Handwheel SR

Operation Manual

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Preface

The Alphatron AlphaPilot MFM system is a type approved heading control system, designed to fit vessels of any size, including high speed crafts.

The Handwheel SR is part of the AlphaPilot MFM system and is used for steering in manual FU steering mode.

- Thoroughly read this operation manual before operating the equipment.
- We recommend keeping this manual nearby the equipment to ensure ready access to it.

Revision History

Revision No.	Date	Description	Author
1.0	19-04-2018	First release.	J. Kreeft

Glossary

The glossary contains a list of abbreviations and a list of definitions.

Abbreviations

Abbreviations as used in this manual are explained in the table below.

FU	Follow-Up
PS	Port Side
SB	Starboard Side
SR	Single Rudder
STBY	Standby

Definitions

The meaning of standard definitions as used in this manual are explained in the table below.

Alarm	Audio and visual signal announcing a condition requiring attention. The audio continues until acknowledged. The acoustic noise pressure of the alarm is at least 75 dBA but not greater than 85 dBA at a distance of 1 m (IEC 60945). The visual indication continues until the alarm condition is removed.
AlphaPilot MFM	Alphatron brand name for the heading control system
Autopilot	A Heading Control System.
Indication	Visual display of any message to the user which may be accompanied by a low intensity acoustic signal to gain attention.
Steering mode selector	A switch provided for the selection of manual steering modes and automatic steering devices.

Safety Information

The signal words DANGER, WARNING and CAUTION used in this manual indicate the degree of hazard that may be encountered by the user. These words are defined as follows:

⚠️	**DANGER**	Indicates a hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.
⚠️	**WARNING**	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠️	**CAUTION**	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

The signal word NOTICE used in this manual indicates information considered important but not related to injury. It is typically used to prevent damage to equipment or property.

To safely operate this system, the following DANGERS, WARNINGS, and CAUTIONS must be adhered to. Failure to comply with the precautions or with specific dangers, warnings, and cautions elsewhere in this manual violates safety standards of design, manufacture, and intended use of the equipment. ALPHATRON MARINE assumes no liability for the customer's failure to comply with these requirements.

⚠️	**WARNING**	Do not disassemble or modify the equipment. Otherwise, it may cause a fire, or you may suffer an electrical shock.
⚠️	**WARNING**	Immediately turn off the power and disconnect the power supply cable if the equipment is generating any smoke or odour or is overheated. Immediately inform your local service agent of the symptom to have it repaired. Prolonged equipment operation under such a condition can cause a fire or electric shock.
⚠️	**WARNING**	Do not place a container containing liquid on the equipment. Otherwise, it may cause a fire, or you may suffer an electrical shock if knocked over.
⚠️	**WARNING**	When unplugging the instrument, be sure to remove the cord terminal correctly. If the cord is pulled, the cord may get damaged resulting in a fire or an electrical shock.

Warranty

To not to adversely affect the warranty, the following notices must be adhered to.

NOTICE	Operating personnel must not remove equipment covers. Only personnel trained and certified by ALPHATRON MARINE must make component replacement and internal adjustment.
NOTICE	Do not disassemble or modify the equipment. Failure to observe this instruction may cause equipment failure, and it will void the warranty.
NOTICE	Any modification to this equipment without prior written permission from ALPHATRON MARINE will void the warranty.
NOTICE	Installation of this product shall only be done by a certified installation company approved by either ALPHATRON MARINE or by an official ALPHATRON MARINE distributor. Acting otherwise will void the warranty.
NOTICE	This product contains no operator serviceable parts. Service and repair shall only be carried out by personnel trained and certified by ALPHATRON MARINE.
NOTICE	Do not place a container containing liquid on the equipment. The equipment can be damaged if knocked over.
NOTICE	When cleaning the surface, do not use any organic solvent such as thinner or benzine. Otherwise, the paint and markings on the surface may get damaged. For cleaning the surface, remove the dust and debris and wipe with a clean dry cloth.

Introduction

The Handwheel SR is part of the AlphaPilot MFM system and is used for steering in manual FU steering mode. The Handwheel SR is typically used in combination with an AlphaPilot MFM control unit.

The Handwheel SR has 1 handwheel and multiple buttons:

- The alarm speaker button will illuminate when there is an alarm. The button is used to mute the speakers of the Handwheel SR and interconnected modules.
- The buttons **DIM -** and **DIM +** are used to control the brightness level of the Handwheel SR and interconnected modules.
- The button **FU** is used to release/take FU control.
- The handwheel is used to steer (step less control).

