



# SOMAG Mount Touch Encoder

User Manual



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**SOMAG AG Jena**  
Am Zementwerk 2  
07745 Jena | Germany

mail: [info@somag-ag.de](mailto:info@somag-ag.de)  
web: [www.somag-ag.de](http://www.somag-ag.de)





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## Revision History

Version	Updated	Changes
/01	April 14, 2025	Initial Version



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## 1 Introduction

The Touch Encoder is one of the new features of the GSM 5000. It improves operation and enables many functions of the SOMAG Mount Control App without the need to connect an additional end device such as a PC/tablet. It is a compact and robust input device mounted directly on the GSM 5000.

Through its combination of touch functionality and rotary input, the encoder allows users to navigate through various control levels, configure basic settings, activate features, and monitor status information.

## 2 Device navigation

The system is designed to provide quick access to all relevant features while maintaining a clear and structured layout. Both touch gestures and rotary input are used for smooth operation, even in dynamic environments.

The following sections explain how to interact with the interface, switch between menus, and operate the key functions of the device.

- **Selecting Menu Items:** A touch press on the respective symbol in the menu selects the item and opens the corresponding submenu.
- **Vertical Navigation:** Within menus, you can scroll vertically through the available submenu entries by swiping up / down or by using the rotary function.

It is also possible to directly open a submenu by tapping its label – even if it is not currently highlighted in the selection field.

- **Horizontal Navigation in Submenus:** In submenus with a segmented yellow bar along the outer edge of the Touch Encoder, you can swipe horizontally to switch between menu sections.

This horizontal navigation is also possible using the rotary function.

- **Adjustable Settings:** Elements with blue bars on the outer edge of the encoder indicate adjustable settings. These can only be modified using the rotary function.
- **Back Navigation:** The back arrow at the bottom edge of the screen allows the user to return to the previous view.
- **Home Navigation:** Touching the SOMAG AG Jena logo/Home Button in the corresponding views activates the Status Overview/Screen Safer. This also applies to the central logo in the Main Menu.
- **Interactive Buttons:** All blue-outlined selection buttons can be activated with a touch press.



