mlunske®

pilot®

KEEPS COMMERCIAL AND SPECIAL-PURPOSE VEHICLES SAFELY ON COURSE

In all weather, in every industry.

MORE THAN JUST A NAME.

Imagine a pilot in the cockpit of a modern aircraft: always aware of the situation, always ready to act. He makes decisions every second – based on clear information, intuitive controls, and absolute system reliability.

With the pilot® control panel series, miunske transfers precisely this principle to the world of commercial and special-purpose vehicles. As in an aircraft cockpit, pilot® focuses on the perfect connection between human and machine: the system receives inputs, processes them precisely, and returns relevant-information in a structured manner. Everything runs bidirectionally – for maximum control in operation.

READY FOR TAKE OFF

HIT THE GROUND RUNNING – WITH pilot® BASIC VARIANTS!

Get ready for the next generation of customized control devices from miunske!

The modular system of pilot®

3 – 4 – 5 – 6 – 9 ... how many segments would you like? A segment (18mm) wide is the basic unit of each operating panel. A vertical combination of multiple segments results in the total width of the operating panel.

Various functional units need a different number of segments

- 2 operating fields and one display field fit on one segment
- one large (XL) operating field and one display field require two segments
- one display requires the width of 4 segments
- Both vertical panel sides (used for status or bargraph LEDs on the left and/or right side) result in the width of one segment

EIGHT BASIC VARIATIONS -COUNTLESS CUSTOMIZATION OPTIONS

Standard becomes individual - fast, efficient, and well-designed.

The eight pilot® basic variants are based on the practical experience oft the miunske development team and already cover a wide range of common applications in special-purpose and commercial vehicles. These variants, therefore provide an excellent starting point for individual adaptations.

For vehicle developers, this means:

- a precisely fitting operating concept for their commercial- or special purpose vehicle
- less effort in the manner of configuration
- shorter development times for vehicle control systems

pilot 3.3
- 3 segments
- 3 operating keys
- 1 XL-operating key

pilot 3.6
- 3 segments
- 6 operating keys

pilot 4.8
- 4 segments
- 8 operating keys

pilot 4.0 D
- 4 segments
- 1 display

pilot 5.2 D
- 5 segments
- 2 operating keys
- 1 display

pilot 6.12
- 6 segments
- 12 operating keys

pilot 9.18
- 9 segments
- 18 operating keys

pilot 9.7 D
- 9 segments
- 7 operating keys incl. 1 XL-operating key
- 1 display

Still haven't found the right pilot® base model

No problem - we'll develop your custom version. Our development team will design a tailored operation device exactly according to your requirements. Thanks to the modular pilot®-**system, application-specific variants will be feasible.**

Get in touch with us!

Together, we will help your ideas take flight.

+49 359389800-0
info@miunske.com

FLEXIBILITY IN FUNCTION & DESIGN

CUSTOMIZED OPERATING DEVICES FOR VEHICLES OF ALL INDUSTRIES

DISPLAY

Display-diversity without compromise: Whether simple numeric data, such as temperature indication or complex graphic content, the pilot- operating unit offers a suitable display according to the vehicle requirements.

OLED-display - monochrome

High contrast and excellent readability even under difficult lighting conditions, e.g. strong sunlight. Perfect for displaying numerical data and clearly structured status information.

- displaying numbers, symbols and pictograms
- 2.4" Dot-Matrix-display
- resolution 128 x 64 pixels
- monochrome, available in up to 4 colors
- high luminosity for optimal readability even under difficult lighting conditions
- selectable display colors: white, yellow, green, or blue

TFT display - fully graphical

Enables the displaying of complex graphic content as well as vehicle silhouettes or system states. Ideal for display-intensive applications with high information density.

- 2.4"LCD-TFT-color display
- resolution: 320 x 240 pixels
- displays graphics, images and colored status indicators
- freely programmable to meet custom requirements

Benefits for vehicle developers

NO LIMIT
Unlimited number of warning and control messages

Flexible installation: Both display types support horizontal and vertical mounting, ensuring maximum integration flexibility across vehicle platforms.

- CAN-based control units: the freely programmable displays are capable of displaying to display an almost unlimited number of warning and operating signals. Content can be operated flexibly via CAN messages and positioned freely on the display.
- Easily parameterizable. Predefined templates for recurrent standard functionalities are available and can be efficiently configured via the FlexGui-software.

XL-BUTTONS AND TACTILE FOIL EMBOSSING

Perceptibly safe operation:
Whether with gloves or in stressful situations, **XL buttons, high-contrast lighting**, and a **tactile foil embossing** always enable precise operation and full control in the vehicle cabin.

