

# DATA MODUL

## Innovative / Intelligent / Individual

Step by step we develop your complete system –  
according to your requirements and wishes.

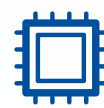
Because the customer is our focus!



DISPLAY



TOUCH



EMBEDDED



SYSTEMS



## **We develop visual solutions – of today and tomorrow!**

We passionately pursue our philosophy of being one of the world's leading partners for future-oriented and professional display and interaction systems. The focus is always on our customers and their satisfaction.

In line with our corporate values, this results in state-of-the-art new developments as well as customized solutions for the industry.

For over 50 years, we have distinguished ourselves through innovation, reliability, quality and the best advice for display and system solutions on the international market.

We shape the future of visual solutions.

# Index



## About DATA MODUL

- 03 Our mission
- 06 Facts & figures
- 08 DATA MODUL worldwide
- 10 Markets



## Product segments

- 16 Display
- 20 Touch
- 24 Embedded
- 28 Systems



## Competences

- 36 Customizing options
- 40 Bonding technologies
- 44 Production & services
- 48 Research & development





## About us

### Facts & figures



Foundation  
**1972**



Revenue  
**~250 Mio. €**



Equity ratio  
**~60%**



Employees worldwide  
**~500**



Offices worldwide  
**> 20**



Production, logistics &  
administration area  
**~40,000 m²**



Employees from  
**> 28 nations**  
worldwide



Investments in  
the last 5 years  
**> 25 Mio. €**



Displays in  
our portfolio  
**> 5,000**

## Our mission

### Corporate values



#### Success

As a strong and focused partner, we strive for sustainable growth together with our customers.



#### Professionalism

We work in a reliable, structured and disciplined way to fulfil highest requirements in all areas.



#### Innovation

With curiosity, courage and competence, we take on tomorrow's technology trends already today.



#### Passion

Excitement for challenges and personal engagement inspire us every single day to fully commit to our tasks and our customers.



#### Team spirit

As a global company, we assume joint responsibility and support each other in achieving our goals.

# DATA MODUL worldwide

## Our locations

With our company headquarters in Munich, several production and logistics locations in Europe, Asia and the USA as well as numerous sales locations, we can react quickly and efficiently to the needs of our customers.

In doing so, we stand for an open corporate culture, responsible corporate governance as well as trusting, long-term relationships with our employees, customers, suppliers and shareholders.



## International production sites

About 30,000 m<sup>2</sup> production & logistics area

### Weikersheim (Germany)

Our technology flagship with a total area of more than 21,000 m<sup>2</sup> – the production and logistics site in Weikersheim. Here we combine flexible production lines, state-of-the-art manufacturing islands, prefabrication, mechanics and prototype construction as well as all bonding technologies at one location.



### Lublin (Poland)

Since April 2019, we have been manufacturing a wide range of display and system solutions at the highest level in our site in Lublin. With around 14,000 m<sup>2</sup> of production and logistics area, we have state-of-the-art machinery and the latest manufacturing methods at our disposal in the heart of Europe.



### Shanghai (China)

Local assembly according to German quality standards on a total area of around 2,000 m<sup>2</sup> in Shanghai: With the commissioning in March 2020, we are continuing our internationalisation strategy and increasing our global manufacturing capacities. This will enable us to serve the needs of local markets and our globally operating customers based in Asia efficiently and quickly.







# The perfect product for every application

## Our market solutions at a glance

Our display solutions can be found in many applications worldwide. Thanks to our extensive product portfolio, we can meet even the most demanding market requirements. In addition to the appropriate products, we offer competent and customer-oriented advice from the concept idea to series production. Over 50 years of expertise and know-how in the field of design and electrical engineering make us the ideal partner for professional display systems.

### Industrial HMI

- > Machine control
- > Robotics
- > Measuring & Weighing equipment
- > Energy



### Medical & Healthcare

- > Laboratory diagnostics
- > Therapy / fitness equipment
- > Patient monitoring
- > Endoscopy & life-support systems



### eMobility

- > EV charging stations
- > Wallboxes
- > Charging displays



### Automotive

- > Vehicle cockpit (road & rail vehicle)
- > Agricultural, forestry & construction machinery
- > Defence
- > Marine



### Transportation

- > Passenger information
- > Ticket machines
- > Info terminals & check-in
- > Passenger guidance systems



### Wearables

- > Smartwatches
- > Handhelds
- > Fitness trackers



### Food industry

- > Industrial kitchen appliances
- > Weighing systems
- > Packaging stations
- > Production monitoring



### Infotainment

- > Education
- > Conference infrastructure
- > Event technology
- > Light & sound control