### 3 Basic Operation

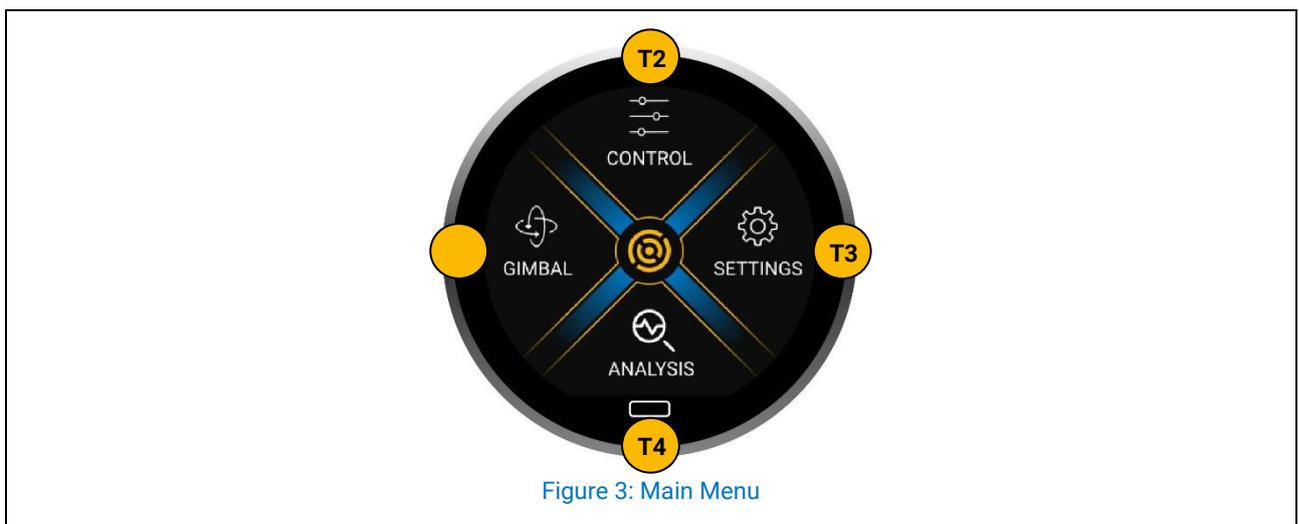
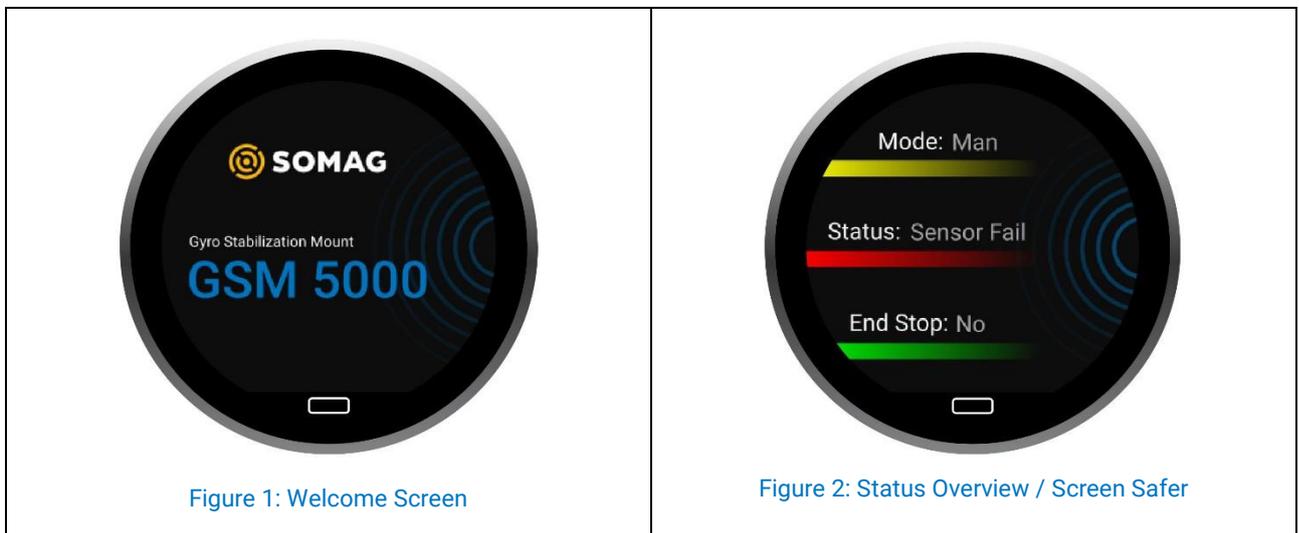
#### 3.1 Initialization

During the initialization of the Mount, the Touch Encoder starts automatically and displays the welcome screen (see Figure 1). After approximately three seconds, it switches to the Status Overview / Screen Safer (see Figure 2), which shows the current operating mode (STAB or MAN), the system status, and whether an End Stop has been reached.

If the Touch Encoder is not operated for two minutes, the display returns to the status overview as a screen saver mode – unless one of the analysis views is active. Tapping the display exits the screen saver and brings up the main menu.

The Main Menu (see Figure 3) serves as the central interface for operating the Touch Encoder.

All functions and sub-functions can be accessed from here using the rotary knob and touch input. The menu navigation offers a quick and intuitive overview of all available options. (see Figure 4).



