



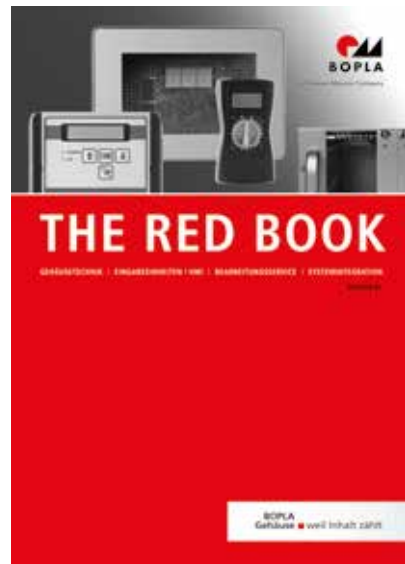
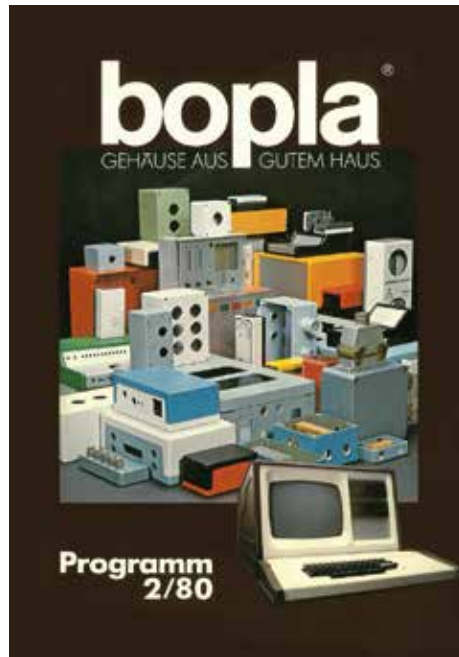
BOPLA

A Phoenix Mecano Company

THE RED BOOK 5.0



BOPLA
enclosures ■ content matters





THE RED BOOK 5.0 – Print and digital!

In our more than 50 years of company history, together with customers we have implemented countless development projects for all sectors which require electronics. Our printed THE RED BOOK catalogue has always been a faithful companion and reliable guide through our comprehensive range of products and services.

Now you have the new Edition 5.0 of THE RED BOOK in your hands – its concept is very different from that of earlier editions. In THE RED BOOK 5.0 catalogue, you make a pre-selection in accordance with field of application, design and technical characteristics. After that, our website will provide you with the very latest information about article numbers, data sheets, drawings and much more to ensure that you receive the enclosure which is tailor-made to your needs.

Your BOPLA team







BOPLA

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BOPLA – Enclosures which provide a home for electronics.

BOPLA enclosures stand out thanks to the excellent quality and design. Combining them with our customers' electronics creates something very special.

For more than 50 years, Bopla Gehäuse Systeme GmbH has been manufacturing and developing enclosures and membrane keypads for applications in the electronic and industrial markets including measurement and control, safety, automotive and medical technology sectors.

With our plastic or aluminium enclosures, we are always ahead of the competition. This is how innovations are created, or existing themes re-interpreted. In this way, BOPLA combines the virtues of a medium-sized company with the advantages provided by a group which operates world-wide. Fast, flexible, innovative and well networked, both locally and globally.

As the subsidiary of the Swiss company of Phoenix Mecano AG, which has around 7.000 employees, BOPLA has recourse to production and marketing sites in all the important markets. This simplifies logistics, and also makes it possible to meet even better our customers' requirements in their target markets.

However, what continues to be most important for BOPLA is protecting valuable electronic components in your application, this is what we develop and manufacture day after day.

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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

Whether 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.



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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 good impact resistance.



Audio, video and lighting technology

Controlling lighting systems and pyrotechnology, 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.

Enclosure planner

1.

Applications

- INDUSTRY ENCLOSURES
- CONTROL ENCLOSURES
- ELECTRONIC ENCLOSURES
- CONSOLE ENCLOSURES
- **HANDHELD ENCLOSURES**
- PROFILE ENCLOSURES
- DESKTOP ENCLOSURES
- 19"-ENCLOSURES
- DIN RAIL ENCLOSURES
- CONTROL PANEL ENCLOSURES

2.


Enclosures


- **BOPAD**
- BOS-Streamline
- BOPLA-Arteb
- BOS
- Alubos
- BOS-Ecoline
- Alustyle

3.