### Smart Building

- > House control (HVAC)
- > Access control
- > Alarm systems



### Smart Retail & Signage

- > POS / POI advertising
- > Vending machines
- > ATMs



### Gaming industry

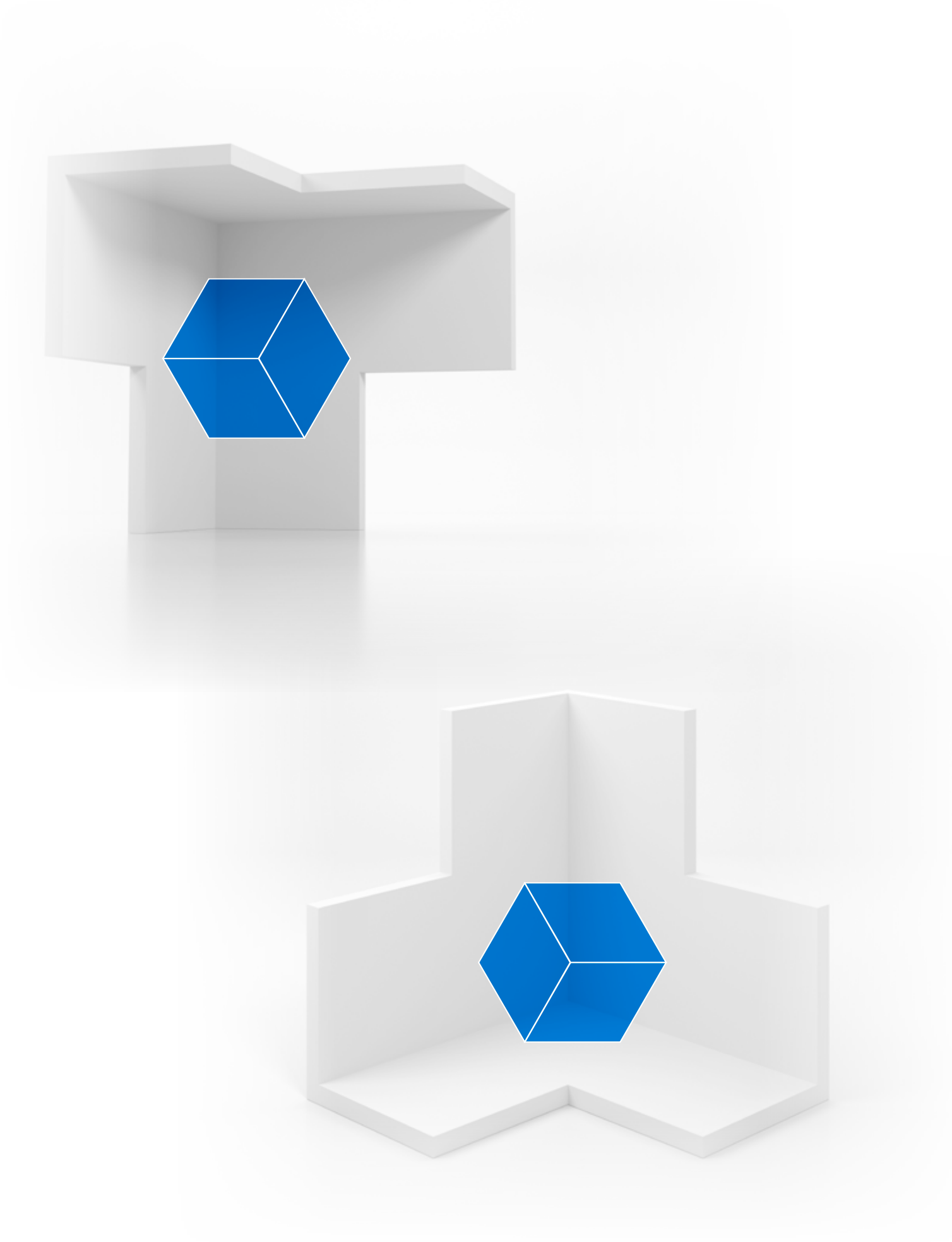
- > Slot machines
- > Entertainment electronics



### White Goods

- > Commercial kitchen equipment
- > Gastronomy
- > Household appliances

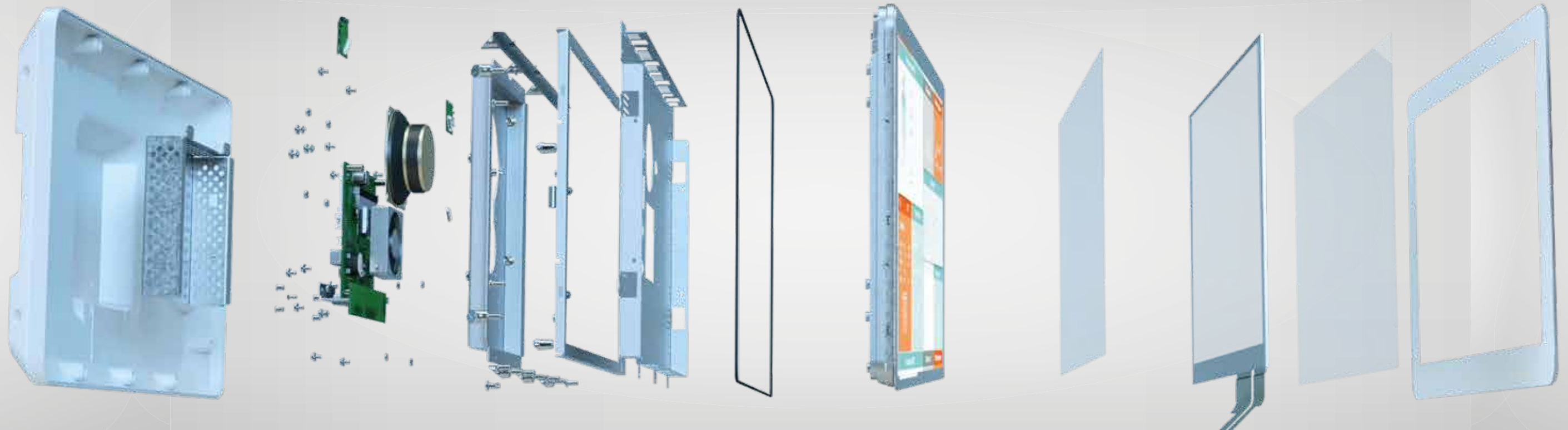




## For us, high-tech is not just a buzzword... but the basis of our success

Over the years, we have perfectly adapted our product and service portfolio to the needs of our customers and the international markets. Our claim is always to combine the highest quality and the most modern technologies into exceptional products. We offer a comprehensive “single source concept” that is unique worldwide: from the selection of suitable display, touch and embedded components to the customized system. You, the customer, are always our main focus!

## Modular product portfolio – Our core competences combined in a unique product



### Systems

- › Open frame, rackmount, monitors & Panel PCs
- › Conception from prototype to series production
- › Modular concepts up to OEM solutions
- › IP protection class
- › Customized housing & design solutions
- › Software customization & GUI design

### Embedded

- › x86- & ARM-based embedded solutions
- › Extensive embedded distribution portfolio
- › COM, SBC & carrier boards
- › eMotion LCD controller boards
- › Custom embedded computing design
- › Software development

### Display

- › TFT, OLED, LED, MIP, E-Paper, FALD etc.
- › Extensive display distribution portfolio
- › Diagonals from below 1" up to 110"
- › Different form factors
- › Fully & semi-customized displays
- › Lifecycle management

### Touch

- › Resistive, PCAP, Infrared & SAW
- › Inhouse developed touch sensor & controller solutions
- › Multi-touch, water, glove & EMC tuning
- › Inhouse optical bonding
- › Customized printing & glass processing
- › Enhancement with haptics, force, gesture control etc.



