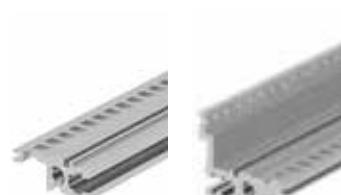
## Material:

Profiles: Al Mg Si 0,5, anodised

## Product advantages:



The subracks in the Interzoll Modul series have the option of continuous EMC screening. All enclosure components can be connected conductively by means of specially-matched EMC accessories.



.Pi

.12

Interzoll Modul provides a matching card guide for every situation – and with mechanical coding on request. To unlock, apply side pressure.

Versions for backplane technology (.Pi) for direct screw-on connectors (.12) acc. to DIN EN 60603-2, and for plug-in units acc. to IEC 60297-3-101.



Subracks and accessories with the BN designation are certified for use in buses and rail vehicles.



The support brackets are firmly pressed to the side panel to cope with extreme mechanical loads. All side panels are passivated and have a conductive function.

## Example of use:





Quick-Finder:  
[www.bopla.de/53](http://www.bopla.de/53)

## Interzoll

### Colour:

Profiles:natural-coloured anodised aluminium

### Protection class:

Depending on the model up to IP40 / NEMA 1

### Material:

Profiles: Al Mg Si 0,5

### Characteristics:

- Wide-ranging standard programme
- Standard subrack for Euro and double Euro cards
- Railway-tested versions for use in bus and rail vehicles
- Special subracks can be created possible quickly and flexibly
- Part and plug-in front panels
- Frame-type plug-in units

### Example of use:



Quick-Finder:  
[www.bopla.de/64](http://www.bopla.de/64)

## Internorm Stil

### Colour:

Enclosure:

● White aluminum, similar to RAL 9006

Profiles, feet:

● Anthracite grey, similar to RAL 7016

### Protection class:

Depending on the model up to IP40 / NEMA 1

### Material:

Profiles: Al Mg Si 0,5, anodised  
Covers: diecast aluminum

Front handles / flanges: diecast aluminum  
Side walls, cover and side panels:  
passivated aluminium

### Characteristics:

- With or without integrated ventilation
- Internorm Stil is based on the Interzoll Modul subrack programme. The Interzoll Modul range of accessories can also be used for Internorm Stil

### Example of use:





# Interzoll Case

## Colour:

Individually according to your specifications

## Protection class:

IP40 / NEMA 1; Depending on the model up to IP65 / NEMA 3

## Material:

Individually manufactured; for example made of aluminum, steel or stainless steel. Other materials and surface coatings are always possible on request.

## Product advantages:



Interzoll Case is a series of tailor-made enclosures manufactured for specific projects and in sheet aluminium or steel using stamping and bending technology. Standard designs exist for manufacturing numerous enclosure types from 19" switch cabinet enclosures to elegant display enclosures.



Enclosure break-throughs and holders for PCBs are integrated in the enclosure directly during the production process. Later reworking is no longer necessary.



The standard designs are available for downloading as 3D-CAD files on [www.bopla.de](http://www.bopla.de) and could be manufactured directly as a "standard product". However, they can also be used as a basis for completely individual designs.



Many surface coatings and colours are available for the external design. Interzoll Case can be given an even more individual design by using printing (even under anodised surfaces).



Optional contact areas between the enclosure components ensure optimal EMC screening.

## Example of use:





Quick-Finder:  
[www.bopla.de/29](http://www.bopla.de/29)

## Interzoll Plus

### Colour:

Enclosure:

- Light grey, similar to RAL 7035 and natural-coloured anodised aluminium, special colours on request.

