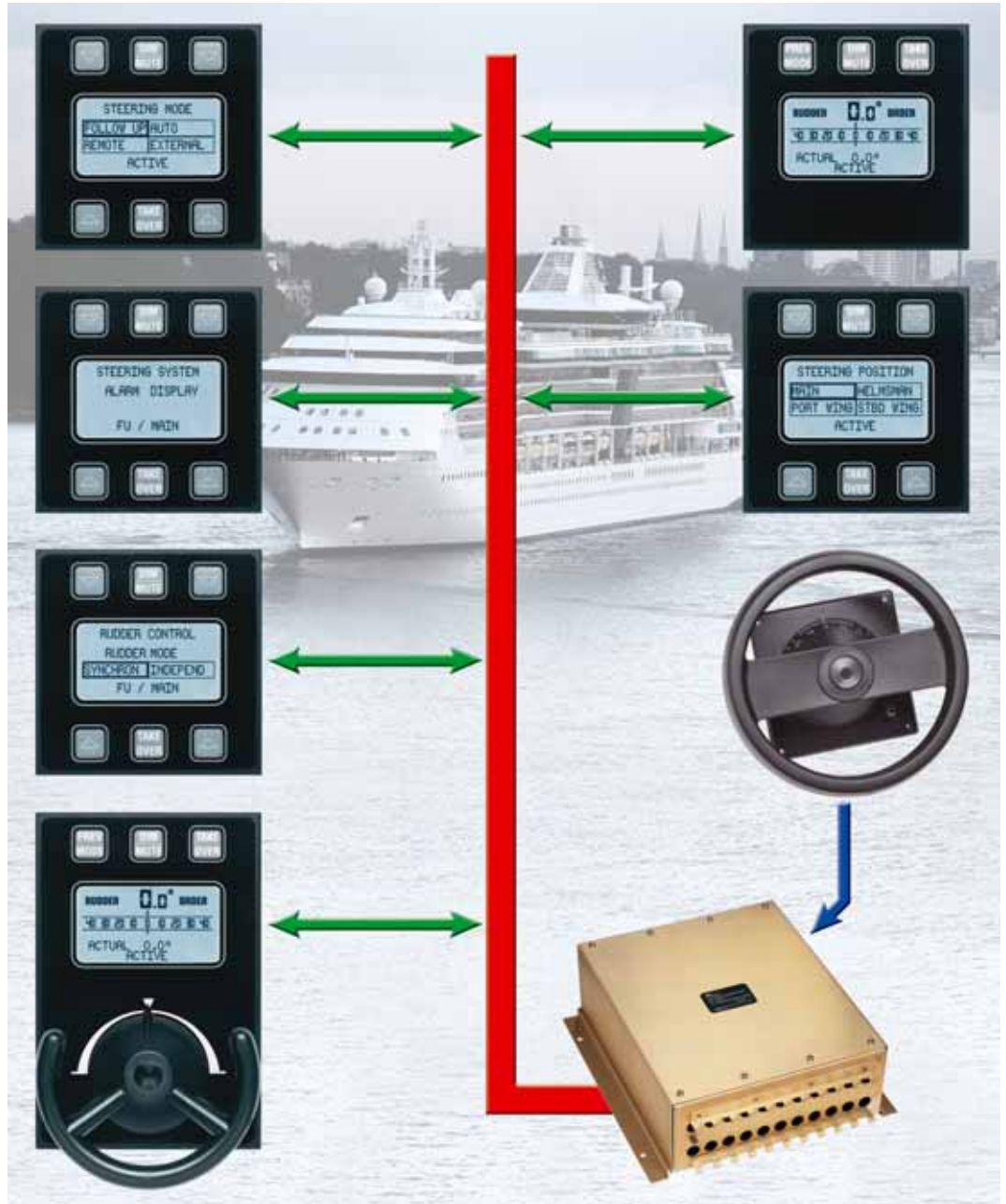


# NAVIGUIDE 4000

## Manual Steering System



**NAVINET 4000 Steering Control Network**

**Sperry Marine**



**Steering Control Unit**  
Contains all I/Os and the interface to the steering gear  
Dimensions H 151 W 392 D 425 mm  
Weight 3 kg



