

# JLR-41 English User Manual

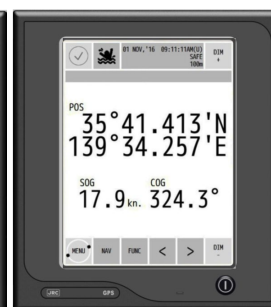


**JLR-4101 GNSS Compass Sensor**

**NWZ-1680 Display Unit**

**Heading**

**Nav Assist Nav**



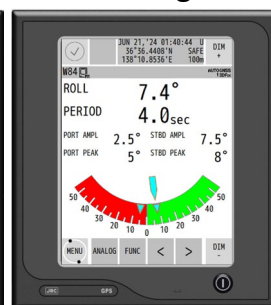
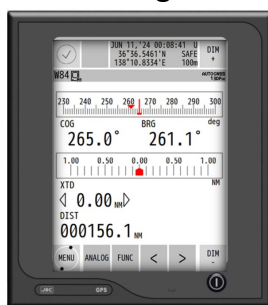
**Analog 1**

**Analog 2**

**Analog 3**

**Analog 4**

**Analog 5**



# JLR-41 English User Manual

## Content

Password protection .....	4
Black screen? .....	4
How to read information on screen .....	5
Analog Display .....	8
Nav Assist info screen.....	8
ROUTE NAVIGATION.....	9
Plot screen.....	10
Highway/ Highway.....	10
Satellite info.....	11
Jamming/Spoofing Alarms. ....	11
Select Active screen.....	12
Missing screenshots / Selection of Screen info.....	13
Date/time adjustment.....	14
Selection of GNSS system for multi mode.....	15
GNSS SYSTEMS .....	16
Position fix Auto/2D/3D .....	16
Elevation Masking .....	16
Set HDOP (Horizontal Dilution of Precision) Calculated "Accuracy" to the position .....	16
Filter time on pos, speed and course .....	16
Set RAIM (Receiver Autonomous Integrity Monitoring) .....	16
Select DATE on position NB! All official maps use WGS84.....	17
Setting the DGPS Correction mode .....	17
Menu list with reference to English manual .....	18

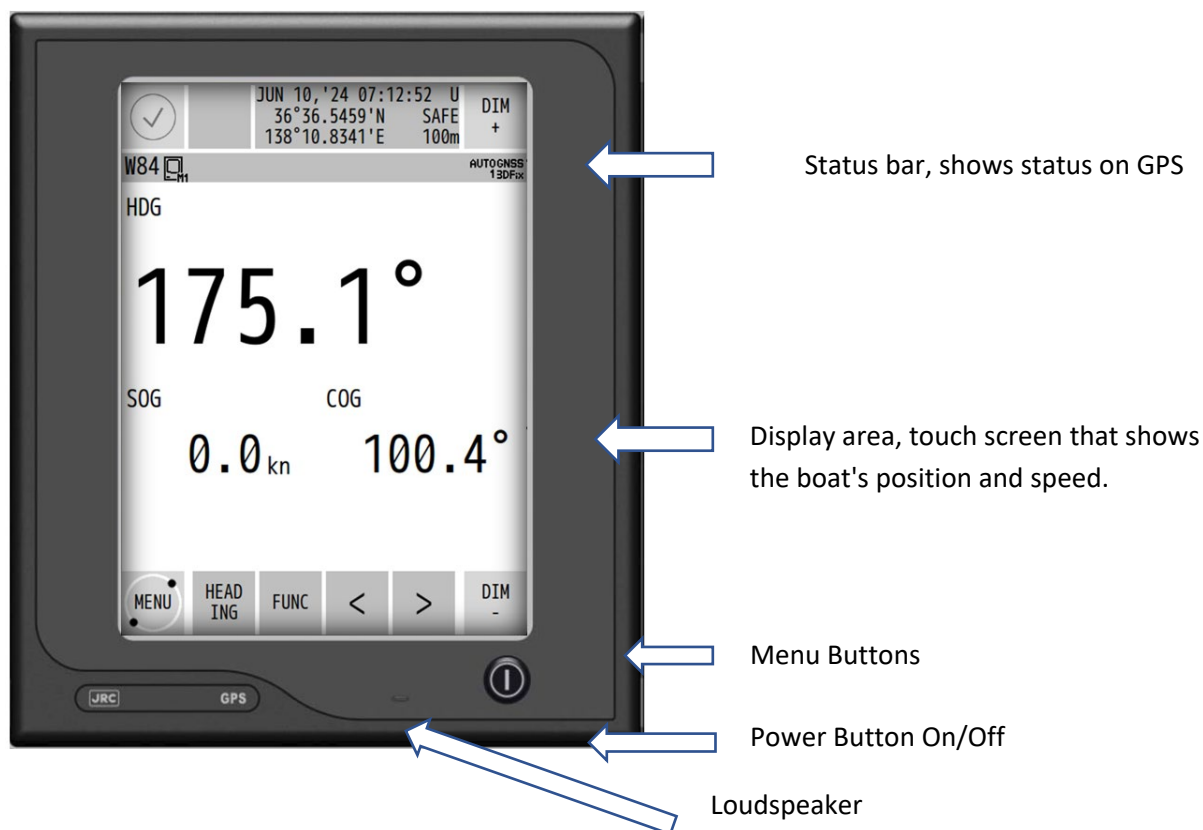
This is a simplified manual, for full info see English manual.