Figure 1: Handwheel SR

Enabling FU control

Push the button **FU** to enable FU control*. The control mode indicator **FU** and handwheel indicator will illuminate, meaning that FU mode is enabled, and that the handwheel is enabled.

*Note that control must be allowed, see subsection 'Control allowed/not allowed' on page 11. Note that another active controller may need to allow control handover first, see subsection 'Control handover' on page 13.

Figure 2: STBY mode enabled

Figure 3: FU mode enabled

Control allowed/not allowed

When not in control, the Handwheel SR is in standby mode and handwheel is disabled (the control mode indicator **STBY** is illuminated and the handwheel indicator is not illuminated). The button **FU** is illuminated when allowed to take control (see Figure 4 and Figure 5).

FU control is steering in manual FU steering mode; therefore, the Mode Switch must be in position **MAN** (Mode Switch 3 Pos) or **AUTO|MAN** (Mode Switch 2 Pos).

FU control is not allowed when the Mode Switch is in position **NFU** (Mode Switch 2 Pos & Mode Switch 3 Pos) or **AUTO** (Mode Switch 3 Pos)).

Figure 4: Enabling FU control not allowed

Figure 5: Enabling FU control allowed

When a non-illuminated button is pushed, the speaker produces 4 short successive beeps to indicate that the operation is not valid.

Control handover

If applicable, handover of control must be allowed first by the active controller to allow the Handwheel SR to take control (i.e. enable FU control).

The method for control handover is pre-set during commissioning. Two system settings are possible, namely 'Take control' or 'Release/take control'.

Take control

Any controller can take control. Control handover allowance is not applicable.

Procedure for Handwheel SR:

- Push the button **FU** to enable FU control. The control mode indicator **FU** and handwheel indicator will illuminate, meaning that the FU mode and the handwheel is enabled.

Release/take control

Any controller can take control, only when the active controller allows control handover.

Procedure for Handwheel SR:

- Take control
  Allow control handover from the active controller (refer to the respective operation manual for the procedure). The button **FU** will illuminate to indicate that FU control is allowed. Push the button **FU** to enable FU control. The control mode indicator **FU** and handwheel indicator will illuminate, meaning that the FU mode and the handwheel is enabled.

- Release control
  To allow control handover to another controller, push the button **FU**, until the control mode indicator **FU** flashes (this indicates that control handover is allowed).
  NOTE: The Handwheel SR stays in control until control is transferred to another controller.
  NOTE: The control mode indicator **FU** keeps flashing until control is transferred to another controller. There is no timeout. The speaker produces 3 short successive beeps with 10 seconds interval to indicate that the operation is not finished.
  NOTE: The Handwheel SR goes into standby mode when control is transferred to another controller.

Steering

In FU control, the steering gear will move the rudder as per FU value command (rudder angle).

Moving the handwheel to the neutral position will cause the rudder to move to the centre position. Turning the handwheel farthest to the left will cause the rudder to move to a predefined maximum rudder angle, turning the handwheel farthest to the right will cause the rudder to move to the predefined maximum rudder angle in the opposite direction.

Alarm handling

The alarm speaker button is only illuminated when there is an internal alarm. When an alarm occurs, the alarm speaker button will flash in an uninterrupted sequence, and the speaker will beep in an uninterrupted sequence.

The alarm speaker can be muted via the alarm speaker button.

When the alarm is (read and) acknowledged on the AlphaPilot MFM control unit, then the illumination will be constant, and the speaker will be muted (if not muted already via the Handwheel SR). When the alarm is accepted (e.g. problem solved), then the illumination on the alarm speaker button will turn off.

Figure 6: Alarm active

Dimming

Buttons **DIM -** and **DIM +** are always illuminated (dimmed to a pre-set brightness level) and control is always allowed.

Push the button **DIM -** or **DIM +** to simultaneously adjust the brightness level of all indicators on the Handwheel SR and interconnected modules.

Alarm speaker and lamp test

Simultaneously push and hold buttons **DIM -** and **DIM +** to test the alarm speaker and the indicators; The alarm speaker will beep continuously and all indicators (buttons, control mode indicators, and handwheel indicator) will illuminate continuously, until the buttons are released.