## Display



**Now and in the future,  
displays** are our main  
interaction interface

As one of the world's leading technology partners in the field of industrial display technologies, we offer a wide-ranging portfolio of services. Our many years of expertise enable us to react quickly and flexibly to changing market situations and to serve customer requirements efficiently.



# Display portfolio

Our extensive portfolio of all leading manufacturers provides the basis for the implementation of state-of-the-art display systems. In addition to a wide range of display sizes and shapes, we also have all common technologies in our constantly growing portfolio and offer semi- and fully-customized display solutions.



## Displays

- > Diagonals from below 1" up to 110"
- > Product strategies based on industrial applications
- > Comprehensive technical support
- > Optional touch displays directly from our display partners
- > In-Cell / On-Cell touch displays

## BestFit

- > Diverse technologies, interfaces, sizes, resolutions, etc.
- > Low power displays
- > Improved readability in strong sunlight
- > Extended temperature ranges for outdoor applications

## Customer benefits

- > Professional lifecycle management
- > Full technical support
- > Aftersales support
- > RMA process
- > Spare parts service
- > Long-term availability
- > Quick availability

# Display technologies

We offer the right display technology for every customer requirement: from classic TFT, passive, MIP and E-Paper to the latest generation of FALD, NVIS and OLED displays. When it comes to selection, our expert teams advise independently of manufacturers and with regard to economic efficiency and sustainability, so that we can always find the right solution for our customers. We also deal with future-oriented technologies such as transparent displays and MicroLED.

## TFT displays

- > Technologies such as TN, VA or IPS
- > Form factors: Standard (4:3, 16:9), wide formats, ultrawide formats, round, square, etc.
- > A wide range of brightnesses
- > Transflective, transmissive, reflective displays
- > Outdoor display applications
- > Low power consumption
- > Special displays for PID & medical applications



## FALD (Full array local dimming)

- > Direct backlight with miniLEDs
- > Very high contrast
- > Excellent picture quality



## E-Paper displays

- > Extremely low power consumption
- > Optimum readability
- > "Always on" (even without power)



## OLED

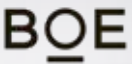
- > Outstanding image display
- > Active & passive matrix
- > Also transparent or flexible

# Display competences

Our industry expertise, market know-how and experience in all areas of display technologies make us the perfect partner for professional systems. In addition, we offer a reliable aftersales support and ensure long-lasting and efficient display solutions thanks to long-standing supplier relationships and professional lifecycle management.

## Our display partners (in alphabetical order)

As a long-standing contractual partner, we always maintain intensive cooperation with leading display manufacturers worldwide. In addition to flexibility, innovative strength and long-term availability, attractive terms and conditions also play a decisive role in the selection of our suppliers.





## Touch



### Innovative touch solutions

Inhouse developed touch solutions and their consistent further development are among our most important performance factors. As a leading supplier of PCAP (Projected Capacitive) touch modules, we offer all common bonding technologies inhouse and at the same time are passionate about new technologies.



## Touch portfolio

Our solutions for industrial touch applications include capacitive and resistive touch sensors from all leading manufacturers as well as self-developed easyTOUCH PCAP solutions on a film/film or glass basis. Individual requirements are made possible by customized components and customer-specific configuration.



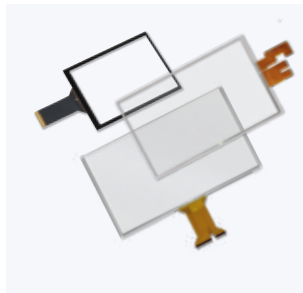
### easyTOUCH

- › Standard products with short lead times consisting of:  
Touch sensor bonded with cover glass & optionally with display
- › Individual solutions



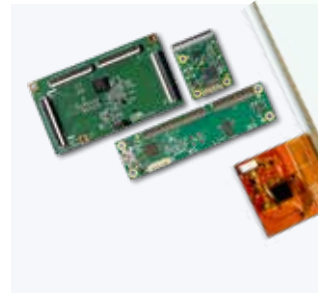
### Cover glass

- › Customized cover glass
- › Chemical or thermal hardening
- › Organic/ceramic printing
- › Various surface treatments



### Sensors

- › Glass or film sensors
- › PCAP sensors up to 86"
- › Resistive sensors up to 21,5"
- › Customized sensors on demand



### Controller

- › Latest PCAP controller solutions (Microchip, Illitek, TouchNetix)
- › I²C & USB protocol
- › Tools for analysis & customization (easyANALYZER)



## Touch competences

Thanks to our expertise in all areas of glass, sensor, controller and bonding technologies, as well as our comprehensive support and services, we develop individual solutions with our customers as early as the consultation stage.

## Touch technologies & alternative input methods

Our PCAP in-house developments of the easyTOUCH series offer cost- and time-efficient solutions especially for industrial applications. Even through thick cover glass as well as with gloves, a flawless operation with up to ten touch points is possible at any time. Individual configuration enables the detection and elimination of disturbing influences, e.g. liquids such as sweat, (salt) water or blood. Alternative touch technologies such as resistive, infrared and SAW (Surface Acoustic Wave), but also the latest PCAP enhancements such as haptic feedback, gesture control, force touch, knob-on-display or encoders are part of our extensive competence spectrum.