**Steering Mode Selector**  
Selects required steering mode  
Dimensions 96 x 96 mm  
Installation depth 155 mm  
Weight 1.1 kg with 3 m cable



**Steering Alarm Indicator**  
Displays steering system alarms  
Dimensions 96 x 96 mm  
Installation depth 155 mm  
Weight 1.1 kg with 3 m cable



**Steering Position Selector**  
Selects required steering stand  
Dimensions 96 x 96 mm  
Installation depth 155 mm  
Weight 1.1 kg with 3 m cable



**Rudder Angle Feedback Unit**



**Follow-Up Hand Wheel**  
250 mm diameter  
Available in SyncroHelm Version  
Installation depth 75 mm  
Weight 3.5 kg



**FU Mini-Wheel**  
For rudder angles of  
 $\pm 45^\circ$  and  $\pm 70^\circ$   
Dimensions 96 x 96 mm  
Installation depth 90 mm  
Weight 0.5 kg



**FU Device Interface/Display Unit**  
Displays actual rudder angle and rudder order from a follow-up wheel  
Dimensions 96 x 96 mm  
Installation depth 155 mm  
Weight 1.1 kg with 3 m cable



**SyncroHelm Wheel Control Unit**  
Controls the main SyncroHelm FU hand wheel  
Dimensions 96 x 96 mm  
Installation depth 155 mm  
Weight 1.1 kg with 3 m cable



**Dual Rudder Sync Selector**  
Selects independent or synchronous rudder control  
Dimensions 96 x 96 mm  
Installation depth 155 mm  
Weight 1.1 kg with 3 m cable



**Steering Mode Selector**  
Selects FU or NFU steering modes  
Dimensions 96 x 192 mm, Installation depth 266 mm  
Weight 1.6 kg with 3 m cable



**Dual NFU Tiller**  
Double NFU with override and VDR output  
Dimensions 96 x 96 mm  
Installation depth 90mm  
Weight 1.5 kg with 3 m cable

