

**SAAB**

R5 SUPREME AIS Installation Short

Instruction

7000 118-363 C1**R5 SUPREME AIS**

*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 AIS Transponder System should always be carefully planned and executed by skilled personnel.***

Please visit our web-site, saab.com, for the latest news regarding this and other Saab products. AIS equipment is currently found under : saab.com/security/maritime-traffic-management/traffic-management/

Our product pages also contains contact information to our dealers and service stations world-wide and much more

RECOMMENDED PHYSICAL LOCATION

Please consult the complete system manual P/N: 7000 118-300 for physical location and mounting aspects of the system units and the VHF and GPS antennas.

SYSTEM MODE

Important: The R5 SUPREME CDU can be set up to operate in different system modes, **AIS, Navigation or a Combined AIS and Navigation mode.**

This short instruction deals with AIS functions only. If Navigation system functions are activated, additional setup will be necessary.

Physical

R5 SUPREME AIS Transponder
Size W x H x D: 227x77x192 [mm]
R5 SUPREME CDU
Size W x H x D: 255x140x84 [mm]
Gimbal Mount
Size W x H x D: 295x170x84 [mm]

Power

R5 SUPREME AIS Transponder
Input 12/24 VDC (Max 30 VDC)
Power Consumption: 20W (60W peak)
R5 SUPREME CDU
Input 12/24 VDC (Max 30 VDC)
Power Consumption: 13W

GPS Receiver (AIS internal)

Receiver: 50 CH
Frequency: L1 (1575.42 MHz)
Update Rate: 2 Hz
Position accuracy (SA off)
Position <2.5 m GPS (CEP, 50%)
Antenna feeding: 5 VDC

Electrical Interfaces

RS 422 Port	Default speed (bps)
Pilot In/Out	38400
ECDIS In/Out	38400
LR In/Out	9600
Sensor 1 In/Out	4800
Sensor 2 In/Out	4800
Sensor 3 In/Out	4800

Note: RTCM-104 corrections are accepted on any of the ports above,

Signal connector RS422: 26 pin HD-SUB (M)
Signal connector I/O: 26 pin HD-SUB (F)
Ethernet connector: RJ45
Power connector: 4 pin ConXall (M)
GPS 50 ohm antenna connector TNC female
VHF 50 ohm antenna connector BNC female

RS 422 Port	Default speed (bps)
CDU Pilot In/Out	38400

Ethernet connector: RJ45
Power connector: 4 pin ConXall (M)

Cables (recommended)

VHF and GPS	RG214/U
Sensors e.g. Gyro	RFE-HFI 2x2x0.75 mm ²
Ethernet Cable	CAT-5

VHF Transceiver

Frequency 156-163 MHz
Output power 1/12.5 W
Channel bandwidth 25 kHz
Bit Rate 9600 bps
Intervals between position reports 1-180 s
Modulation FM-GMSK/GFSK
Transmitter 1
Receivers 3
Transceiver Sensitivity <-107 dBm

Environmental data

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

Compass safe distance

R5 SUPREME AIS Transponder
65 cm to standard magnetic compass
40 cm to steering magnetic compass
R5 SUPREME CDU
75 cm to standard magnetic compass
50 cm to steering magnetic compass

The R5 SUPREME AIS Transponder System is compliant with the following Standards

IMO Performance Standard for AIS (MSC 74(69) Annex 3)
ITU-R M. 1371-5
ITU-R M. 825-3
ITU-R M. 1084-5
IEC 61993-2 Edition 2
IEC 61162-1/2 Edition 4/1 (NMEA 0183, Version 4.0)
IEC 61108-1 Edition 2
IEC 60945 Edition 4
IEC 62288 Edition 2
IALA Guidelines on AIS

Specifications subject to change without notice



SAAB R5 SUPREME AIS Installation Short Instruction

7000 118-363 C1

INSTALLATION

Connect the system as detailed below.