20251114	Fixed bugs and added info regarding Spoofing software.	Roger Schultz
20241213	First edition	Roger Schultz

# JLR-41 English User Manual

**JLR-41**

**NWZ-1680 Display Unit**



Button	Name	Function	Button	Name	Function
	Alarm	Displays the icon when an alarm is activated. Icon changes with alarm status		Screen selection	Shows main screen selected from screen list
	MOB	Shifts to chartplotter image and saves the MOB position		Function	On-screen operation menus
	DIM up	Increases brightness		Changing menus	Switches to under menu/ image.
	Dim down	Decreases brightness			
	Menu	Opens the menu, and the process indicator, the balls are moving			

# JLR-41 English User Manual

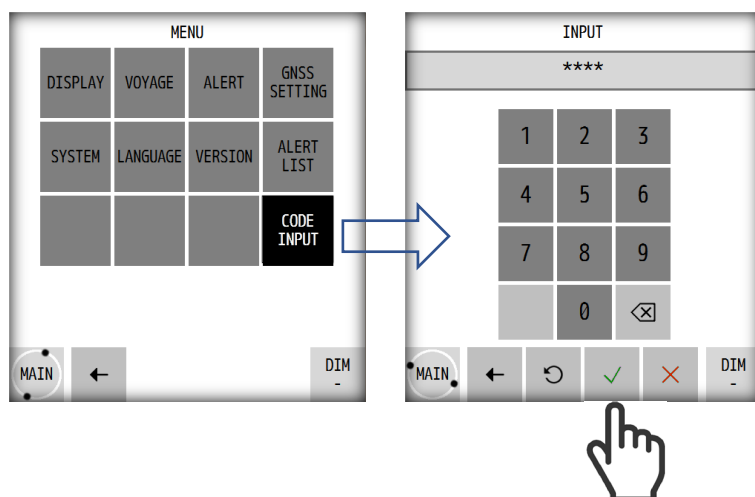
## Password protection

NOTE! Several of the menu settings are password protected to prevent accidental switching of data

To enter a password, press: MENU and Code Input

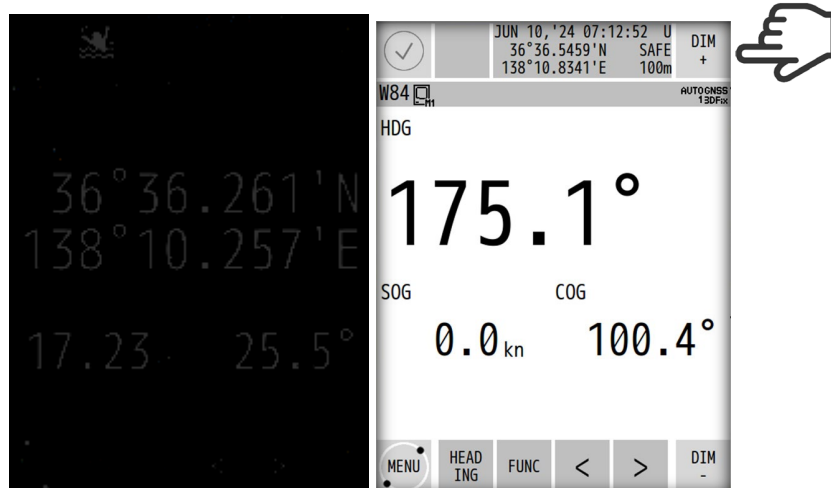


Enter code and exit with ☒. User setting code is 1680



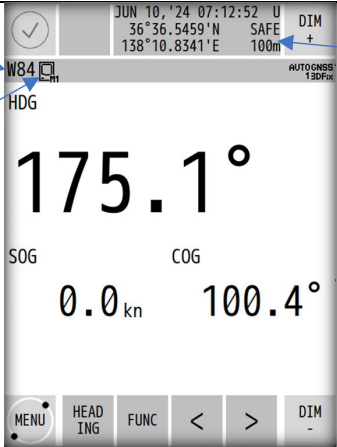
## Black screen?

Tap in the upper right corner of the screen where is  the button and then the backlight should increase.













