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R5 SUPREME NAV System Installation Short Instruction

7000 118-368 C1

R5 SUPREME NAV

*This quick installation guide serves as a complement to the standard manuals found on the documentation CD. It is designed to give immediate access to essential information when executing an installation and a functionality test. **Installation of the R5 SUPREME Navigation System should always be carefully planned and executed by skilled personnel.***

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RECOMMENDED PHYSICAL LOCATION

Please consult the complete system manual P/N: 7000 118-301 for physical location aspects of the navigation sensor, Control and Display Unit (CDU) and GPS antenna.

Important: The R5 SUPREME Navigation System is offered in GPS and DGPS configuration. In addition, the R5 CDU can be installed in many different configurations. Mainly:

- Navigation System – Standalone or networked
- Combined AIS & Navigation System
- AIS System

This short instruction covers standalone Navigation System installations.

Physical

R5 SUPREME CDU
Size W x H x D: 255x140x85 (mm)
Gimbal Mount
Size W x H x D: 252x95x65 (mm)
R4 Navigation Sensor
Size W x H x D: 128x39x137 (mm) R4 Navigation
R5 Nav Junction box
Size W x H x D: 270x72x200 (mm)
Weight 0.75 kg

Power

R5 SUPREME CDU
Input 12/24 VDC (Max 30 VDC)
Power Consumption: 13W
R4 Navigation Sensor
Input 12/24 VDC (Max 32 VDC)
Power Consumption 2.0W (GNSS), 2.7W (DGNSS)

GNSS Receiver

Receiver: 270 CH
Frequency: L1 GPS and GLONASS
Update Rate: 5 Hz
Position accuracy:
Position <2.0 m 2 sigma (95%), DGNSS
Position <5 m, 2 sigma (95%), GNSS
Antenna feeding: 5 VDC

Electrical Interfaces

R5 SUPREME CDU
Signal connector RS422: 26 pin HD-SUB (M)
Ethernet connector: RJ45
Power connector: 4 pin ConXall (M)

RS 422 Port	Default speed (bps)
Sensor Port	57600
User Port 3	38400
User Port 4	38400

R4 Navigation Sensor
Power and Signal Cable connector: 18 pin ConXall (M)
GPS 50 ohm antenna connector TNC female

RS 422 Port	Default speed (bps)
System Port	57600
User Port 1	38400
User Port 2	9600

Cables (recommended)

GNSS RG214/U
Sensors e.g. Gyro RFE-HFI 2x2x0.75 mm²
Ethernet Cable CAT-5

Environmental data

General:
Protected environment (IEC 60945)
Operating temperature -15 °C to 55 °C

GNSS antennas:
Exposed environment (IEC 60945)

Compass safe distance

R5 SUPREME CDU
75 cm to standard magnetic compass
50 cm to steering magnetic compass
R4 Navigation Sensor
60 cm to standard magnetic compass
40 cm to steering magnetic compass

The R5 SUPREME Navigation System is compliant with the following Standards

MO Resolution MSC.112(73)
IMO Resolution MSC. 113(73)
IMO Resolution MSC.114(73)
IMO Resolution MSC.115(73)
IMO Resolution MSC.191(79)
IMO Resolution A.694(17)
IEC 61108-1 Ed. 2.0
IEC 61108-2 Ed. 1.0
IEC 61108-4 Ed. 4.0
IEC 60945 Ed. 4.0
IEC 61162-1 Ed. 4.0
IEC 62288 Ed. 2.0

Specifications subject to change without notice

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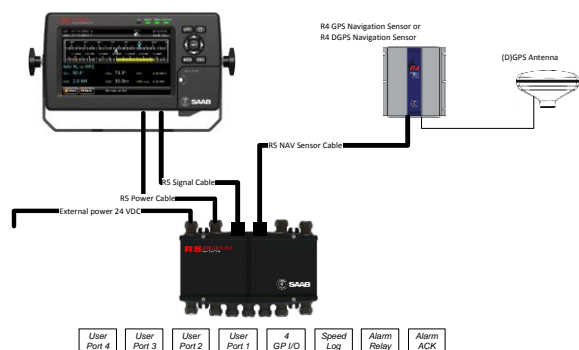
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INSTALLATION

The system can be installed with or without the R5 Nav Junction box.