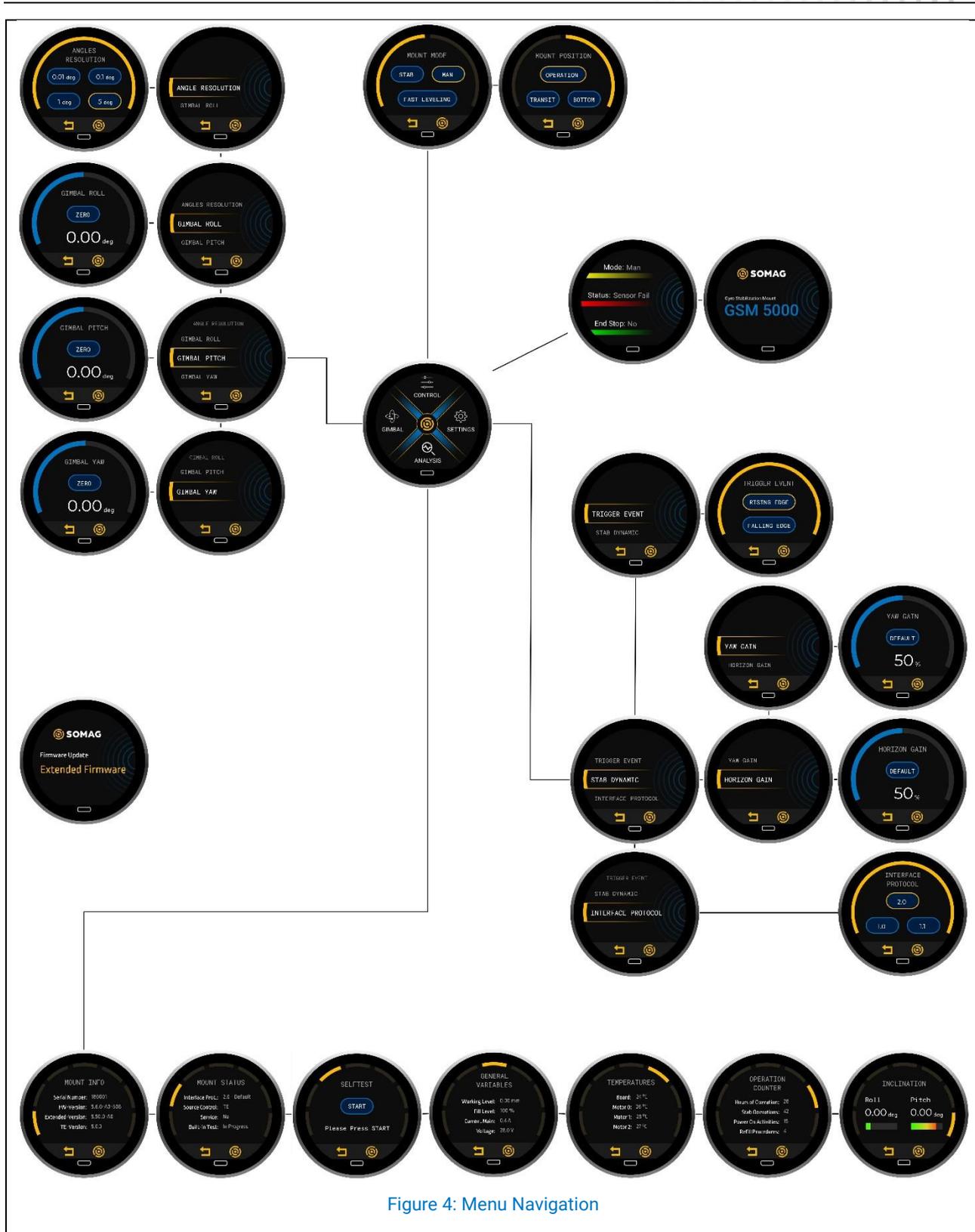


Figure 4: Menu Navigation



### 3.2 T1 – Gimbal

The Gimbal menu item provides the possibility to manually adjust the gimbal values in all three axes. It is divided into the Angle Resolution, Gimbal Roll, Gimbal Pitch and Gimbal Yaw submenus (see Figure 5).