Characteristics

-  **Protection class**
IP00 ... IP69
-  **Impact resistance**
IK00 ... IK 10
-  **Flame retardance**
UL94 V-0
-  **Variable sizes**
-  **EMC protection**
-  **Material complies with the railway standard**
DIN EN 45545
-  **Plastic with UV protection**
-  **Seawater 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

4.

Enclosure sizes

5.

Accessories

6.

www.bopla.de

Dimensions



Model	A	B	C (Flat)	C (Console)
BOP 520	130	75	17.5	-
BOP 500	130	75	26	-
BOP 700	165	90	34	47.5
BOP 900	200	105	34	53.6
BOP 7.0	215	150	46	53
BOP 10.1	285	198	46	61.2

Variants

Model	Battery compartment	Console type	VESA fitting	Optimised touch/display
BOP 520	✓			2,4", 2,8"
BOP 500	✓			2,4", 2,8"
BOP 700	✓	✓		3,5", 4,3"
BOP 900	✓	✓	✓*	3,5", 4,3", 5,0"
BOP 7.0		✓	✓	7"
BOP 10.1		✓	✓	10,1"

* Additional processing of the enclosure is required

Enclosure colour

-  Black
RAL 9005
-  White
RAL 9016



● DESIGN SEAL

IMPACT PROTECTION

BATTERY COMPARTMENT

WALL FITTING

CABLE GLANDS

GENERAL ACCESSORIES

Colours



Our website contains the following details of all our products:

TECHNICAL DRAWINGS
(pdf, dxf, stp)

ARTICLE NUMBERS

MATERIAL DATA

WORKS TEST CERTIFICATES

ASSEMBLY INSTRUCTIONS

MATCHING ACCESSORIES

BASKET FUNCTION

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).



Applications

Industry enclosures



1	Bocube	46 - 49
2	Euomas II	50 - 53
3	Euomas ABS / PC / F05	54 - 57
4	Euomas Polymas	58 - 61
5	Euomas Polyester	62 - 65
6	Bocube Alu	66 - 69
7	Euomas Alu / F05	70 - 73
8	Polysafe	74 - 77
9	Bocard	80 - 83

Controller enclosures



1	Bocard	80 - 83
2	RegloCard-Plus	84 - 87
3	CombiCard 5000-7000	88 - 91
4	CombiCard 1000-3000 / CombiSet 500	92 - 95

Applications

Electronic enclosures



❶	BoLink	98 - 101
❷	Circum	102 - 105
❸	Unimas	106 - 109
❹	Elesett / Eletec	110 - 113
❺	Element / Universal	114 - 117
❻	Elegant	118 - 121

Console enclosures



1	Elegant-Pult	126 - 129
2	Ultrapult	130 - 133
3	Futura / Bopult	134 - 137
4	BoPad	140 - 143
5	Alu-Topline	174 - 177
6	Interzoll Case	218 - 221

Applications

Hand-held enclosures



1	BoPad	140 - 143
2	BOS-Streamline	144 - 147
3	BOPLA-Arteb	148 - 151
4	BOS	152 - 155
5	Alubos	162 - 165
6	BOS-Ecoline	166 - 169
7	Alustyle	158 - 161



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Profile enclosures



1	Alustyle	158 - 161
2	Alubos	162 - 165
3	BOS-Ecoline	166 - 169
4	Filotec	170 - 173
5	Alu-Topline	174 - 177
6	Aluplan	178 - 181
7	Intertego	184 - 187
8	Combirail	244 - 247
9	Alurail	240 - 243

Applications

Desktop enclosures



1	Intertego	184 - 187
2	Botego	188 - 191
3	Ultramas	192 - 195
4	Unimas	106 - 109
5	Internorm Stil	198 - 201
6	Interzoll Case	218 - 221
7	Internorm	202 - 205
8	Interzoll Plus	206 - 209



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19" enclosures



1	Intertego	184 - 187
2	Internorm Stil	198 - 201
3	Internorm	202 - 205
4	Interzoll Modul	210 - 213
5	Interzoll Plus	206 - 209
6	Interzoll	214 - 217
7	Interzoll Case	218 - 221

Applications

DIN rail enclosures



1	Alurail	240 - 243
2	CombiNorm-Control	236 - 239
3	CombiNorm-Classic	224 - 227
4	CombiNorm-Compact	228 - 231
5	CombiNorm-Connect	232 - 235
6	Combirail	244 - 247
7	Interzoll Case	218 - 221