Gesture control



Haptic feedback



Force touch



Knob-on-display

### Touch configuration

- › Choice of different film/film or glass touch sensors
- › Customized development of sensors & passive or active (chip-on-flex) tails if required
- › Individual settings for touch controllers
- › FPC tail bonding for SITO sensors

### Service & support

- › Software tools for configuration & signal analysis
- › Support for product qualification through specialised FAEs
- › Lifecycle management

### Optical bonding

- › Fully- or semi-automatic optical bonding processes for bonding touch sensor, cover glass & display
- › Improved image quality through elimination of reflections
- › Increased mechanical robustness
- › Extension of backlight lifetime

### Customer benefits

- › Everything from a single source:  
Diverse solutions with individual value-added & finishing options
- › Broad expertise in mechanics & design options
- › Supplier independence through inhouse developments



## Embedded



### Tailor-made embedded solutions

From pre-configured kits to customized baseboard designs and professional embedded computing units: with our extensive portfolio based on x86- and ARM-architectures, we offer embedded solutions perfectly tailored to the application area. Regardless of form factors and performance classes - our development teams provide timely and reliable support from the development to the implementation of customized baseboards, integrated CPU boards as well as displays and touchscreens. Our most important tasks also include continuous development in the area of embedded computing. Thus, we always provide our customers with the latest modular platforms.



## Embedded portfolio

For many years, we have been developing and optimising our extensive range of embedded products. In addition to our self-developed LCD controller boards of the eMotion series, we also offer special carrier boards, computer-on-modules (COM) as well as single board computers (SBC). Through our standard products and inhouse developments from our embedded portfolio, we offer you the latest processor technologies and embedded solutions at the highest level.



### eMotion LCD controller boards

- › Ideal for industrial applications
- › Different interfaces, e.g. HDMI, VGA Display-Port & DVI
- › eMotion boards also available as a kit with all necessary components, e.g. cables, converter, power supply unit



### COM / SBC solutions

- › Equipped with the latest processor technology
- › Numerous form factors
- › Wide range of COMs (computer-on-module) & SBCs (single board computer)
- › Individual software support



### Customized board design

- › Various individualisation options
- › Suitable embedded computing solutions according to customer requirements
- › Advice on defining requirements
- › Optimal cost design & lifecycle management
- › Interface compliance measurements



### DisplayKit solutions

- › Perfectly matched components
- › Smooth integration into customized monitor concepts
- › Individual firmware & software
- › Approval after extensive tests

## Our embedded partners

Convince yourself of our extensive distribution portfolio of modern embedded components from our long-term partners. Our range of x86- and ARM-based embedded boards includes a wide variety of form factors and performance classes from leading manufacturers.



## Embedded competences

In the field of industrial embedded solutions, we have well-founded expert knowledge in terms of both computing design and software development. According to the respective customer requirements, we offer suitable solution approaches, which we also bring to implementation within the shortest possible time. In addition, we dedicate ourselves intensively to new technologies and offer efficient and customer-oriented services and support from prototype to series production.

### Embedded computing design

- › Standard & customized computer-on-modules
- › Latest CPU platforms
- › Baseboard & single board computer design
- › Thermal system integration
- › Power-saving single-core designs up to high-end multi-core solutions
- › Part selection taking into account cost, quality & long-term availability

### Customer benefits

- › Long-term availability
- › Professional PCN / EOL processes
- › Inhouse FAE teams & international sales offices
- › Long-standing partnership with world-leading embedded component manufacturers
- › Mechanical adaptation & validated timing adjustment for every available TFT
- › Accessories such as memory modules, mass storage, I/O modules
- › Customized adaptations based on standard products

### Services & support

- › Design validation
- › Comprehensive technical support
- › Compliance measurements
- › Customized embedded operating systems (Windows, Embedded Linux & others on request)

### Software development

- › BIOS / UEFI Support
- › Board Support Packages (BSP)
- › Driver development, APIs, application software
- › Mainline-based Yocto Linux operating system
- › Programmable logic



## Systems



### High-quality system engineering

We stand for qualified and customer-oriented expert advice in the fields of display, touch, embedded and systems. Our modular product concept enables us to realise customized monitor and panel PC solutions for a variety of market-specific applications. Our distribution portfolio as well as our sophisticated in-house products are optimally matched to the respective customer needs. With our many years of project experience and our established international network, we ensure long-term availability and can thus significantly reduce the time to market.





## System portfolio

From open frame to rack mount and desktop applications: thanks to our modular concept, we offer a wide range of customized solutions for monitors and panel PCs. Our system solutions are used worldwide in professional applications and information systems with high-quality requirements. Thanks to the integration of embedded boards in OEM housings and our touch technologies that can be integrated in a variety of ways, there are almost no limits to individual systems.



### Monitors

- › Open frame solutions for simplified integration into OEM enclosures
- › Monitors with IP front protection
- › Desktop monitors for industrial use
- › Up to 4K / UHD resolution, interfaces up to DP1.4, HDMI 2.0



### Panel PCs

- › Open Frame panel PCs with different touch technologies
- › Panel PCs for use in demanding environmental conditions
- › Stand-alone panel PCs for plug & play use
- › Latest x86- & ARM-platforms

## OEM solutions

With our many years of experience in the implementation of extensive projects – also for sensitive markets such as medicine, automotive or the food industry – we can offer perfectly tailored solutions. For us, the successful cooperation with our customers as well as long-term support and long-standing partnerships is always of high importance. Our experts can also provide professional and comprehensive advice on special product design requirements such as housing materials or temperature, humidity and vandalism protection.

### Additional features

- › Accessories such as power supplies, cables etc.
- › BIOS, custom OS & GUI development
- › Artificial Intelligence (AI)
- › RFID / NFC / Bluetooth / WiFi
- › Lighting concepts
- › Proximity & ambient light sensor
- › Audio & camera integration
- › Barcode scanner



