



Creative  
Interconnect  
Solutions

# ILLUMINATED PANELS



➔ Precision-engineered  
front panels for extreme  
environments

For more than 15 years, Nicomatic (formerly Oxytronic) has been a trusted partner in the design and manufacturing of **backlit cockpit panels** and **custom HMI interfaces** for aerospace, eVTOL, defense and maritime applications.

Our teams support both **Build-to-Spec** and **Build-to-Print** programs, covering mechanical design, PCBA engineering, optical integration and complete illuminated solutions.

## KEY BENEFITS

### ENDLESS CUSTOMISATION

Fully tailored HMI panels with custom :

- Backlight configurations (white, green, NVIS, multizone)
- Button, switch and keypad layouts
- Engraved legends, markings and symbols
- Integrated elements: screens, ventilators, flip guards, red bars, seals

### OPTIMISED DESIGN

Internal control of mechanical, optical and electronic engineering :

- Shape, thickness, finishing and ergonomics
- Luminance & chrominance tuning
- Homogeneity and contrast optimisation
- Optical filter stacks designed for NVIS Class compliance
- **DO-160 QUALIFIED**

### DIVERSE APPLICATIONS

Suitable for :

- Fixed-wing aircraft
- Rotary-wing aircraft
- eVTOL and next-generation electric aircraft
- Land/off-road vehicles
- Maritime systems, ROVs & submarine applications

**Panels designed and tested to meet strict environmental requirements:**

- Temperature, vibration, shock
- Radiance control for NVIS
- Chromaticity stability
- Robust electromagnetic behaviour with EMI gaskets



# MANUFACTURING CAPABILITIES

Our complete in-house production workflow ensures repeatability and premium optical quality

## Machining & Forming

- 3-axis machining (PMMA, polycarbonate, aluminium)
- High-precision engraving
- Injection-molded button design
- Mechanical design ensuring watertightness (IP on request)

## Marking & Finishing

- Laser engraving for all materials
- Sandblasting and high-quality paint booth
- Durable legends resistant to abrasion, UV and chemicals

## Electronics & Assembly

- PCBA design and SMT assembly
- LED/optical stack engineering (diffusers, filters)
- Video-colorimeter for luminance and chrominance tuning
- Spectroradiometer for NVIS radiance validation

## Integration Options

- Toggle switches
- Pushbuttons
- Keypads
- LCD/OLED screens
- Ventilators
- Flip guards
- EMI and sealing gaskets

# OPTICAL PERFORMANCE

## BACKLIGHTING QUALITY

- Uniform luminance across the entire panel
- Adjustable intensity (dimming)
- Multiple colours including NVIS-compatible options

## NIGHT VISION COMPATIBILITY

- Optical design ensuring NVIS radiance limits are met
- Full chromaticity and radiance characterization

## LIGHT STABILITY & LIFETIME

- Long-life LED integration
- Thermal stability of luminance
- Optical stack resistant to ageing and high temperatures

| Category       | Details  |
|----------------|--|
| Materials      | PMMA, polycarbonate, aluminium                   |
| Marking        | Laser engraving, paint fill, protective coatings |
| Backlighting   | Custom LED architecture with diffusers & filters |
| NVIS           | Optional, designed to meet NVIS radiance limits  |
| Environmental  | DO-160 qualified (vibration, shock, temperature) |
| Operating Temp | -40°C to +70°C typical                           |
| Integration    | Switches, screens, keypads, EMI seals, gaskets   |
| Sizes          | 100% custom-built                                |
| ITAR           | ITAR-free  |

## MARKET REFERENCES

### Air

- Fixed-wing aircraft
- Rotary-wing aircraft

### eVTOL & next-generation electric aircraft

### Land

- Off-road & military vehicles

### Sea

- ROV systems
- Submarine applications (harmonisation)
- Dimming & luminance control

More than 4,000 illuminated panels produced every year.

## DESIGN EXPERTISE

### INTERNAL ENGINEERING CAPABILITIES

- Mechanical design (sheet metal, housings, button bodies)
- PCBA design & electronic regulation for LEDs
- Optical design for chromaticity & homogeneity
- NVIS optical filter design
- Clean mechanical design ensuring watertightness (IP on request)
- Performance Parameters Controlled
- Chromaticity
- Radiance (NVIS)
- Homogeneity (harmonisation)
- Dimming & luminance control

## CUSTOMISATION PATHS

### Build-to-Spec

Complete development based on your functional, optical, mechanical and environmental requirements. From co-design to qualification, we deliver a fully tailored illuminated panel for your mission.

### Build-to-Print

Manufacturing according to your drawings and documentation. Guaranteed repeatability, optical consistency and robust production processes.

Find support  
at your local  
Nicomatic Office