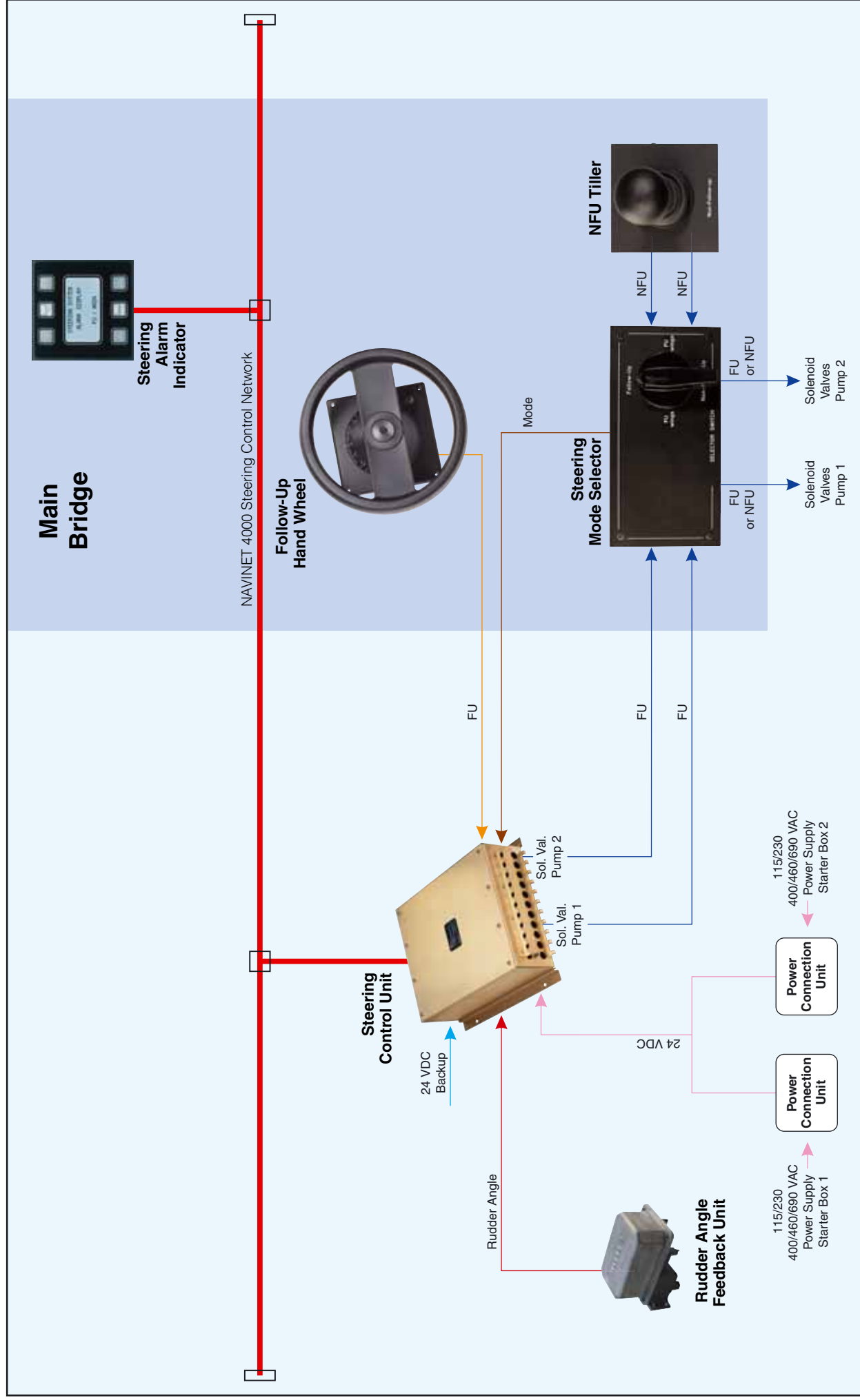


**Steering Mode Selector/Dual NFU Tiller**  
Selects secondary steering or mainsteering (NFU) and contains the NFU Tiller. Only for use in combination with an autopilot. Dimensions 96 x 192 mm, installation depth 220 mm Weight 3 kg with six 3 m cables