Voice control



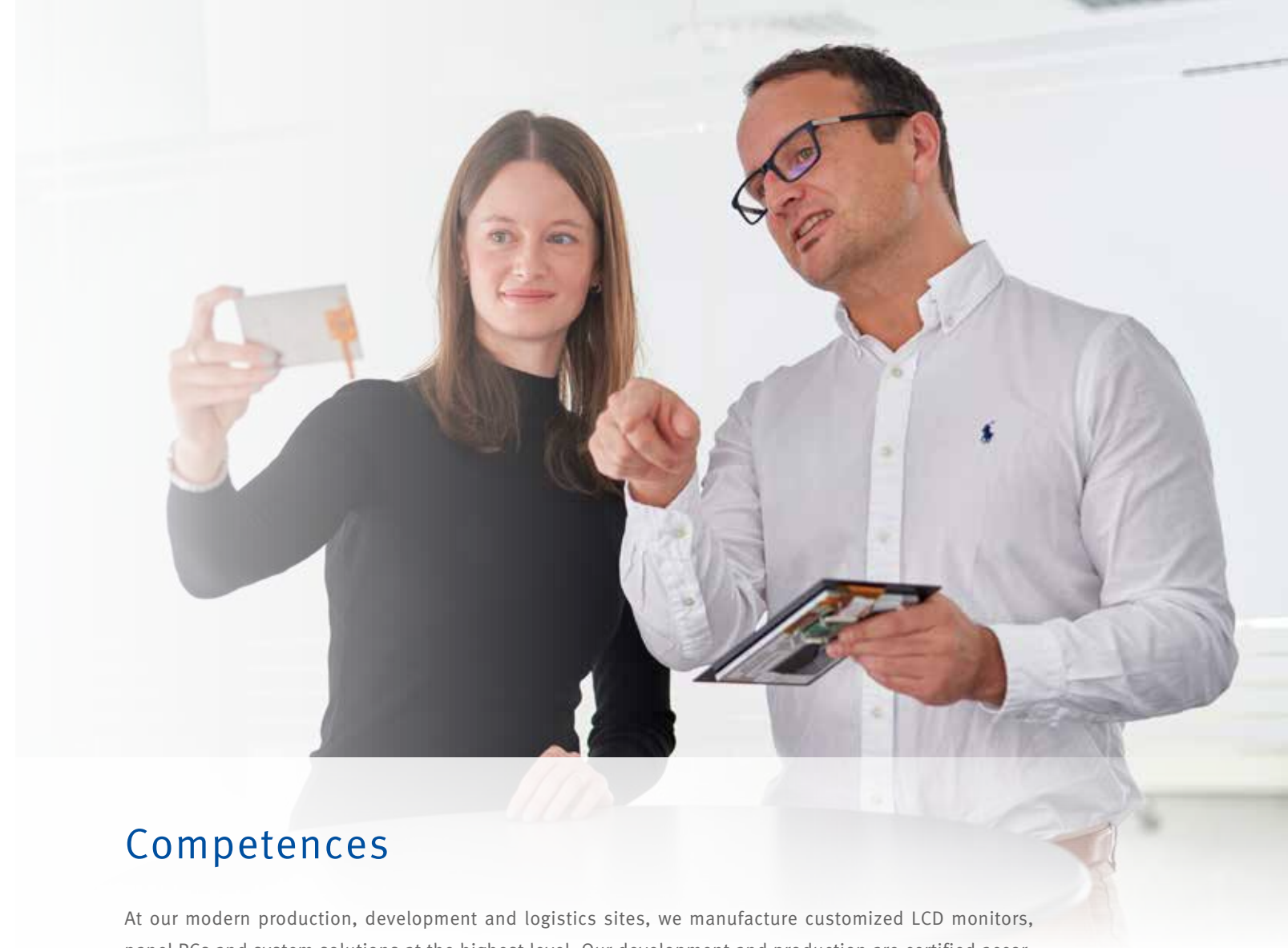
Face detection



Lighting concepts



App development



## Competences

At our modern production, development and logistics sites, we manufacture customized LCD monitors, panel PCs and system solutions at the highest level. Our development and production are certified according to ISO 9001 and ISO 13485 and form the foundation for high-quality standards. Furthermore, we support our customers throughout the entire product life cycle and offer not only competent advice and innovative technologies, but also suitable services and additional benefits.

### Consulting

- › Individual requirements analysis & concept definition
- › Selection of suitable components: display, touch, embedded & additional features
- › Material concepts, testing & selection
- › Industrialisation from design to series production
- › System upgrade & extended support
- › Customized software development

### Service & support

- › Project management from the design phase to series production
- › Technical support during the product qualification & approval process
- › Individual logistics concepts worldwide
- › Maintenance & obsolescence management
- › Hardware & software training

### Production facilities

- › Production areas of ~31,000 m² with flexible production lines
- › Class 7 clean room according to ISO 14644 ensures a dust-free production environment
- › Gap filling & pick-and-place processes for housing integration

### Customer benefits

- › Everything from a single source
- › Customized conception (prototype to series production)
- › Extensive experience in handling projects for demanding industries such as medicine & automotive
- › Extensive knowledge of latest market trends in the fields of display technologies, embedded computing design & industrial applications

# Digital signage portfolio

Regardless of whether they are used indoors or outdoors, our digital signage systems are made of high-quality components optimised for professional use. Combined with modern design, outstanding performance meets IoT-enabled features to form the basis for efficient solutions. Our large-format displays up to 98" impress with bright and vivid colours, high-resolution image content and extra-wide viewing angles. In addition, LED solutions with pixel pitches from 0.8 to 20 mm offer exceptional display options and maximum flexibility. Numerous customization options make your digital signage system remarkable and unique!

## Professional design & high-quality components

- 24/7 operation
- Portrait & landscape format
- Slim design
- Indoor & outdoor products
- VESA mounting points

## Brilliant & vivid colours

- 4K UHD
- High contrast & brightness
- Wide viewing angles
- Sunlight-readable

## Smart & easy CMS

- Integration of images, videos, sounds, news feeds, weather information
- Remote updating of content for individual or group screens
- Reporting of displayed content & analysis of customer behaviour
- Integration of external databases

## IoT-ready

- Mobile data connection
- Bluetooth & WiFi
- Cloud services

## Plug & play

- Latest interfaces
- Pre-installed software
- Flexible software licensing models

## Customer interaction

- Touch
- Voice / gesture control
- Sensors technologies

# Market-specific solutions

Designed for professional use, our signage products can be used in many different areas. From point-of-sale and kiosk terminals to innovative advertising concepts at charging stations: discover our wide range of possibilities and let us inspire you!