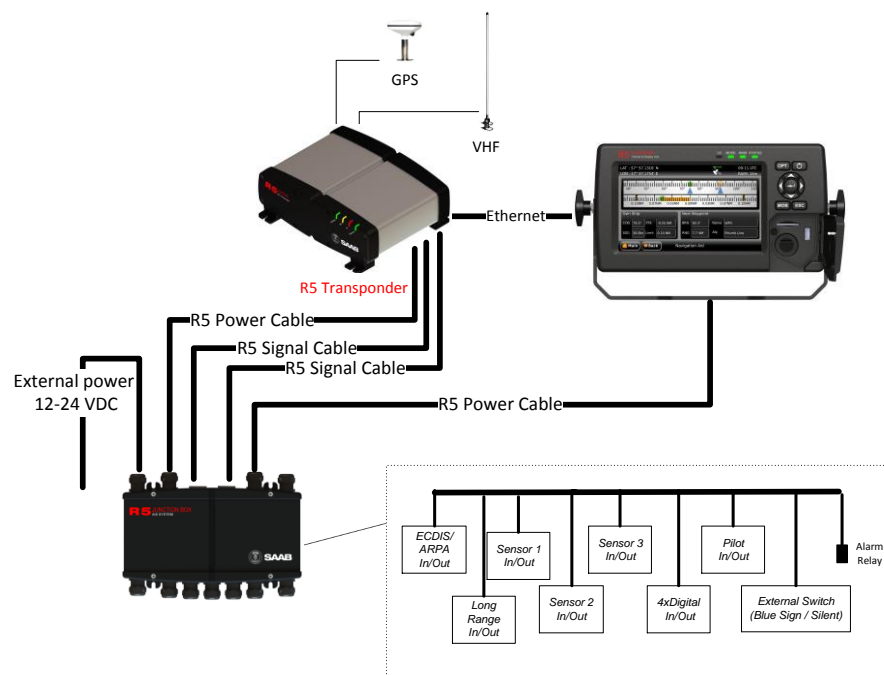
Connect External GNSS sensor, and if available Heading and Rate Of Turn sensors, to the Junction box Sensor inputs.

Connect External ECDIS to Junction box ECDIS port.

ARPA displays with AIS support may be connected to Junction box ECDIS or Pilot port.

Note: An additional Pilot port for temporary access to AIS data is available under the CDU front hatch.

Connect the alarm relay to alarm system.



System overview

INITIAL SET UP

SYSTEM POWER UP

The R5 SUPREME AIS Transponder and CDU 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 transponder has power and is connected by network to the R5 CDU before continuing.



Set up the system as an AIS system and follow the set up guide. Make sure to configure network unique IP and LWE ID for the transponder and CDU. Default AIS user password is **user** in lower case letters.

SYSTEM CONFIGURATION

Set up the following parameters under: *Main Menu* → *Maintenance* → *Configuration* → *AIS* → *Ship Static*

- MMSI
- IMO
- Call Sign
- Ship Name
- Height over Keel
- Ship Type

SET SHIP DIMENSIONS

Set up the ship dimension parameters under: *Main Menu* → *Maintenance* → *Configuration* → *AIS* → *Ship Dimensions*



SAAB R5 SUPREME AIS Installation Short Instruction

7000 118-363 C1

There are two methods for setting Ship Dimensions. The configuration parameter "**Ship Size Mode**" under: Main Menu → Maintenance → Configuration → Interface → Misc. Interfaces can be set to **Standard** or **Simplified** (default).

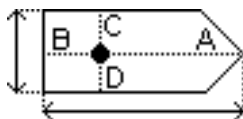
If external system will be used for full AIS configuration including ship size/antenna configuration, Standard Mode is recommended unless the external system integration has been verified with R5 specifically.

Standard Mode

In this mode data is entered exactly as it will be reported on VHF link.

Input:

- A, B, C, D for internal antenna [m]
- A, B, C, D for external antenna [m]

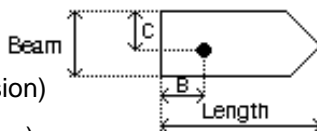


Simplified Mode (default)

In **Simplified mode** the transponder will automatically calculate and correctly round the A,B,C and D values reported on the VHF link from Length, Beam, X and Y.

Input:

- Length x.x [m] (one decimal precision)
- Beam x.x [m] (one decimal precision)
- B, C for internal antenna relative to ship x.x [m] (one decimal precision)
- B, C for external antenna relative to ship x.x [m] (one decimal precision)



SYSTEM FUNCTIONAL TEST

TRANSPONDER STATUS LED'S

Normal transponder operation can be verified using the LEDs in the front. TX and RX LEDs will flash during VHF TX and RX.

System Status	Status LED
Normal Operation	Solid GREEN
Unacknowledged active alarms	Flashing RED
Acknowledged active alarms	Solid RED
Power failure	OFF

CDU STATUS LED'S

The Status LEDs on the CDU front shall be interpreted in the same way as the Transponder Status LED.

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. Main Menu → Status → Alarm List

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

TIME AND DATE

Verify system time and date in the upper right corner. If incorrect, the transponder internal GPS does not have a position fix. This will also be indicated by an alarm "UTC Sync Invalid".