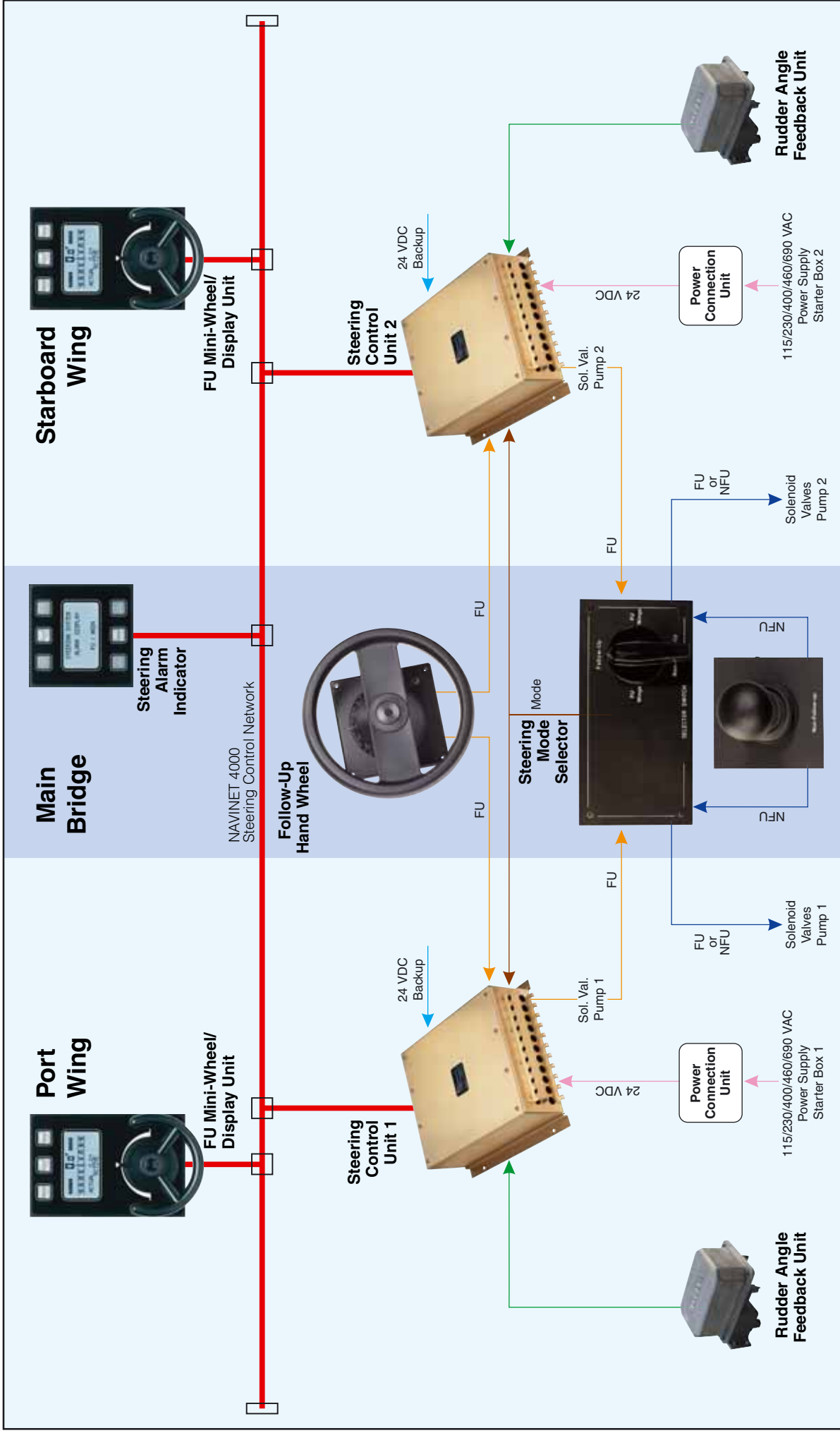


**FU Mini-Wheel/Display Unit**  
Follow-up hand wheel with display of actual rudder angle and rudder order.  
Available in SyncroHelm Version.  
Dimensions 144 x 96 mm  
Installation depth 155 mm  
Weight 1.8 kg with 3 m cable