POS shop window



Retail



Out-of-home



POS infoterminal



Access control



eMobility



Infosystems / LED walls



Kiosk systems



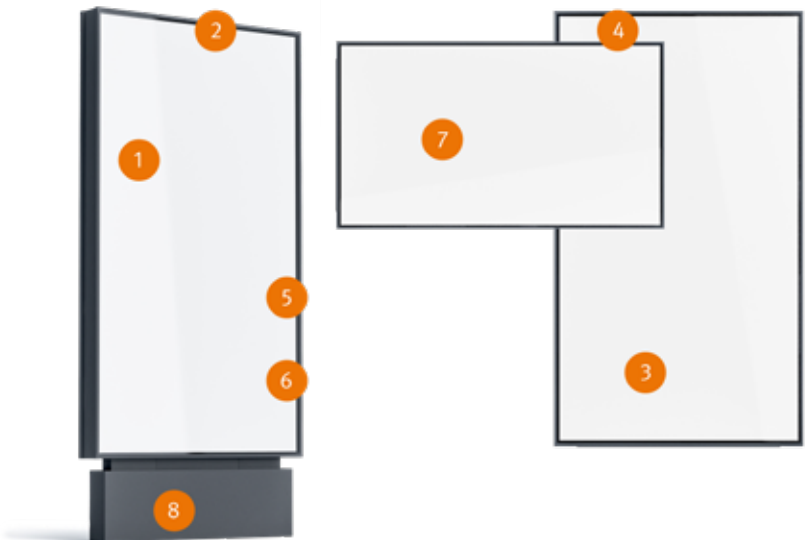
# Services & support

Modern smart retail and digital signage systems combine a large number of components and have to withstand many different environmental conditions. In addition to high-quality hardware components, we also offer the appropriate service and support to operate your system efficiently and sustainably. Our claim to offer every-thing from a single source also includes the commissioning, maintenance and provision of modern software solutions for the simple administration and operation of your signage system.


# Fully customizable

Discover the latest version of our signage system with outstanding performance and elegant design. Design it according to your wishes - just tell us your ideas and requirements and we will find the best solution!

1. Touch / gesture control
2. Aluminium, metal or plastic housing
3. Anti-glare / Reflex cover glass
4. Portrait or landscape format
5. NFC reader
6. QR code scanner
7. Industrial displays
8. Pedestal, wall or ceiling mounting





An abstract geometric illustration featuring several 3D cubes of varying sizes and orientations. Some cubes are solid blue, while others are wireframe or semi-transparent. They are interconnected by a network of thin white lines and dashed circles, suggesting a complex system or process. The background is a light blue gradient with a subtle pattern of dots and lines, resembling a molecular or network structure. The overall aesthetic is clean, modern, and technical.

## From the initial idea to series production, we stand by our customers' side...

... and accompany every step up to the final product realisation and beyond. We offer competent expert advice in the areas of display, touch, embedded and systems. Our sophisticated portfolio from standard components to inhouse developments as well as our many years of project management experience enable system engineering at the highest level. Thus, we ensure the fast and, above all, efficient and sustainable realisation of every project.

## Customizing options



### Customizing at DATA MODUL

In addition to our large standard portfolio of well-known manufacturers, we offer our customers numerous customization options in the area of display, touch, embedded and system solutions. Our expert teams not only provide support in the selection of suitable components, but also develop solutions together with the customer that are ideally suited to the requirements of the respective application area.



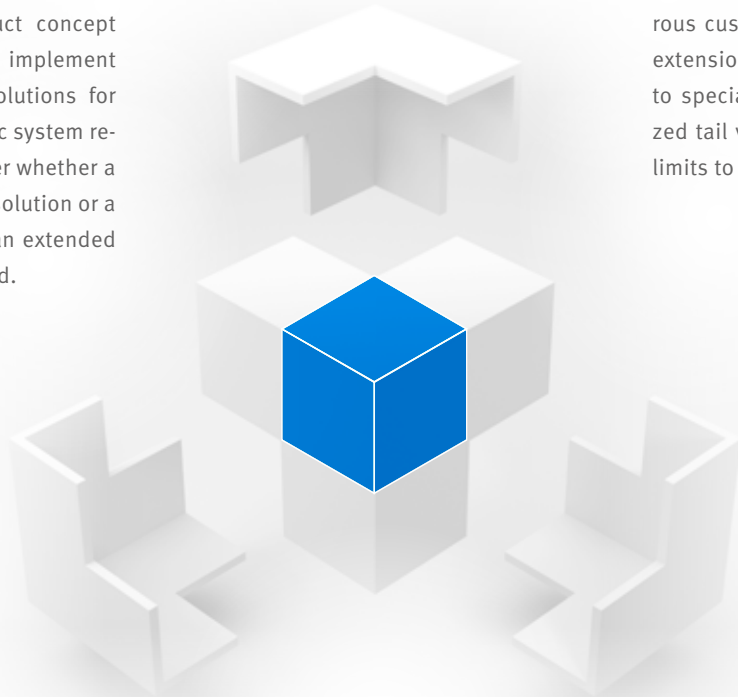
# Customized solutions

With our modular product concept, all technology areas of our company are combined into one system. Thanks to modern display and touch technologies, the latest embedded boards and controllers as well as innovative manufacturing processes and a wide range of housing variants, we can offer real added value with our customized solutions.



## System solutions

Regardless of the level of complexity required, our modular product concept enables us to develop and implement modern and sustainable solutions for almost any customer-specific system requirement. It does not matter whether a simple monitor or panel PC solution or a complete HMI system with an extended range of functions is required.



## Custom displays

The right display for every customer: with our numerous options, including a wide range of display technologies, customized FPC connectors, individual backlight options and fully-customized special formats, no customer wishes remain unfulfilled.