The pilot® operating unit enables precise vehicle control- even under challenging conditions. XL buttons ensure secure operation. Embossed contours in the front foil optimize the haptic feedback and support quick and intuitive orientation, ideal if the situation demands your full attention.

BARGRAPH-LEDS

Enhanced indication of switching status via bargraph LEDs
For detailed indication of machine or switching status, each operation key can optionally be enhanced with bargraph LEDs. Standard buttons with up to 4 LEDs and XL buttons with up to 6 LEDs.

CONTROL AND DISPLAY ELEMENTS

Flexible functionality and clear user feedback

All operating elements are configurable as Indicator, switch, button, and pulse button. RGB LEDs nearby the keys allow visualization of the switching status (‘on’/‘off’) with customizable color levels, gradients, or flashing frequencies. This provides clear and intuitive feedback to the driver or machine operator.

Excellent visibility in all lighting conditions
The high color saturation and contrast of the symbols backlit with RGB LEDs provide excellent readability- even under challenging lighting conditions such as direct sunlight or darkness.

STATUS LEDS

Better Overview of Vehicle Status Through Additional Status LEDs
Side-integrated status indicators provide a compact, space-saving way to display critical information—visually clear and immediately recognizable. Each of the four RGB status LEDs can be used to signal additional operating states and can be freely configured in terms of symbol and color, or labeled directly through printing on the operating foil.

OPERATING FOIL

Basic version

The standard version of the pilot®-operating unit consists of a black anodized aluminum frame and a durable front foil made of cleaning-agent-resistant polyester. This combination ensures high mechanical resistance and permanent readability even under intensive use in the vehicle.

Customization

The front foil can be precisely adapted to the vehicle design concept. It can be laser-marked and also printed in the CMYK color spectrum:

- An extensive icon database for laser engraving is available in the pilot configurator
- Customized texts, graphics, and logos can be imprinted

In this way the pilot® operating unit can be perfectly integrated into the existing vehicle design, both functionally and visually.

ALUMINUM FRAME

Designed for demanding use in commercial vehicle industry: the pilot operating unit is specifically engineered for harsch environments, and with its IP65 rating, it ensures reliable protection against dust and water jets.

The front panel is made of anodized aluminum with high mechanical resistance, is corrosion-resistant and ensures longevity even in vibration- and dirt- intensive application fields such as in construction machinery, agricultural equipment, and commercial vehicles.

Customization
anodized finish options: natural, yellow, orange, red, green, blue

SAFE FROM DUST AND DIRT WITH pilot®

Designed for use in harsh environments: pilot® impresses with its durable, and **rear-potted housing** and ensures, thanks to its **IP65 rating,** reliable protection against dust and dirt.

Whether with gloves or in poor visibility, XL buttons, high-contrast lighting, and clearly noticeable foil embossing ensure precise operation and full control.

ADAPTABLE UP TO THE LAST MINUTE

MEET CUSTOMER REQUIREMENTS – EVEN AT VEHICLE HANDOVER

The pilot operating unit offers a significant advantage for developers in special vehicle construction and system integration. To realize vehicle-specific operating functions, pilot operating units can be stored and configured later.

This allows you to react very quickly to changes in customer requirements, and you are generally flexible in their configuration.

For the configuration developers need:

- the desired basic operating unit
- a clean working area
- a laser used for manufacturing the operating foil e.g., Xtool M1

With pilot®, we keep vehicle developers flexible – and can configure the operating unit exactly when it fits best in the project timeline.

Felix Alexander König - Teamleader, custom vehicle construction
Welp Group - Farmingtons

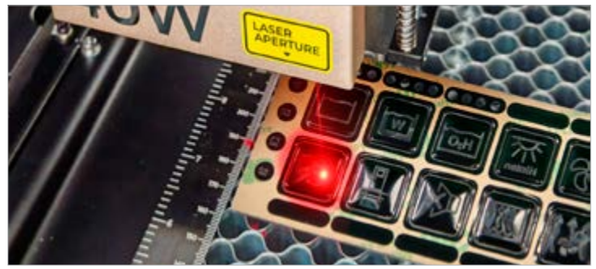
HOW IT WORKS:

1 Selection of the pilot® base version

The selection of the pilot® base version is based on the control functions required for the respective vehicle. In this process, the appropriate pilot® variant with transport foil is chosen and combined with a separate, unlasered operating foil.

2 Create and Laser the foil concept

In the next step, the foil concept is defined. The layout of the vehicle-specific operating foil is created on a computer and takes into account the individual assignment of symbols to the respective control fields. Based on this layout, the operating foil is then laser-processed.