Control panel enclosures



1	BoTouch	252 - 255
2	CombiCard 5000-7000	88 - 91
3	Interzoll Case	218 - 221
4	Uninorm	248 - 251

PRODUCTS	Profile-enclosures	Indicator-enclosures	Controller-enclosures	Industrial-enclosures	Elektronic-enclosures	Touch screen enclosures	Hand-held enclosures	Console-enclosures	Table-enclosures	Control panel mounting enclosures	19" enclosures	Plastic	Aluminium
Bocube				•									
Euromas II				•									
Euromas ABS / PC / F05				•									
Euromas Polymas				•									
Euromas Polyester				•									
Bocube Alu				•									
Euromas Alu / F05				•									
Polysafe				•									
Bocard			•	•									
RegloCard-Plus			•	•									
CombiCard 5000-7000			•	•						•			
CombiCard 1000-3000		•	•	•						•			
BoLink													
Circum					•								
Unimas					•				•				
Elesett / Eletec					•								
Element / Universal					•								
Elegant					•								
Elegant-Pult								•					
Ultrapult								•					
Futura / Bopult								•					
BoPad						•	•	•					
BOS-Streamline							•						
BOPLA-Arteb							•						
BOS							•						
Alustyle	•						•						
Alubos	•						•						
BOS-Ecoline	•						•						
Filotec	•												
Alu-Topline	•							•					
Aluplan	•					•							
Intertego	•								•		•		
Botego									•				
Ultramas									•				
Internorm Stil									•		•		
Internorm									•		•		
Interzoll Plus									•		•		
Interzoll Modul									•		•		
Interzoll									•		•		
Interzoll Case		•				•		•	•	•	•		
Alurail	•	•											
CombiNorm-Control		•											
CombiNorm-Classic		•											
CombiNorm-Compact		•											
CombiNorm-Connect		•											
Combirail	•	•											
Uninorm										•			
BoTouch						•				•			

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CombiNorm-Control	236 - 239
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Elegant-Pult	126 - 129
Elesett / Eletec	110 - 113
Element / Universal	114 - 117
Euromas II	50 - 53
Euromas ABS / PC / F05-Gehäuse	54 - 57
Euromas Aluminium / F05-Gehäuse	70 - 73
Euromas Polyester	62 - 65
Euromas Polymas	58 - 61
Filotec	170 - 173
Futura / Bopult	134 - 137
Internorm	202 - 205
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Enclosures for switch cabinets

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Cable glands / Accessories

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Technical information

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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!





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Machining service



Quick-Finder:
www.bopla.de/14

Mechanical machining

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.

Our range of services includes:

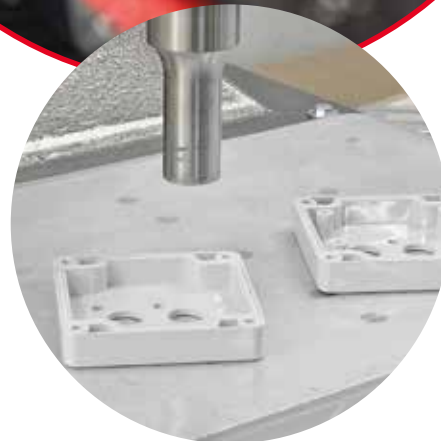
- Drilling
- Milling
- Counter-sinking
- Thread-cutting



Our highly-qualified and motivated employees saw extruded aluminium profiles in accordance with your specifications. This ensures optimal delivery times and a high level of quality for the products.

Profile processing:

- Scutting
- Sawing



Ultrasonic welding

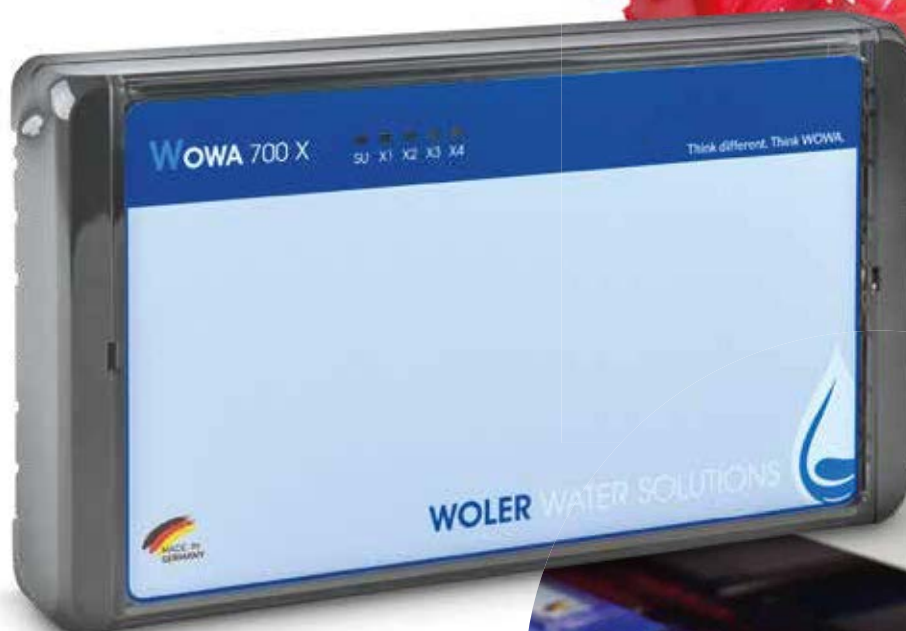
We use a special ultrasonic welding method to join the screw domes to our enclosures.

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

Services

Surface improvement

By "surface improvement" we mean all the technical processes used during production of a part in order to improve the surface characteristics. These characteristics may be 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





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Laser marking

Flexible, abrasion-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.



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.



Quick-Finder:
www.bopla.de/101



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.



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.



EMC coating Plastic enclosures:

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.

With plastic housings:

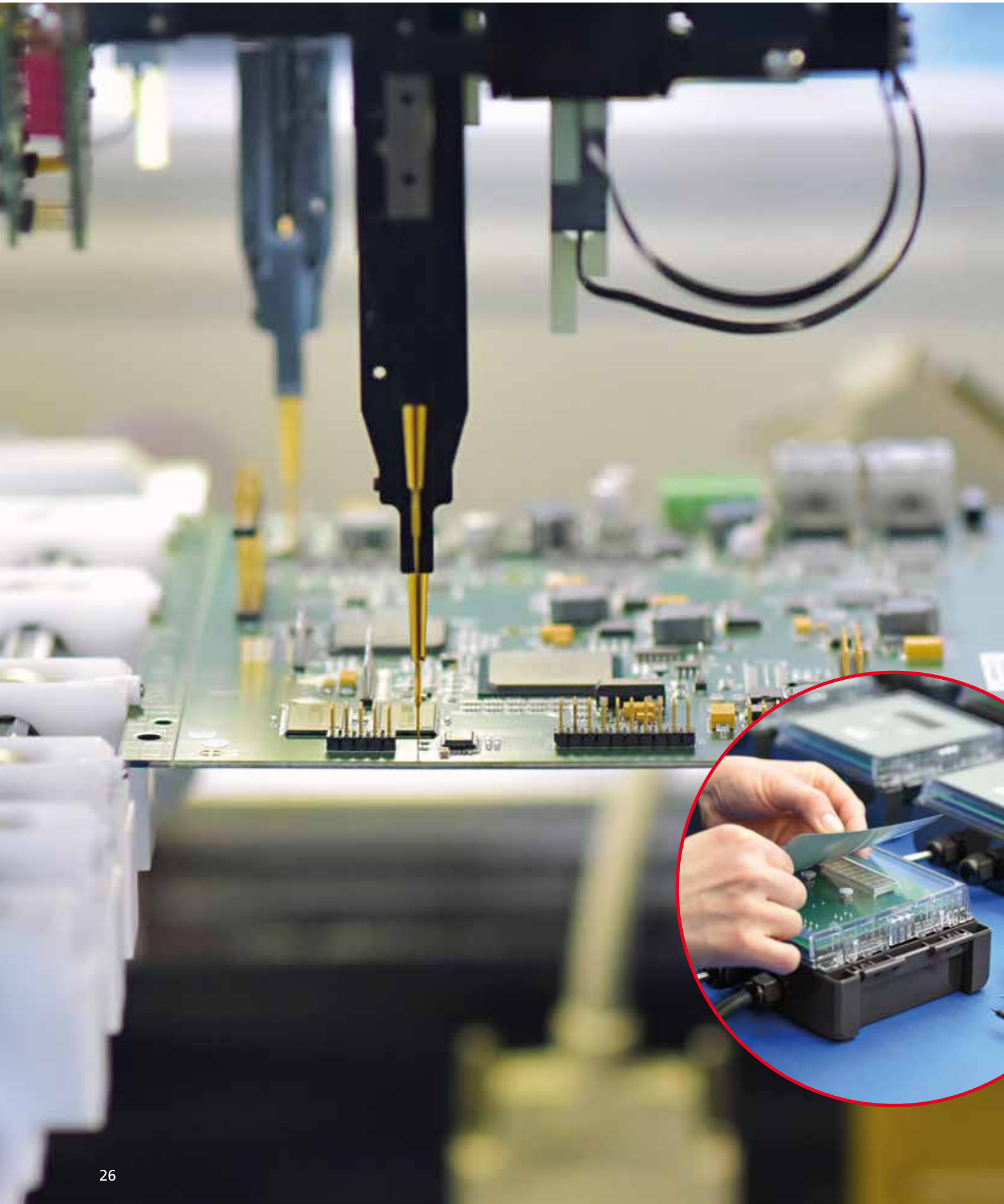
- Copper-chrome-nickel evaporation
- Aluminium evaporation
- Lacquering with conductive copper lacquer