These can be selected by vertical swiping or rotating the Touch Encoder and activated by touch. The arrow symbol is a button to return to the previous view. Entering this submenu stores the current Mount Mode and activates MAN Mode. Upon exiting, the Mount automatically returns to the previously saved mode

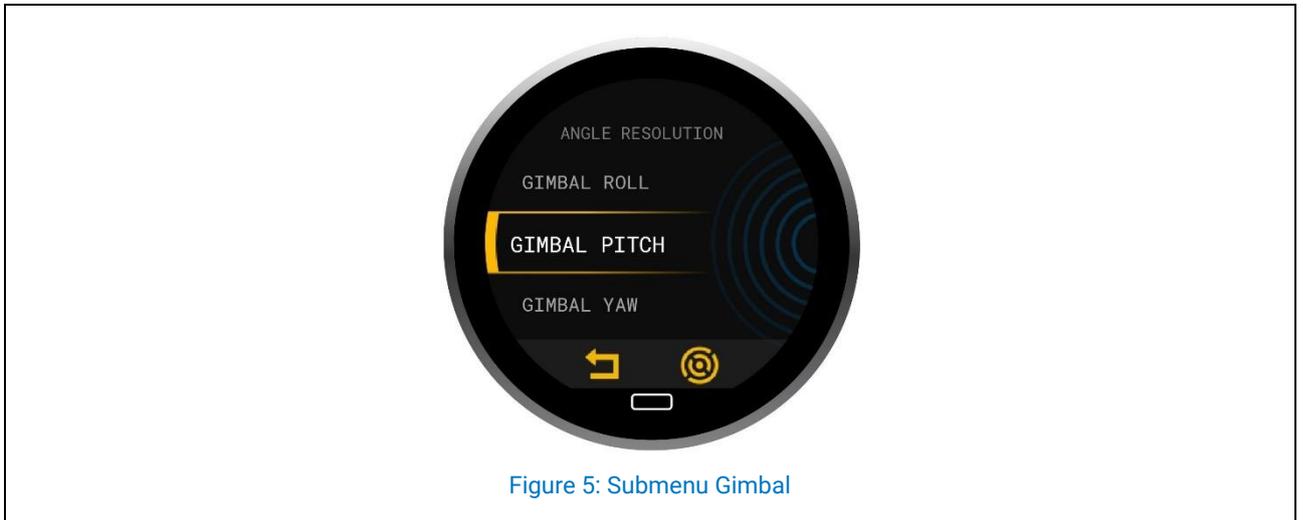


Figure 5: Submenu Gimbal

#### Angle Resolution

Angle Resolution allows you to set the resolution of the angle per encoder step. Before setting the angles, it is advisable to set the appropriate resolution via this sub-item.



Figure 6: Sub-item Angle Resolution

#### Gimbal Roll, Pitch and Yaw

The selected axis can be controlled manually by turning the Touch Encoder. The resolution is based on the step size set via Angle Resolution. The current value is always shown on the display.

The 'Zero' button resets the angle to 0°.



Figure 7: Example Sub-item Gimbal Axis

### 3.3 T2 – Control

The control menu item is separated into two different views, Mount Mode and Mount Position.

You can switch between these two views through the rotary function or by horizontal swiping.

#### Mount Mode

Here you can switch between the STAB- and MAN-Mode. In STAB-Mode the Mount actively stabilizes the payload to ensure a leveled position.

In MAN-Mode the Mount is manually controlled either through the Touch Encoder (see chapter 0), the SOMAG Mount Control App or through commands from another connected external software.

The 'Fast Leveling' button enables the Mount to rapidly move towards the leveling and drift value.



Figure 8: Mount Mode

#### Mount Position

A significant difference between the GSM 5000 and the GSM 4000 is that the GSM 5000 has an electric hydraulic valve to regulate the working height instead of a manual valve. For this reason, the device can be lowered in two ways, through using the Touch Encoder or through the SOMAG Mount Control App.

By pressing the 'Transit' button, the GSM 5000 is hydraulically lowered from its operating height to its bottom position, placing it in a safe and transportable state.

This movement is supported by the active control of the hydraulic pumps, ensuring that the payload remains balanced and does not tilt uncontrollably to one side during the lowering process.

After lowering the device using the 'Transit' or 'Bottom' command, the GSM 5000 can be hydraulically raised to working height again by pressing the 'Operation' button.

The 'Bottom' button serves as a safety fallback level for the transit command. It allows the mount to be lowered to the bottom position even if the hydraulic pumps are not functioning properly.