GPS STATUS

Verify GPS antenna installation quality in the GPS Status View

Main Menu → Status → AIS → AIS Internal GPS Status

VHF COMMUNICATION TEST

Verify two way VHF communications with other vessels using the Communication Test mode. Main Menu → Maintenance → Communication Test

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7000 118-363 C1

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JUNCTION BOX INTERFACES

Terminal Marking	Pin Marking	Signal	Type
POWER IN	+	Ext Power In +	12/24 V DC in
POWER IN		No connection	-
POWER IN	-	Ext Power In -	0 V DC
CAN BUS	P	CAN Bus P	Differential CAN
CAN BUS		No connection	-
CAN BUS	N	CAN Bus N	Differential CAN
R5 POWER	+	R5 Power +	R5 Power Cable Red
R5 POWER		No connection	-
R5 POWER	-	R5 Power -	R5 Power Cable Black
R5 POWER	R	R5 Power R	R5 Power Cable Brown
R5 POWER	F	R5 Power F	R5 Power Cable Orange
ECDIS	TX-A	ECDIS TX-A	RS422 transmit
ECDIS	TX-B	ECDIS TX-B	RS422 transmit
ECDIS	GND	ECDIS GND	RS422 isolated signal ground
ECDIS	RX-A	ECDIS RX-A	RS422 receive
ECDIS	RX-B	ECDIS RX-B	RS422 receive
LONG RANGE	TX-A	Long Range TX-A	RS422 transmit
LONG RANGE	TX-B	Long Range TX-B	RS422 transmit
LONG RANGE	GND	Long Range GND	RS422 isolated signal ground
LONG RANGE	RX-A	Long Range RX-A	RS422 receive
LONG RANGE	RX-B	Long Range RX-B	RS422 receive
SENSOR 2	TX-A	Sensor 2 TX-A	RS422 transmit
SENSOR 2	TX-B	Sensor 2 TX-B	RS422 transmit
SENSOR 2	GND	Sensor 2 GND	RS422 isolated signal ground
SENSOR 2	RX-A	Sensor 2 RX-A	RS422 receive
SENSOR 2	RX-B	Sensor 2 RX-B	RS422 receive
SENSOR 1	TX-A	Sensor 1 TX-A	RS422 transmit
SENSOR 1	TX-B	Sensor 1 TX-B	RS422 transmit
SENSOR 1	GND	Sensor 1 GND	RS422 isolated signal ground
SENSOR 1	RX-A	Sensor 1 RX-A	RS422 receive
SENSOR 1	RX-B	Sensor 1 RX-B	RS422 receive
EXT SWITCH	F	Ext Switch F	External switch

EXT SWITCH		No connection	-
EXT SWITCH	R	Ext Switch R	External switch
AUX PWR	+	AUX Power +	12/24 V DC out
AUX PWR		No connection	-
AUX PWR	-	AUX Power -	0 V DC out
SENSOR 3	TX-A	Sensor 3 TX-A	RS422 transmit
SENSOR 3	TX-B	Sensor 3 TX-B	RS422 transmit
SENSOR 3	GND	Sensor 3 GND	RS422 isolated signal ground
SENSOR 3	RX-A	Sensor 3 RX-A	RS422 receive
SENSOR 3	RX-B	Sensor 3 RX-B	RS422 receive
GPIO OUT	0	GPIO OUT 0	General binary output
GPIO OUT	1	GPIO OUT 1	General binary output
GPIO OUT	2	GPIO OUT 2	General binary output
GPIO OUT	3	GPIO OUT 3	General binary output
GPIO OUT	GND	GPIO OUT GND	GPIO out signals ground
GPIO IN	0	GPIO IN 0	General binary input
GPIO IN	1	GPIO IN 1	General binary input
GPIO IN	2	GPIO IN 2	General binary input
GPIO IN	3	GPIO IN 3	General binary input
GPIO IN	GND	GPIO IN GND	GPIO in signals ground
ALARM RELAY	NC	Alarm Relay NC	Normally closed
ALARM RELAY	COM	Alarm Relay COM	Common
ALARM RELAY	NO	Alarm Relay NO	Normally open
PILOT PORT	TX-A	Pilot Port TX-A	RS422 transmit
PILOT PORT	TX-B	Pilot Port TX-B	RS422 transmit
PILOT PORT	GND	Pilot Port GND	RS422 signal ground
PILOT PORT	RX-A	Pilot Port RX-A	RS422 receive
PILOT PORT	RX-B	Pilot Port RX-B	RS422 receive
USB	USB	USB 1.1	Service / SW Upgrade

R5 Power Cable, 7000 118-077, A

Pin	Signal Name	Colour
1	12/24VDC positive	Red
2	GND	Black
3*	External Switch (R)	Brown
4*	External Switch (F)	Orange