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





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Integration of electronics



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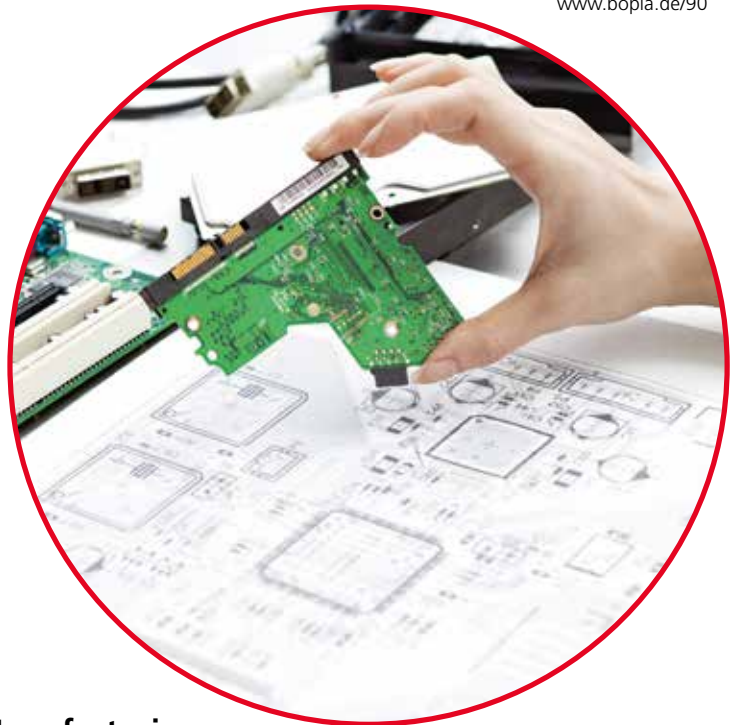
The heart of your product

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.

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.

Our contact persons 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

Qualified technicians carry out the final assessment of the modules, with function and end tests.



Services





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Mounting / Testing / Packaging

The perfect result



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www.bopla.de/102

For mechanical processing, mounting of the enclosure parts or additional mechanical articles, terminal insertion, pre-wiring or the 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.

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!

Our offer comprises:

Consultation



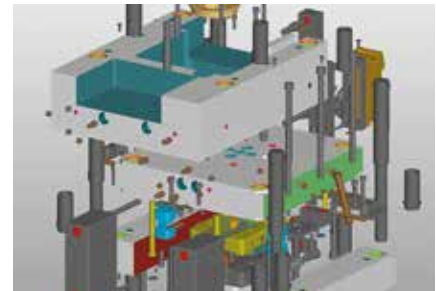
- Consultation
- Spezifikation
- Preliminary costing

Construction



- Preparation of drawing
- Filling study
- Prototype construction

Tool



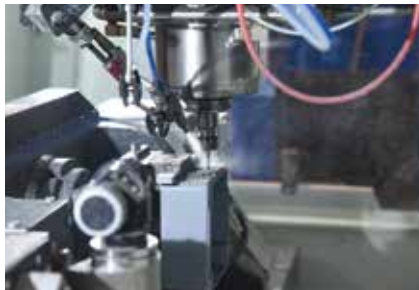
- Tool drawing
- Tool manufacture

Production process



- Plastic injection moulding
- Aluminium profile extrusion
- Aluminium / zinc die casting
- Stamping and bending technology
- Further processing