Figure 9: Mount Position



- **since the lowering process is not actively supported by the pumps in this case, the payload may tilt to one side during the movement.**



### 3.4 T3 – Settings

The Settings menu item provides the possibility to set trigger events, adjust the gain factor and select the communication protocol (see Figure 10). These can be selected by vertical swiping or rotating the touch encoder and activated by touch.



Figure 10: Overview Settings Menu

#### Trigger Event

When an edge on the trigger input is detected, the gimbals angles and the according internal time will be recorded. This data can be retrieved via the Serial Interface. In this panel, it is possible to switch between triggering on the 'Rising Edge' (default) or on the 'Falling Edge'.



Figure 11: Trigger Event

#### STAB Dynamic

The STAB dynamic submenu is divided into Horizon- and Yaw Gain. These can be selected by swipe or rotating the touch encoder and activated by touch.

The Horizontal and Yaw Gain Factor of the Mount labels the dynamics of the Mount. The higher the value, the faster the device responds.

Please note that a high value may cause oscillations. By rotating the Touch Encoder, the value can be adjusted. The 'Default' button resets the gain factor to the factory reset.



Figure 12: Example Yaw Gain

### Interface Protocol

In this submenu it is possible to switch between different communication protocols by touching the corresponding button.

Protocol 2.0 is the latest SOMAG Mount Communication Protocol and is the default protocol. It is possible to select older communication protocols for backward compatibility with Flight Management Systems from various manufacturers.

**Note:** It is possible that the Mount starts to move when the user switches between the protocols because the mode of operation changes according to the selected protocol.



Figure 13: Interface Protocol

## 3.5 T4 – Analysis

The Analysis submenu provides a possibility for data analysis through the views Mount Info, Mount Status, Selftest, General Variables, Temperatures, Operation Counter and Inclination.

These can be selected by rotating the Touch Encoder or by horizontal swiping.

### Mount Info

In this view you can find the Serial Number and the different versions for Firmware, sub-processors (Extended) and Touch Encoder (TE).

Those provide helpful information necessary for troubleshooting procedures.



Figure 14: Mount Info

### Mount Status

This view provides information about the set interface protocol (see chapter 0 Interface Protocol), the current control source of the Mount (e.g., TE - Touch Encoder, FMS, etc.), whether service is required and whether the Built-in test has completed successfully without any errors.



Figure 15: Mount Status

### Selftest

Through this view it is possible to perform the Selftest by pressing the 'Start' button.

The Selftest function executes a routine, which checks all sensors, mechanics and electronics. To carry out the test, press 'Start' and go along with the displayed instructions. The log file will be saved on the SD-Card. SOMAG AG Jena can analyze this file and utilize it for troubleshooting purposes.



- **After successfully pumping down the Mount (reaching the lowest position), the Selftest is started automatically after five seconds. Please keep your distance from the Mount as it moves automatically.**



Figure 16: Selftest

### General Variables

This view shows the working height, the fill level in the reservoir, the current power consumption and the supply voltage.



Figure 17: General Variables

### Temperatures

This view shows the different temperatures of the board and the motors.



Figure 18: Temperatures

### Operation Counter

This view contains various counters, which show how often different procedures have been executed.



Figure 19: Operation Counter

### Inclination

This view displays the current inclination of the system using a digital bubble level. The color gradient between green and red helps assess how far the system is from a perfectly level state. This visual feedback supports quick and intuitive setup or positioning in the field:

Green: Within  $\pm 0.5^\circ$  – optimal alignment

Yellow to orange: Between  $\pm 0.5^\circ$  and  $\pm 1.5^\circ$  – acceptable, but should be monitored

Red: Beyond  $\pm 1.5^\circ$  up to  $\pm 2^\circ$  and higher – critical range, alignment should be corrected



Figure 20: Inclination

## 4 Additional Views

In addition to the views described above, additional displays may appear on the Touch Encoder depending on the system status or specific use cases. These views and their functions are explained in this section.

### Firmware Update

During a firmware update, the Touch Encoder displays a dedicated update view indicating that the process is in progress.



- **Do not power off the device or disconnect any components during the update process.**



Figure 21: Firmware Update