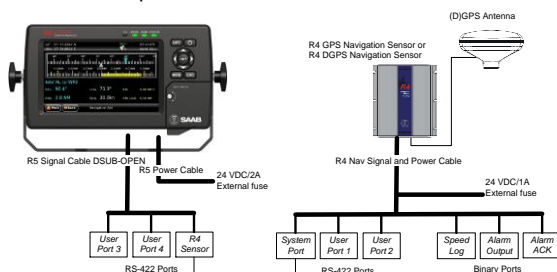
INSTALLING WITH R5 NAV JUNCTION BOX

The CDU and R4 Sensor signal cables are pre-connected. All external signals are labelled at the junction box screw terminals. R5 CDU and R4 Sensor power fuses and an alarm relay are included in the junction box. The Junction box cable glands will fit 6-12mm diameter cables. Connect the User ports and other digital interfaces to bridge systems as needed. See the full manual for details.



INSTALLING WITHOUT R5 NAV JUNCTION BOX

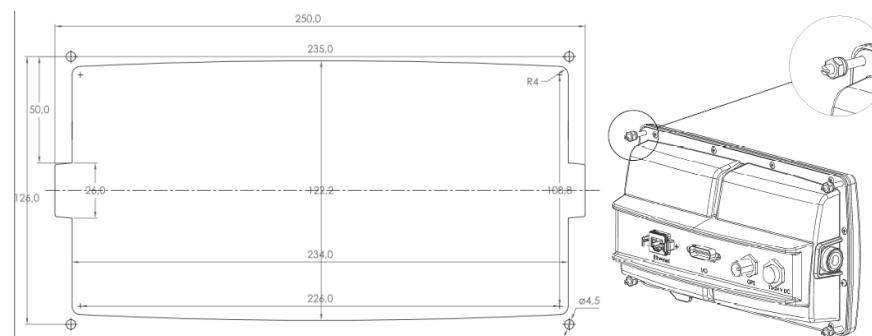
Open end signal cables are used with the R5 CDU and R4 Navigation Sensor. Connect R5 CDU Sensor Port TX signals to R4 Navigation Sensor System port RX, and R4 Navigation Sensor System port TX signals to R5 CDU Sensor Port RX. See attached cable and interface specifications.



MOUNTING

The R5 CDU can be panel or gimbal mounted. A gimbal mount frame, and panel mount screws are included with the R5 CDU.

For panel mount use the cutout dimensions in the figure below. Do not exceed the cutout area, the screw holes may be too close to the cutout. A 1:1 scale cutout drawing is available on the documentation CD. If printed, verify scale has not changed by measuring given dimensions.



INITIAL SET UP

SYSTEM POWER UP

The R5 CDU and R4 Navigation Sensor units will start to operate when power is applied. The system is fully operational within two minutes.

SETUP WIZARD

The first time the R5 CDU is powered up, a setup wizard will be launched that will guide through the system setup.

Make sure the R4 Navigation Sensor has power and is connected to the R5 CDU before continuing.

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Set up the system as a Navigation system (GNSS or DGNSS depending on R4 Navigation Sensor type connected) and follow the set up guide. Default CDU password is **cdupwd** in lower case letters.

SET UP GNSS / DGNSS PARAMETERS

Set up GNSS parameters as required for each installation type under:

Main Menu → Configuration → GNSS / DGNSS

SET UP NAVIGATIONAL PARAMETERS

Review and setup as desired under:

Main Menu → Configuration → Navigation

SET UP INPUT AND OUTPUT PORTS

Set up connections to external systems under:

Main Menu → Maintenance → Configuration → Interface

Verify working communication with external systems when done.

SYSTEM FUNCTIONAL TEST

Please consult the full manual on CD if any problems are detected.

R5 CDU STATUS LED'S

Normal operation can be verified using the LEDs in the front.

LED	Function
Status	Solid Red – Acknowledged active alarms Flashing Red – Unacknowledged active alarms Solid Green – No alarms, power on Not lit – No power
RAIM	Solid Green – “Safe” Estimated position error < RAIM limit Solid Yellow – “Caution” Estimated positioning error may be > Raim limit Solid Red – “Unsafe” Estimated positioning error > RAIM limit Not lit – No power
Mode	Not used.
(LS)	Not a led. Light sensor for automatic backlight dimming.

R4 SENSOR STATUS LED'S

The Status LEDs on the R4 Sensor shall be interpreted as follows.