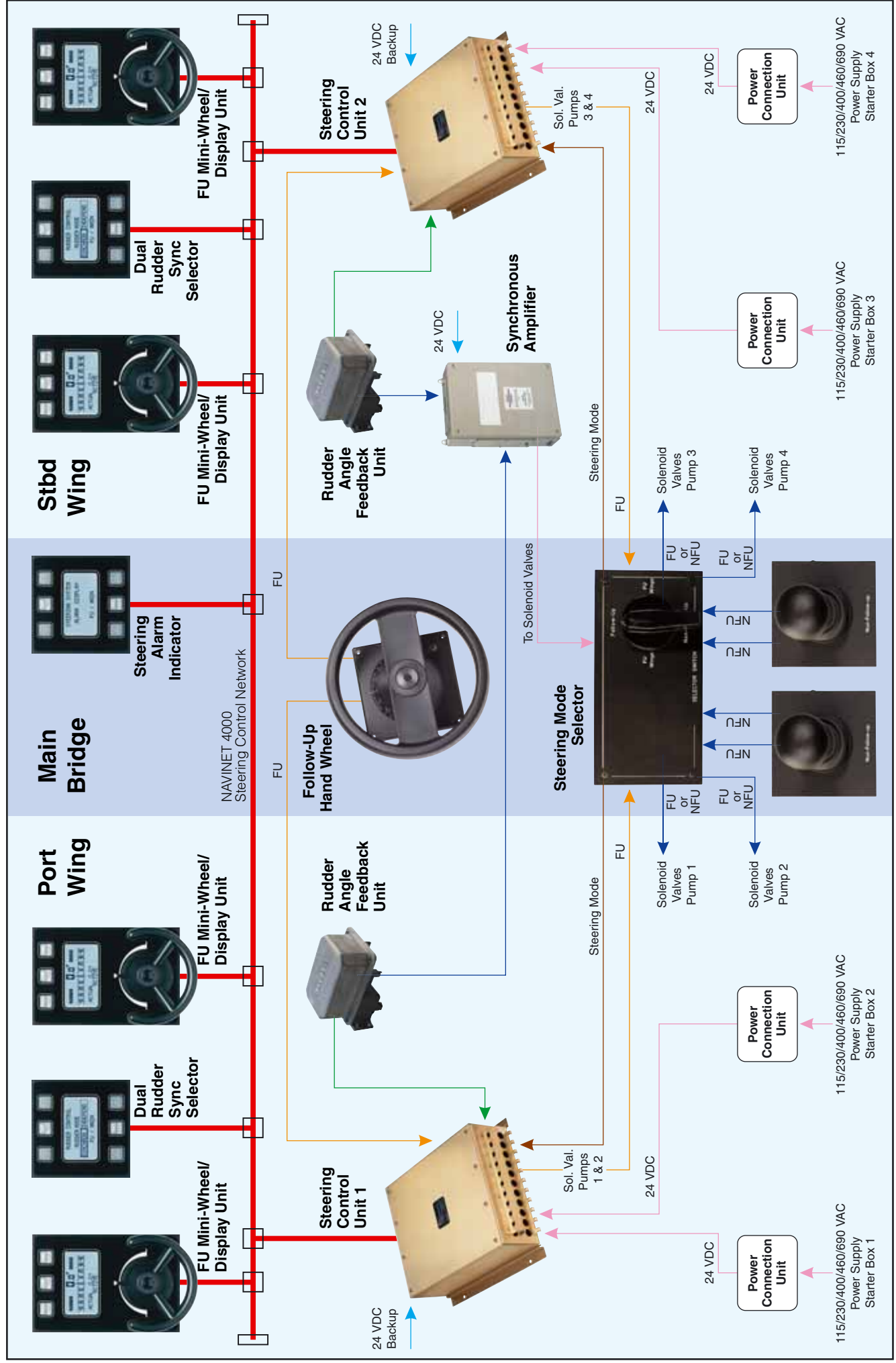
Minimum Configuration for Single FU and Double NFU for Single Rudders



Double FU and Double NFU for Single Rudders with additional FU Mini-Wheel at Wing Steering Positions