Processing



- Milling
- Drilling
- Counter-sinking
- Punching
- Sawing

Refinement



- Printing
- (Powder) lacquering
- Engraving
- Laser marking
- EMC screening

Packaging



- HMI integration
- Assembly
- Wiring
- Cable assembly

Testing



- IP test
- IK test
- Climatic test
- EMV test

Packaging



- ESD-compliant packaging
- Individual packaging
- Returnable packaging
- Logistics concept

Individual enclosures



Technology

Plastic injection molded enclosures

Aluminium-/Zinc die-cast



Modified enclosures on 19" basis

Stamping and bending technology

Extrusion of aluminum profiles

Advantages

Advantages of plastic

Plastic injection-moulded enclosure:

- Individual design
- Low weight
- Low unit costs for large quantities
- In parts which are resistant to aggressive environmental influences (salt water)

Advantages of metal

Aluminium / zinc die casting:

- Reliable even under extreme conditions
- High impact resistance, stability and ingress protection
- Resistant to chemicals and temperature
- Very good heat dissipation
- Good EMC screening
- Low unit costs

Aluminium profile enclosures:

- Variable lengths (a "family" of enclosures can easily be created)
- Ideal for use in difficult environments (high chemical and temperature resistance)
- Good opportunities for EMC screening and conductive connections
- Very good heat dissipation
- Low tool costs
- High level of impact resistance
- Very good stability

Stamping and bending technology:

- Small quantities at lower cost than with plastic enclosures
- Good opportunities for EMC screening and conductive connections
- Ideal for use in difficult environments (high chemical and temperature resistance)
- Low-cost alterations to the enclosure design are possible
- Very good stability



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www.bopla.de/60

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!





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Here are the solutions!

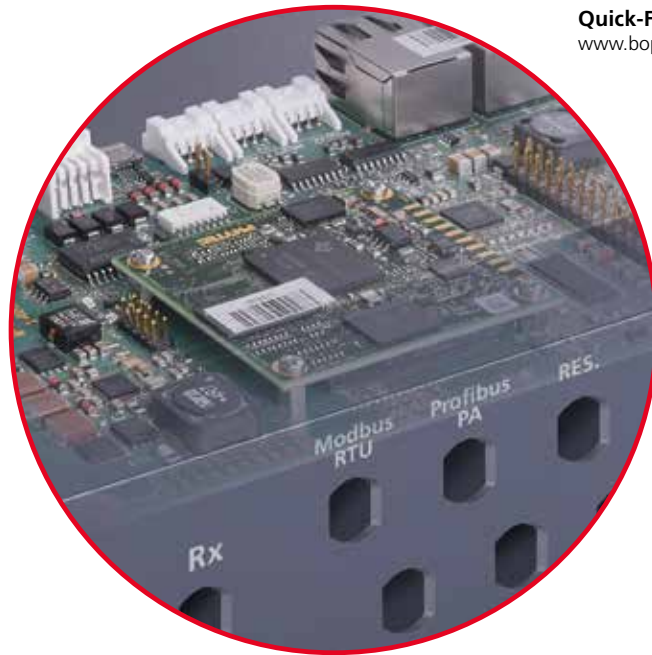


Quick-Finder:
www.bopla.de/77

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 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!



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, and powder and EMC coatings.

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.

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.

Our high-quality front membranes conform to high tightness and robustness standards. There are virtually no limits on design. The front membranes can be supplied with or without self-adhesive layers, depending on the customer's requirements. In addition, we can also offer key embossing and display windows, depending on your needs.