LED	Function
PWR	Red - Power indicator
GPS	Yellow - GPS Position fix
CORR	Yellow - GNSS corrections available
DGPS	Green - DGPS position in use

Note: LEDs will behave differently during boot. Allow two minutes from power on before examination of LED status.

ALARM LIST

Make sure no unexpected alarms are active under:

Main Menu → Status → Alarm List

Disable any active alarms not applicable for the installation in the Alarm Config View. *Main Menu → Maintenance → Configuration → Alarm*

GPS STATUS

Verify GPS antenna installation quality in the GPS Status View

Main Menu → Status → GPS Status

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R4 NAVIGATION SENSOR INTERFACES

SIGNAL AND POWER PORT WITH R4 SENSOR SIGNAL AND POWER CABLE

Pin	In/Out	Signal Name	Signal Type	Cable Colour
1	Out	User Port 1– RxA (-)	RS422 / RTCM SC-104	White
2	In	System Port – RxA(-)	RS422	Green
3	In	User Port 1– RxB (+)	RS422 / RTCM SC-104	Brown
4	Out	Alarm Ack GND	0 VDC	Brown/Green
5	In	System Port – RxB(+)	RS422	Yellow
6	Out	Speed Log GND	0 VDC	Yellow/Brown
7	Out	User Port 1– TxA (-)	RS422	Grey
8	Out	User Port 1– TxB (+)	RS422	Pink
9	In	Power GND	0 VDC	Blue
10	Out	System Port – TxA(-)	RS422	Black
11	Out	System Port – TxB(+)	RS422	Purple
12	-	NC	-	NC
13	Out	User Port 2 – TxB (+)	RS422 / RTCM SC-104	Red/Blue
14	In	Alarm Ack In	0 VDC / NC	White/Green
15	Out	Speed Log Out	0 VDC / 5VDC	White/Yellow
16	Out	User Port 2 – TxA (-)	RS422 / RTCM SC-104	Grey/Pink
17	In	Power+ (Vcc)	12/24 VDC	Red
18	Out	Alarm Relay Out	0 V (Active) Vcc – 1V (Inactive)	White/Grey

ANTENNA CONNECTOR

Connector: TNC (Female)

Output: +5 VDC (referenced to VCC input GND)

R5 CDU INTERFACES:

I/O PORT WITH R5 SIGNAL CABLE DSUB-OPEN

Pin	In/Out	Signal Name	Signal Type	Cable Colour
1	Out	Sensor Port – TxB (+)	RS422	White
2	Out	Sensor Port – TxA (-)	RS422	Brown
3	In	User Port 4 – RxB (+)	RS422	Green
4	In	User Port 4 – RxA (-)	RS422	Yellow
5	Out	User Port 4 – TxB (+)	RS422	Grey
6	Out	User Port 4 – TxA (-)	RS422	Pink
7	In	User Port 3 – RxB (+)	RS422	Blue
8	In	User Port 3 – RxA (-)	RS422	Red
9	-	User Port 3 – GND	RS422	Black
10	-	Sensor Port – GND	RS422	Violet
11	In	Sensor Port – RxB (+)	RS422	Grey / Pink
12	In	Sensor Port – RxA (-)	RS422	Red / Blue
13	-	User Port 4 – GND	RS422	White / Green
14	Out	General I/O 1 – Out	Binary	Brown / Green
15	Out	General I/O 0 – Out	Binary	White / Yellow
16	In	General I/O 1 – In	Binary	Yellow / Brown
17	Out	User Port 3 – TxB (+)	RS422	White / Grey
18	Out	User Port 3 – TxA (-)	RS422	Grey / Brown
19	In	General I/O 2 – In	Binary	White / Pink
20	-	GND	Binary	Pink / Brown
21	-	GND	Binary	White / Blue
22	In	General I/O 0 – In	Binary	Brown / Blue
23	Out	General I/O 3 - Out	Binary	White / Red
24	-	NOT CONNECTED	-	Brown / Red
25	-	NOT CONNECTED	-	
26	-	NOT CONNECTED	-	

CDU POWER PORT

Pin	In/Out	Signal Name	Signal Type	R5 Power Cable
1	In	PWR +	12/24 VDC	Red
2	In	PWG GND	0 VDC	Black
3	-	-	-	Brown
4	-	-	-	Orange

CDU GND PORT – CONNECT TO SHIP GND