3 Apply the foil

Finally, the finished operating foil is applied to the control panel. To do this, the transport foil is removed, and the operating foil is applied under clean conditions. Assembly is carried out according to the enclosed installation instructions, which are provided with the order.

DEVELOPMENT TIME: EXPRESS

CONFIGURE HARDWARE AND SOFTWARE BY YOURSELF

CONFIGURE HARDWARE QUICKLY AND EASILY ONLINE

Developers can configure all hardware components individually using the **online configurator**, from button layout and display type to status indicators, frame color, and foil layout. In this way, a highly application-specific operating unit can be designed in no time, precisely tailored to the vehicle concept.

pilot® ONLINE CONFIGURATOR

Your fast track to a customized pilot® operating unitl

1 **Open the online configurator**

2 **Choose your pilot® model**
Choose the appropriate base variant as the basis for your operating concept.

3 **configure control and display elements**
Define the display type as well as the desired symbols, functions, bar graph, and status indicators. Custom symbols can also be uploaded and integrated if required.

4 **define design and housing**
Define the front foil layout, housing color, and desired assembly options.

- **Coordination with the end customer, if required**
  Reviewing the preview with the end customer and recording any changes or requests.

5 **Submit configuration to miunske and receive a quote**
Send a quote request to miunske with the final configuration and the desired quantity.

6 **Commissioning**

7 **Parameterization via CANopen**
EDS files are available for download in the online catalog.

8 **Commissioning in commercial vehicles or work machines**

START INSTANTLY

EVERYTHING IS UNDER YOUR CONTROL

SOFTWARE – CANOPEN-READY

Fully Configurable Software with EDS File
For each pilot® operating unit, miunske provides the corresponding EDS file along with a detailed description – directly accessible in the product catalog. The EDS files can be easily imported into CANopen parameterization tools, such as the miunske-toolchain or CODESYS. This allows all relevant functions to be individually parameterized – from the switching and display behavior of the control panels to additional LED indicators. This makes software configuration fast and transparent, precisely tailored to your application.

pilot® operating units are suitable for CAN Safety applications.

CANopen safety

download miunske-toolchain:

toolchain by miunske

INTEGRATION INTO THE VEHICLE

The pilot® operating units are designed to integrate easily into different vehicle architectures – assembly-friendly, ready to connect, and robust.

Easy vehicle integration: The pilot® base versions 9.7D and 9.18 are designed in the standard DIN housing format, allowing particularly simple and time-saving integration. All versions of the pilot® series are designed for both horizontal and vertical mounting – providing maximum flexibility for integration in the driver's cab or external areas.

Preassembled cable harnesses: For installation-friendly implementation, miunske provides preassembled cable harnesses precisely tailored to vehicle-specific requirements – including defined cable lengths and customer-specific connectors such as DEUTSCH, Micro-MATE-N-LOK, or other commonly used market variants.

IP65 protection for indoor and outdoor application: All versions of the pilot® series are dust- and jet water–protected according to IP65. This makes them ideal for use in demanding environments – for example, in the exterior of commercial vehicles, on construction sites or in agricultural machinery.

EXPERT SUPPORT AND TRAINING FOR EFFICIENT CAN SYSTEM SOLUTIONS

miunske® follows a solution-oriented approach to the use of CAN products. Within this strategy, the 2G CAN keypads were developed in-house and have already proven successful in the market. The new series of pilot® operating units does not replace the previous series, but rather complements the existing portfolio of CAN operating units.

In addition, miunske offers an extensive portfolio of CAN input/output modules, which can either be integrated into existing CAN networks or used as standalone CAN systems.

Know-how transfer – with CAN training directly from the developer
miunske® provides comprehensive support – from the development of customer-specific solutions to series production. For developer teams, looking to implement their own CAN applications, we offer practical in-house training – with concrete application examples and direct reference to the parameterization of miunske products.

DEVELOPMENT AND PRODUCTION - MADE IN GERMANY

The pilot® control panels are entirely developed and manufactured at miunske's facility in Grosspostwitz, Germany. Through the close integration of electronics development, PCB assembly (SMT), module assembly, and cable harness production, miunske provides maximum manufacturing depth – ensuring full control, high flexibility, and consistently verified quality throughout the entire production process.

Through direct collaboration between development, production, and quality assurance, perfectly tailored system solutions are created – precisely aligned with the requirements of commercial and special-purpose vehicles as well as mobile work machines.

Future-proof, user-friendly, and 100% made in Germany.

SACHSEN
This measure is co-financed with tax revenues based on the budget approved by the Saxon State Parliament.

MADE IN GERMANY

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miunske Group
D-02692 Grosspostwitz

+49 35938 9800-0
info@miunske.com

miunske®

miunske.com