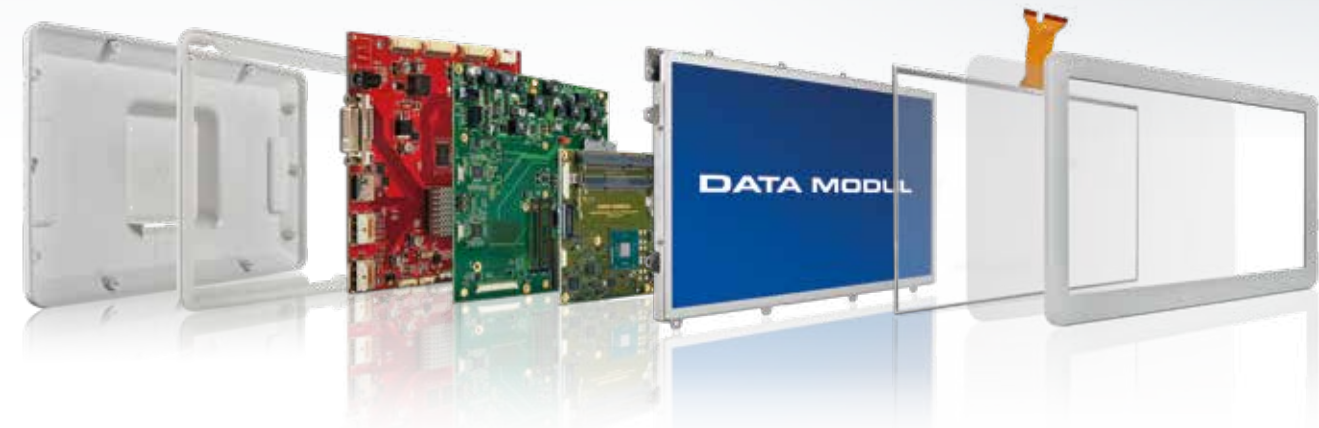
## Embedded design

Proven reference designs enable us to significantly reduce costs and development times for customized board designs and thus to respond efficiently and flexibly to customer-specific requirements. In addition, we have expertise in HMI software development and can offer the necessary software adaptations and update services if required.

## Custom Touch

Our range of products includes numerous customization options for touch extensions: from custom-made glass, to special touch sensors or customized tail variants, there are almost no limits to the options.

# Modular product concept



Mechanics / Housing	Controller & embedded boards	Displays	Touchscreens & cover glass
<ul style="list-style-type: none"><li>Open frame solutions &amp; units with up to IPX9K protected housings</li><li>Metal &amp; plastic enclosures</li><li>Various surface structures &amp; colours</li><li>Customized solutions</li></ul>	<ul style="list-style-type: none"><li>x86- &amp; ARM-based embedded boards</li><li>eMotion LCD controller boards</li><li>Single board computers</li><li>Computer-on-modules &amp; carrier boards</li><li>Custom board development</li></ul>	<ul style="list-style-type: none"><li>All common TFT technologies</li><li>Backlight enhancement</li><li>Ribbon cable in customized designs</li><li>Indoor &amp; outdoor variants</li><li>Special formats like curved, stretched, round</li></ul>	<ul style="list-style-type: none"><li>Cover glass with special hardening, printing &amp; breakouts</li><li>Touch sensors with individual tail position &amp; track guidance</li><li>Optional operation via force touch, gesture control, haptic feedback</li></ul>



## Bonding technologies



### All bonding methods from one source

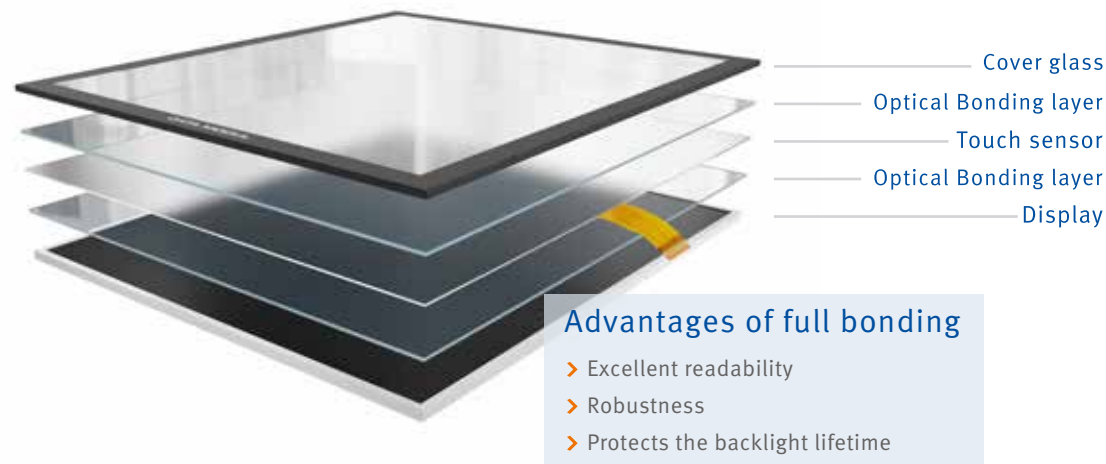
We are proud to be one of the largest and most versatile bonding providers in the European and international industrial display market. Inhouse, we have state-of-the-art OCA, LOCA, air, gel and hybrid bonding processes and can thus offer customized touch display solutions directly from a single source. Clean room, production and development capacities of several thousand square metres allow us to act quickly and flexibly and to manufacture products at the highest quality level. You can benefit from our decades of experience in the field of bonding, too!





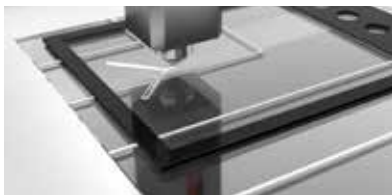
# Our bonding & manufacturing processes

Our vertical range of manufacture combined with state-of-the-art production lines enables us to realise even highly complex systems for our customers. With the introduction of PCAP touch technology in industry, the demand for optically bonded displays has increased continuously. A distinction is made here between the connection of cover glass and touch sensor and the full-surface bonding of the display – so-called full bonding.



## Optical bonding

Depending on the components, the prevailing environmental conditions and the scope of the project, we select the appropriate optical bonding process. All processes are carried out inhouse and under cleanroom conditions.