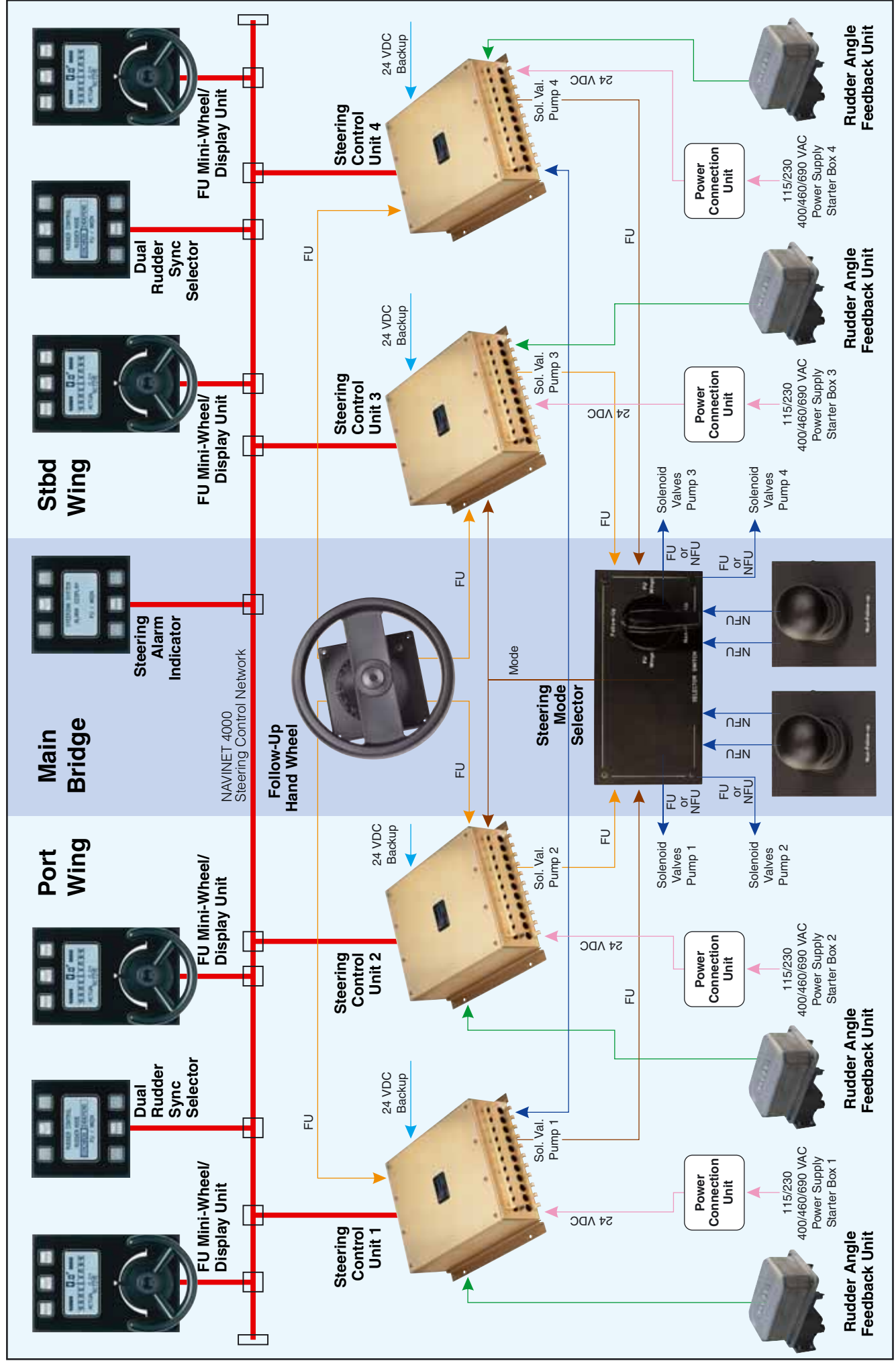


## Expanded Configuration for Double FU and Double NFU for Dual Rudders



Expanded Configuration for Double FU and Double NFU\* for each Rudder Blade in Dual Rudder Systems

(\*Independent only)



## Steering Control Unit

### Environment

Ambient temperature range  
 operation -15° C to +55° C  
 storage -25° C to +70° C

Protection grade IP32 to DIN 40050

Magnetic clearance 0.4 m

Environmental testing in accordance with EN 60945 (IEC 945 +A1).

Dimensions  
 H 151 mm  
 W 392 mm  
 D 425 mm

Weight 3 kg

Power requirements  
 Maximum 24 VDC (18 V to 36 V)  
 ripple content 4 V pp, extreme values should not exceed 36 V or fall below 18 V

Power consumption 10 W max.  
 Reverse polarity protection built-in

Cable connection clamp-type terminals

### Type Approval

The NAVGUIDE 4000 Manual Steering System has been type approved by Germanischer Lloyd to IEC/EN 60945

### INPUTS

Rudder order signal (follow-up hand wheel)