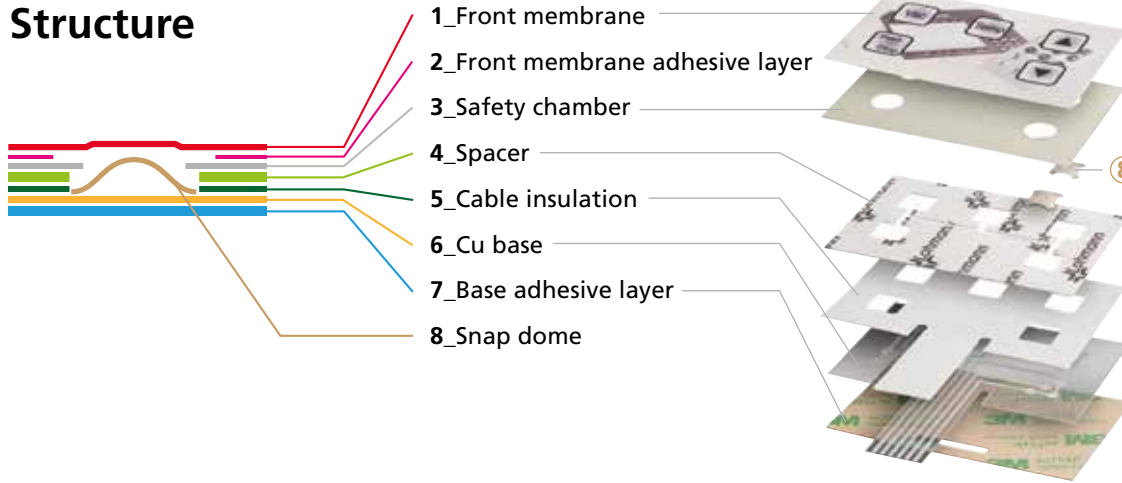


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The structure

Structure

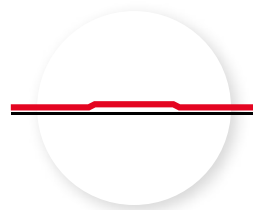


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Embossing

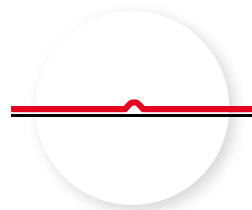
Membranes are embossed primarily to improve ease of use.

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



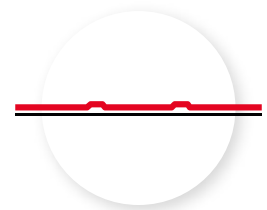
Raised embossing

Height: approx. 0.3 - 0.5 mm*



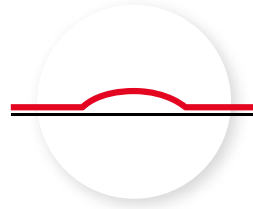
Cap embossing

Height: approx. 0.6 - 0.8 mm*



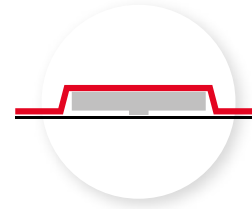
Rim embossing

Height: approx. 0.3 - 0.5 mm*



Dome embossing

Height: approx. 0.6 - 1.4 mm*



Profiline embossing

Height: approx. 1.0 - 1.5 mm*

* Dependent on the membrane material

Printing methods



Screen printing

Industrial screen printing is the most widely-used process for manufacturing all types of especially high-quality membrane keypads / HMIs. 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

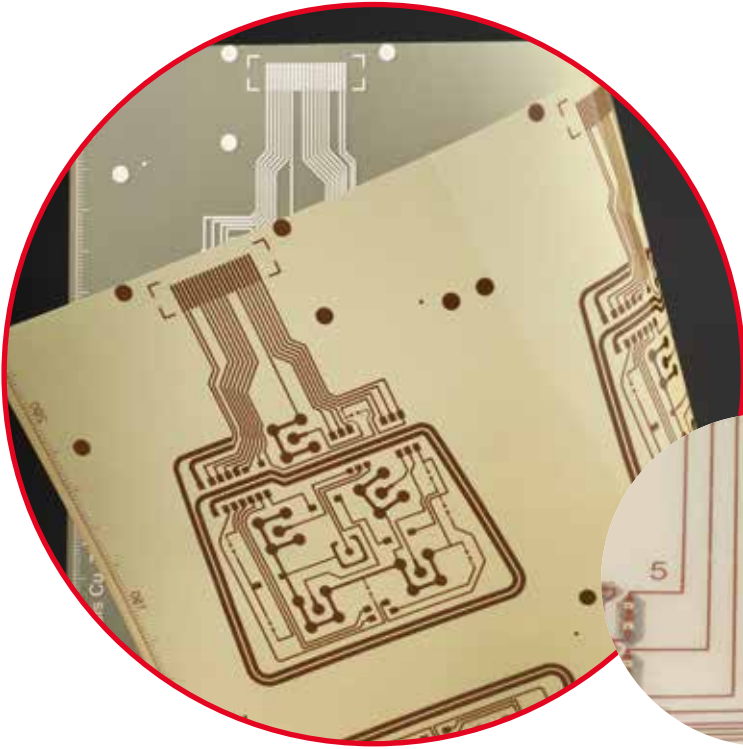


High-gloss technology

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.