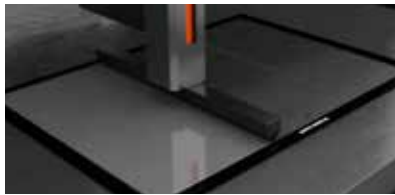
### LOCA / OCR

- Liquid adhesion
- Curing by UV light
- Can be used for cover glass, glass-based sensor & display



### E-Field

- Liquid adhesion with electric field
- Curing by UV light
- Optimised for bonding small diagonals up to 7"



### Hybrid bonding

- Liquid adhesion with slit coating
- Curing by UV light & vacuum
- Optimised for high volume projects



### OCA

- Pressure-sensitive adhesive
- Autoclave curing
- Can be used for foil sensors, optical filters on the cover glass



### Gel

- Pre-cut gel pads
- Autoclave curing
- Can be used for frameless displays



### Air gap

- Double-sided industrial adhesive tape in the form of strips / die-cuts
- Applicable for resistive / PCAP touch on display



## Pretreatment

To ensure an optimal process flow, careful pretreatment of the components is essential. We rely on automated optical inspection (AOI) and thorough cleaning of the cover glass and touch sensors. We also have the most modern equipment to bond FPC tails securely or to optimally prepare plastic parts using plasma pretreatment.



AOI



Tail bonding



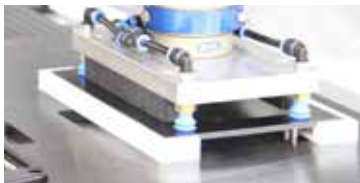
Cleaning



Plasmatization

## Structural Bonding

For the bonding of housings with cover glass / touch units or touch displays, we rely on advanced fully automated manufacturing methods. These methods are called structural bonding and ensure an efficient and precise connection.



### Pick & place

- Camera-based assembly of cover glass / touch units with housings or displays



### Gap filling

- Measurement & filling of the gap between the housing & the cover glass / touch unit



### Hot melt

- Bonding of housing with cover glass / touch units by means of reactive polyurethane



## Production & services



**On around 30,000 m<sup>2</sup> we  
manufacture in our advanced  
production facilities...**

...in Europe, North America and Asia professional display solutions for industrial use – regardless of industry or market. Thanks to state-of-the-art production methods, we realise individual applications for our international customers. The interaction of development, design, production and logistics not only allows us a short time-to-market phase and a unique product portfolio – it is also our basis for the successful implementation of sophisticated applications that meet high-quality standards.



# Production steps & quality assurance

In addition to the optical and structural bonding processes, we offer a wide range of services around our production sites. We support our customers from prototype development through series production to worldwide logistics solutions, ensuring a smooth and efficient process. We are committed to continuously aligning our products and services with changing market and customer requirements. To ensure this high-quality standard, we undergo regular certification processes.



## Sample, pre-series & series production

- › Rapid Prototyping
- › Mechanical engineering for bonding & manufacturing tools
- › Creation of assembly instructions
- › Coordinated samples & series releases for a smooth production handover



## Production

- › State-of-the-art production sites
- › Almost all production technologies worldwide
- › Flexible production lines tailored to the product
- › Optimised set-up & processing times
- › Fully automated processes



## Logistics

- › Customized logistics concepts according to customer requirements
- › Use of state-of-the-art shuttle systems
- › Cost-efficient & on-time delivery
- › Short location, delivery & call-off times



## Quality assurance

- › Ensuring the quality requirements of the customer, the products & the company
- › Incoming & outgoing goods inspection
- › Preparation of initial sample inspection reports
- › Stock control



## Service

- › Professional spare parts & RMA processing
- › Fast & uncomplicated processing of returns
- › Cause analysis & parallel immediate measures
- › Documented error analysis & corrective measures



## Quality management

- › Quality & environmental management
- › Risk management
- › Material conformity e.g. RoHs & REACH
- › Support of internal & external audits
- › Support for project & product-related certifications e.g. UL, CE etc.
- › Certified according to DIN EN ISO 14001, 9001, 13485



## Research & development



### On the track of new technologies & trends

Our highly qualified teams of experts and engineers pick up on current market trends and translate them into innovative hardware and software solutions. This is how, based on individual customer and market requirements, custom-fit touch, embedded and software products are created.





# Research & Development

From development and design to certification support, we stand by our customers as a competent and reliable partner throughout the entire product development process.



## Mechanical engineering

- › Production-optimised mechanical design for all common technologies & materials
- › FEM simulation for heat dissipation & strength analyses
- › Development of optimal cooling solutions
- › Tooling for manual & automated manufacturing processes
- › Packaging concepts



## System engineering

- › Development of customized HMI & monitors
- › Selection & coordination of components such as display, power supplies & sensors according to requirements
- › Qualification at system level (EMC, safety & environmental conditions)
- › Prototyping for rapid prototypes
- › Extensive end-of-line tests



## Process engineering

- › Many years of expertise in the field of materials science, especially in the area of bonding
- › Development of automated manufacturing processes & professional production equipment
- › Customized adaptations of manufacturing processes



## Qualification

- › Support from concept to series product
- › Consulting according to the respective market requirements
- › Partial or complete certifications & approvals
- › Long-term tests to ensure durability



## Computing design

- › Many years of experience in the development of complex embedded systems
- › Long-term availability & cost optimisation through careful component selection
- › High-speed simulations & power integrity analyses
- › Consistent design review processes
- › Building blocks of pre-verified circuit parts such as commonly used communication interfaces
- › Battery-powered systems & charging electronics
- › Verification & compliance testing



## Software development

- › Bootloader & BIOS development
- › SoC vendor-based Linux reference BSPs
- › Mainline Linux-based mass production BSPs
- › Custom Windows systems
- › Real-time systems with FreeRTOS
- › Application software & user interfaces
- › IoT & cloud solutions
- › Support & maintenance contracts to ensure regular security updates



# DATA MODUL



DISPLAY



TOUCH



EMBEDDED



SYSTEMS

As a leading expert in the field of industrial display, touch and embedded technologies we design, develop and manufacture tailor-made system solutions at the highest level.

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