± 10 V ± 70° max. rudder angle potentiometer resistance 2kΩ with center tap

Rudder angle feedback signal

± 10 V ± 70° max. rudder angle potentiometer resistance 2kΩ with or without center tap

External system

± 10 V ± 120° max. rudder angle

Speed input

200 p/nm or IEC 61162-1

Steering mode status

} potential-free contact required

Override status

Mute

### OUTPUTS

DC solenoid valves  
 Outputs

two for port  
 two for starboard (solid-state relays)

Type plus or minus switching  
 Voltage 12 VDC to 110 VDC  
 Rating 2.0 A max.  
 Additional outputs optional

or  
 AC solenoid valves  
 Outputs

two for port  
 two for starboard (solid-state relays)  
 24 VAC to 230 VAC  
 1.0 A max.  
 optional

Voltage Rating  
 Additional outputs

or ("and" if required)

Proportional rudder order / error  
 Outputs

two  
 80 mV/° to 350 mV/° (isolated)  
 or  
 4 mA to 20 mA (isolated)  
 optional

Additional outputs

### Outputs and Interfaces

CAN to IEC 61162-3 for bus interface units and additional follow up amplifier

Central alarm

bidirectional IEC 61162-1

Voyage data Recorder (VDR)

IEC 61162-1

Status and alarm outputs

Ext. system status

Deadman's control

Mute

System alarm

Override alarm

Power failure alarm

Primary supply

Backup supply

} potential-free contact  
 2 A max. current  
 250 V max. voltage

## Sperry Marine

[www.sperrymarine.northropgrumman.com](http://www.sperrymarine.northropgrumman.com)

For more information, please contact:

### AMERICAS

#### Charlottesville, VA USA

Tel.: +1 434-974-2000

Fax: +1 434-974-2259

#### Melville, NY USA

Tel: +1 631-719-4736

Fax: +1 631-719-4630

### ASIA

#### China, Shanghai

Tel: +86-21-5836-9978

Fax: +86-21-5836-9979

#### Hong Kong, Sheung Wan

Tel: +852-2581-9122

Fax: +852-2581-9967

#### Japan, Tokyo

Ph: +81 (0)-3-3863-7401

Fax: +81 (0)-3-3863-7455

#### Singapore

Tel: +65-6274-3332

Fax: +65-6271-3339

#### South Korea, Busan

Tel: +82-51-247-7455

Fax: +82-51-247-7454

#### Taiwan, Kaohsiung

Tel: +886-7-331-7786

Fax: +886-7-331-7924

### CANADA

#### Nova Scotia, Halifax

Tel: +1 902-468-9479

Fax: +1 902-468-9480

### EUROPE

#### Belgium, Antwerp

Tel: +32-3-233-14-33

Fax: +32-3-225-05-53

#### Denmark, Copenhagen

Tel: +45-77-33-66-33

Fax: +45-77-33-66-11

#### Germany, Hamburg

Tel: +49-40-299-00-0

Fax: +49-40-299-00-146

#### Holland, Vlaardingen

Tel: +31(0)-10-4451600

Fax: +31(0)-10-4345015

#### Norway, Bergen

Tel: +47-55-94-94-94

Fax: +47-55-34-52-27

#### United Kingdom, New Malden

Tel: +44(0)-20 8329-2000

Fax: +44(0)-20 8329-2415

Sperry Marine, with worldwide headquarters in Charlottesville, VA, and major engineering and support offices in Melville, NY, New Malden, England, and Hamburg, Germany, is part of the Northrop Grumman **Electronic Systems** sector.

This brochure and the information herein is the intellectual property of Northrop Grumman Sperry Marine B.V. (NGSM B.V.) and its associate companies and may not be copied or reproduced without the express permission of NGSM B.V. Specifications were correct at time of press but may be varied in accordance with NGSM B.V.'s policy of continuous product development, any technical content should be verified with NGSM B.V.

© May 2005 Northrop Grumman BR-0107 · 06/05 · Printed in Hamburg, Germany



Over 400 Locations Worldwide