### Protection class:

Depending on the model up to IP40 / NEMA 1

### Material:

Profiles: Al Mg Si 0,5, anodised  
Cover plates: sheet steel  
Plastic panels, covers: ABS / PVC V-1

### Characteristics:

- Internorm Plus is based on the Interzoll subrack programme. The Interzoll range of accessories can also be used for Internorm Plus

### Example of use:



Quick-Finder:  
[www.bopla.de/30](http://www.bopla.de/30)

## Internorm

### Colour:

Enclosure:

- Light grey, similar to RAL 7035

Corner profiles, cover caps, door:  

- Silver grey, similar to RAL 7001

### Protection class:

Depending on the model up to IP54 / NEMA 3

### Material:

Enclosure: PS (polystyrene)  
Seal: CR / TPE  
(Round cord / FIP seal)

### Characteristics:

- Height-variable by using extension sets
- Collapsible screw cover
- Integrated collapsible tip-up feet
- Wall mounting is possible

### Example of use:





## Alurail

### Colour:

Profile: natural-coloured anodised aluminium

### Profile caps:

Light grey, similar to RAL 7035  
Special colours on request.

### Protection class:

Depending on the model up to IP40

### Material:

Extruded profiles: Al Mg Si 0,5 anodised  
Profile caps: polyamide 6.6 FR

### Characteristics:

- Length-variable thanks to profile technology
- Variable positioning of the modules
- Can be used as a single-board enclosure
- Design-matching wall fitting
- Earthing kit as an accessory

### Example of use:



## CombiNorm-Classic

### Colour:

Light grey, similar to RAL 7035  
Special colours on request.

### Protection class:

Depending on the model up to IP40 / NEMA 1

### Material:

Enclosure: ABS  
V-0 material on request

### Characteristics:

- Matching connection terminals as accessories
- DIN rail holder also for use as wall fitting
- Terminal approvals acc. to UL 1059, CSA 22.2 No. 158 and EN 60998
- Wide range of accessories

### Example of use:





## CombiNorm-Compact

### Colour:

Light grey, similar to RAL 7035  
Special colours on request.

### Protection class:

Depending on the model up to  
IP40 / NEMA 1

### Material:

Enclosure: PA 6.6-FR (V-0)

### Characteristics:

- Various lid types
- Matching connection terminals as accessories
- Wide range of accessories

### Example of use:



## CombiNorm-Connect

### Colour:

Light grey, similar to RAL 7035  
Special colours on request.

### Protection class:

Depending on the model up to  
IP40 / NEMA 1

### Material:

Enclosure: Polyamide UL 94 V-0

### Characteristics:

- Minimal installation width with maximum number of poles
- Optimal relationship of the circuit board area to the enclosure size
- Front panels and crystal-clear covers
- DIN rail bus connector with gold-plated contacts
- Spring-cage terminals
- Screw-type terminal blocks – fixed and pluggable

### Example of use:

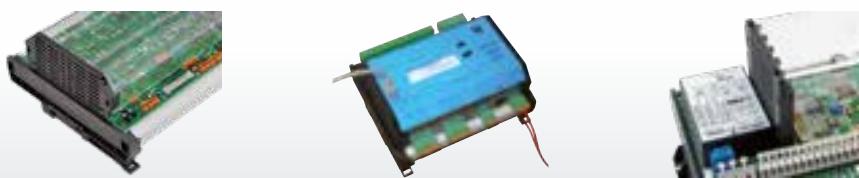




Example of use:



Example of use:



## CombiNorm- Control

### Colour:

- Light grey, similar to RAL 7035
- Special colours on request.

### Protection class:

Depending on the model up to IP40 / NEMA 1

### Material:

Enclosure: ABS flame retardant

### Characteristics:

- Various lid types
- Integrated DIN rail fixing
- Matching connection terminals as accessories
- Sets available to ensure a fast project start

## Combirail

### Colour:

#### Profile:

- Light grey, similar to RAL 7035

#### Side panels:

- Black, similar to RAL 9005
- Special colours on request.