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The technologies

Capacitive touch screen

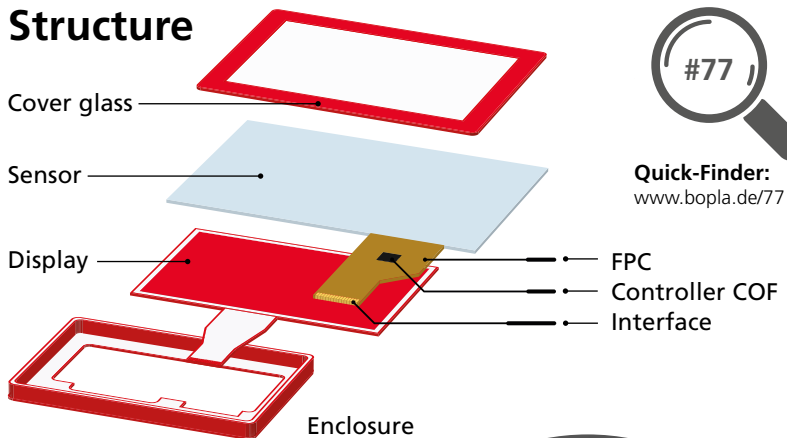
Until recently, membrane keypads and conventional resistive touch screen solutions have been used in the industrial environment, but capacitive touch screen technology is now increasingly taking over. Capacitive technology, definitively shaped by the consumer market, now meets the high demands made in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

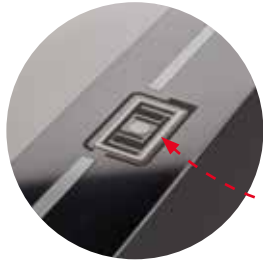
- Vandal-proof
- Easy cleaning
- Can be operated wearing gloves
- Temperature resistance
- UV resistance
- Operation in wet environments no problem
- Extremely high service-life

Structure



Quick-Finder:
www.bopla.de/77

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



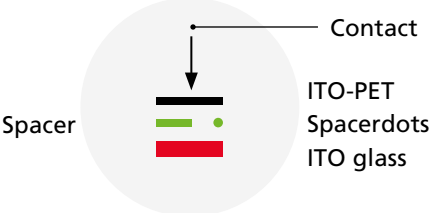
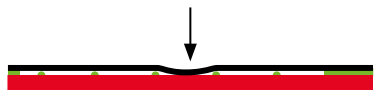
Resistive touch screen

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

Touch / display integration

Our solutions for all enclosures



Individual enclosures, optimised for the installation of capacitive and resistive touch screens.

In addition to the integration of standard displays, our enclosures also make possible the installation of resistive and capacitive touch screens.

In both cases, the integration of the touch screen can be achieved in many ways. For applications in which dirt-collecting edges are not allowed to remain, we provide solutions behind glass or with a continuous front membrane – full-surface laminated or with rear spacer dots.

- Individual solutions for all types of enclosures
- Enclosure, front membrane or glass backprinted or printed for specific projects
- Special grouting compound technologies for optimal protection against harsh environment, shock and vibration

Digital Label System – DLS



DLS offers individual, exchangeable new marking of keys during ongoing operation.

By using DLS, keys can constantly be digitally re-marked. DLS can carry out multiple occupancies of keys, in addition to customised symbols or languages. The markings are also visible when the keys are voltage-free. By using e-paper displays, DLS operates energy-efficiently because energy is only needed when the markings are changed. Various interfaces allow new marking with the symbols available in the memory.

- Fewer keys
- Re-marking of keys
- Customised personalised marking
- Voltage-free display operation
- User-friendly configuration software

Printed electronics

Capacitive keypads

Touch sensor membranes convert nonconductive surfaces such as membranes, glass panels or, e.g., enclosures into a capacitive keypad.

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



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

On request

Pressure sensor systems

- Low-profile and lightweight
- Combinations with other sensors possible
- Sensor electronics can be integrated for better scalability
- Integration of customer designs

Printed heaters

- Low-profile, lightweight and flexible
- Can be integrated into membrane keypads, glass and touch systems
- Self-regulating or with integrated measuring electronics
- Up to 200°C in continuous operation (depending on overall system)



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Sample service with mechanical processing!



As enclosure specialists, our aim is to ensure that as early as the development phase, your valuable electronics, including all interfaces, display and operating elements, are secured in the enclosure in accordance with their function and as near to series production requirements as possible. This is why we support you with individual samples when you are selecting your enclosure.

- Free selection from all standard enclosures
- On request, also including mechanical processing according to your specifications
- You will soon receive your personal enclosure sample

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PDF, DXF and 3D data
for all products are available on our websites.

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