CLAIMS

1. A user interface apparatus (110) for controlling a marine vessel (100), comprising:

a mechanical stick (112) with a linear motion, a mechanical block (114) with a rotational motion, and a mechanical ring (116) with a rotational motion, all of which are configured to interact with a user (160), and all of which are configured and positioned concentric;

one or more electric motors (118) configured to give tactile feedback to the user (160);

one or more electric visual elements (120, 120A, 120B) configured to give visual feedback to the user (160); and

one or more processors (132) configured to:

operate the user interface apparatus in a plurality of operation modes (160A, 160B), each operation mode (160A, 160B) with a distinct configuration (162A, 162B) mapping one of a ship speed, a thrust force, a propeller speed, a propeller pitch, or a power output as a control parameter for the mechanical stick (112), disabling the mechanical block (114) or mapping one of a direction of a thrust force, or a steering angle as a control parameter for the mechanical block (114), and disabling the mechanical ring (116) or mapping one of a heading, a course, a torque, a rate of turn, or a steering angle as a control parameter for the mechanical ring (116);

retrieve (152) distinct settings (166A/170A/166B/170B) for the tactile feedback and/or the visual feedback as a part of the distinct configuration (162A, 162B) of the operation mode (160A, 160B); and

control (156) the tactile feedback given by the one or more electric motors (118) and/or the visual feedback given by the one or more electric visual elements (120) based on the retrieved distinct settings during setting (154) a selected control parameter mapped to the mechanical stick (112), the mechanical block (114) or the mechanical ring (116), wherein an integrated control approach is provided as the distinct tactile and/or visual feedback settings enable setting different control parameters with the same mechanical stick (112), the mechanical block (114), and the mechanical ring (116) in the plurality of the operation modes (160A, 160B).

2. The apparatus of claim 1, wherein the mechanical stick (112) is

configured and positioned to move along the linear motion across the mechanical block (114), and the mechanical block (114) comprises an external dome shape (210).

3. The apparatus of any preceding claim, wherein the mechanical ring (116) is configured and positioned to surround the mechanical block (114).

4. The apparatus of any preceding claim, wherein the one or more visual elements (120, 120A, 120B) comprise a plurality of leds (400, 402, 500, 502) configured to give the visual feedback for the selected control parameter as one or more of an allowed range, a current setting, a new setting.

5. The apparatus of any preceding claim, wherein the one or more electric motors (118) are configured to give the tactile feedback for the selected control parameter as detents (602, 604, 606, 608) and/or varying degrees of friction (620, 622, 624) during the setting (154) of the selected control parameter, and/or as restraints (610, 612) indicating an allowed range of the selected control parameter.

6. The apparatus of any preceding claim, wherein the one or more processors (132) are configured to operate the user interface apparatus in an auto pilot control mode selected from the plurality of the operation modes (160A, 160B), wherein the one or more processors (132) are configured to maintain the selected control parameter settable (154) with the mechanical stick (112) related to the ship speed, disable the mechanical block (114), and maintain the selected control parameter settable (154) with the mechanical ring (116) related to the heading or the course.

7. The apparatus of any preceding claim, wherein the one or more processors (132) are configured to operate the user interface apparatus in an azimuth lever mode selected from the plurality of the operation modes (160A, 160B), wherein the one or more processors (132) are configured to maintain the selected control parameter settable (154) with the mechanical stick (112) related to the thrust force or the propeller speed, maintain the selected control parameter settable (154) with the mechanical block (114) related to the direction of the thrust force, and disable the mechanical ring (116).

8. The apparatus of any preceding claim, wherein the one or more processors (132) are configured to operate the user interface apparatus in a bow thruster mode selected from the plurality of the operation modes (160A, 160B), wherein the one or more processors (132) are configured to maintain the selected control parameter settable (154) with the mechanical stick (112) related

to the thrust or the speed, disable the mechanical block (114), and disable the mechanical ring (116).

9. The apparatus of any preceding claim, wherein the one or more processors (132) are configured to operate the user interface apparatus in a mini wheel mode selected from the plurality of the operation modes (160A, 160B), wherein the one or more processors (132) are configured to maintain the selected control parameter settable (154) with the mechanical stick (112) related to the ship speed or the propeller speed, disable the mechanical block (114), and maintain the selected control parameter settable (154) with the mechanical ring (116) related to the steering angle.

10. The apparatus of any preceding claim, wherein the one or more processors (132) are configured to operate the user interface apparatus in a joystick mode selected from the plurality of the operation modes (160A, 160B), wherein the one or more processors (132) are configured to maintain the selected control parameter settable (154) with the mechanical stick (112) related to the ship speed, the thrust force or the power, maintain the selected control parameter settable (154) with the mechanical block (114) related to the direction of the thrust force, and maintain the selected control parameter settable (154) with the mechanical ring (116) related to the torque or the rate of turn.

11. The apparatus of any preceding claim, wherein a first operation mode (160A) comprises a first configuration (162A) of control parameters for the steering system (142) and the propulsion system (144), and a second operation mode (160B) comprises a second configuration (162B) of control parameters for the steering system (142) and the propulsion system (144), and the first configuration (162A) and the second configuration (162B) comprise a different set of control parameters.

12. The apparatus of any ~~preceding~~ of claims 1 to 10, wherein the plurality of the operation modes (160A, 160B) comprises a first operation mode (160A) with control parameters (162A) for one or more azimuthing propulsion units of a propulsion system (144) of the marine vessel (100), and a second operation mode (160B) with control parameters (162B) for one or more fixed direction propulsion units of the propulsion system (144) of the marine vessel (100).

13. The apparatus of any ~~preceding~~ of claims 1 to 10, wherein a rate of change of the selected same control parameter is different between a first operation mode (160A) and a second operation mode (160B)