### Protection class:

### Material:

Extruded profiles: polyamide PA-GF HT, V-0  
Side panels: polyamide PA, V-0

### Characteristics:

- Profile technology provides variable lengths
- Easy-to-install snap-in technology
- 100°C temperature resistance
- Design-matching wall fitting
- Potential earthing to the DIN rail



Quick-Finder:  
[www.bopla.de/17](http://www.bopla.de/17)

## Uninorm

### Colour:

- Black, similar to RAL 9005  
Special colours on request.

### Protection class:

Depending on the model up to  
IP65 / NEMA 3

### Material:

Enclosure: Modified PPE+PS  
(SE1 GFN1)

### Characteristics:

- Fixing with screw or spring clamps
- Connecting piece for standard retaining clasp acc. to DIN 43835 Form B
- Wide range of accessories

### Example of use:



Quick-Finder:  
[www.bopla.de/78](http://www.bopla.de/78)

## BoTouch

### Colour:

- Black, sim. to RAL 9005 (BTK / BTK-IP)  
Customised (BTA)  
Special colours on request.

### Protection class:

Depending on the model up to  
IP65 / NEMA 3

### Material:

Rear hood: galvanised sheet steel  
Rear panel: aluminium anodised  
BTK enclosure frame: PC UL 94 V-0  
BTK-IP enclosure frame: PA 6.6 GF 30 UL 94 V-0  
BTA front frame: aluminium anodised or powder-coated

### Characteristics:

- For touch screens from 4.3" to 12.1"
- Enclosure front / front membrane: project-specific printed or back-printed
- Rear hood / enclosure frame with terminal elements for panel mounting

### Example of use:



# Cable glands

## Pressure compensation elements and glands



## Cable glands, plastic



## Cable glands, brass



## Special screw connections



Other accessories such as sealing and blind plugs, grommets, lock nuts, You can find sealing rings and rubber seals on our website.

# General accessories



Our universal brackets enable reliable wall mounting - also in the VESA standard.



Universal mast mounting in 5 standard sizes with different mounting spacings for fitting enclosures to the mast.



Because of the various settings (fixed detent position every 10°), the universal wall fitting can be used on a wall or as a foot. The length of the profiles can be adapted to every enclosure.



Every hand-held enclosure can be fitted with a universal holding clip.



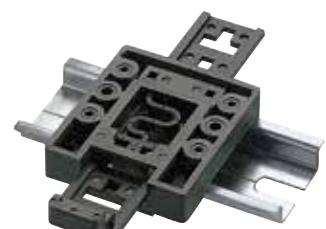
The universal clip and tip-up clip can be retrofitted to all enclosures.



By using the universal screw-on lanyard loop, hand-held enclosures can easily be carried round the neck.



The swivelling handle allows the flexible-width handle to be used both as a carrying handle and a tip-up bow.



These clips ensure reliable mounting of the enclosure on the mounting rail and are available for different loads.



With different battery compartments allow almost every type of enclosure can be used as a hand-held enclosure.



Universal enclosure feet ensure a stability on all surfaces.



With the UDS, power and data connections can be implemented for mobile devices.



Screws and spacers for mounting cams in plastic enclosures.

Explanation of all icons, products starting on page 34.



**Protection class**  
IP00 ... IP69



**Impact resistance**  
IK00 ... IK 10



**Flame retardance**  
UL94 V-0



**Flame retardance**  
5V



**Variable sizes**



**EMC protection**



**Cooling**



**Material complies with the railway standard**  
DIN EN 45545



**Plastic with UV protection**



**Sea water resistance**



**Locking is possible**



**Wall mounting is possible**



**Mast mounting**



**Battery compartment**



**Hinged catch**



As standard, applies to the product range and a few variants



Achievable with accessories or by means of modification

# Contact – worldwide on-site



We at BOPLA combine the values of a medium-sized company with the advantages of a concern which operates worldwide. Flexible, innovative and responsible – but also down-to-earth, on-site and close. As a subsidiary of the Swiss company Phoenix Mecano AG with around 7,200 employees, BOPLA can make use of production and marketing sites in all important markets.

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