# JLR-41 English User Manual







## How to read information on screen

	Date & Clock, U UTC, Local Time (12 hours display AM/PM)	
Position date WGS84  Status field, see below	 <p>RAIM Shows set alarm limit RAIM limit: 10m, 30m, 50m, 100m. 100m is the default for the alarm limit! No error on satellite: SAFE RAIM Offline: CAUTION Error in Satellite: UNSAFE</p> <p><b>R</b>eceiver <b>A</b>utonomous <b>I</b>ntegrity <b>M</b>onitoring = Autonomous integrity monitoring of the receiver, or short slow self-check on accuracy and alarm limit.</p>	










## STATUS INDICATORS

Status	2	3	4	5		6	7		8	9	10
			SPF...								HDOP
11	12	13									
EXT1	AUTO 1	GNSS 3DFix									

# JLR-41 English User Manual



NR	ICON	Description
1		Displays display nr M: Master/Main unit R: Remote unit
2		Received Beacon info. Not in use in Norway
3		Magnetic correction is used
4		Lisense for Spoofing/Jamming is installed
	<b>SPF...</b>	<p><b>INFO!:</b>  <b>Spoofing</b>, or to spoof, means to spoof a sender's ID in communications, i.e. and send a GPS signal with the same ID as the real satellites have.  <b>Meaconing</b> is type of spoofing but where a true GNSS signal is re-emitted from a position other than where the signal was received.  <b>Jamming</b> is to send a noise signal so that the receiver is blocked.</p> <p>Spoofing/jamming detected. (Software is Licensed, and must be entered by the dealer, there is and a test version that can be added, it is free of charge from JRC but the dealer must enter it.</p> <p><b>SPF...:</b> Spoofing determination in progress.  <b>SPFI:</b> Spoofing alert. Spoofing radio waves may be emitted.  <b>SPOO(FING):</b> Spoofing detected.  <b>JAM: L1</b> Jamming detected in L1 (GPS/QZSS/Galileo)  <b>JAM: GLO</b> Jamming detected in GLONASS  <b>JAM: BDS</b> Jamming detected in BDS  <b>JAM: GNSS</b> Jamming detected in GNSS</p> <p>GPS: Global Positioning System. Positioning system  Galileo: Positioning system that is operated by  QZSS: Quasi-Zenith Satellite System (Michibiki).  GLONASS: Global Navigation Satellite System.  BeiDou: Positioning system</p> <p>Operated by  U.S.A.  European Union.  Japan  Russia.  China.</p>
<p>The picture below shows how Meaconing, re-emitting of Satellite signal, can be experienced. The illustration is from Jammertest at Andenes/Bleik 2023, arranged by the Norwegian Public Roads Administration, where the position on GPS was moved 2.4 km.</p> <p>PS! The boat reported the new position on the AIS, so it was renamed "Noah-sjark".</p> 		
5		Heading calculation state 1 4: Calculating the heading with 4 satellites or less

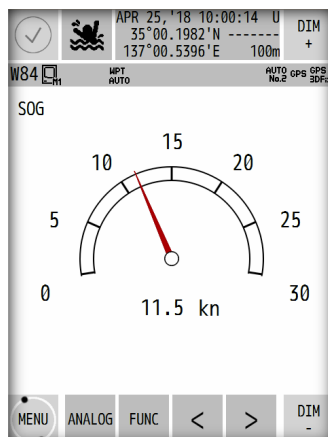
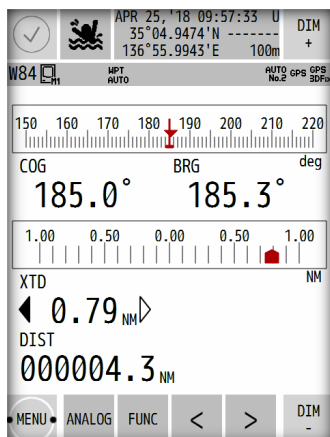
# JLR-41 English User Manual

NR	ICON	Description
		DR: DR in progress
6		Installation menu is open
?		Displayed if the sailing route is shared in networks
7		Course Calculation Status 2 Displays the status of the course calculation in six levels. It disappears when the calculation is finished.
		Displayed when calculating the heading with two antennas.
8		Demo/Simulator mode
9		Shows that DGPS/GPS mode switch,
10	<b>HDOP</b>	HDOP Alarm, HDOP above set alarm limit  
11	<b>EXT1</b>	Display Sensor EXT1 : No1 Sensor EXT2 : No2 Sensor
12	<b>AUTO 1</b> 	Positioning System Indicates the current positioning system. The positioning system that has been set but cannot be used is shown in yellow. <b>AUTO1:</b> Selects the most suitable positioning system, including QZSS. <b>AUTO2:</b> Selecting the most appropriate positioning system, except QZSS. <b>GPS/GP:</b> GPS QZSS/QZ: QZSS GLO: GLONASS GA
13	<b>GNSS 3DFix</b>  <b>NoFix</b>	<i>Positioning Status</i> <i>GNSS:</i> GNSS position fix. <i>GPS:</i> GPS location fix. <i>DGPS:</i> Beacon DGPS position fix. <i>SBAS:</i> SBAS position fix. <i>2D:</i> 2 dimensional position fix. <i>3D:</i> 3 dimensional position fix. With height. <i>No Fix:</i> No position fixing, GPS signal blocked or during startup

# JLR-41 English User Manual

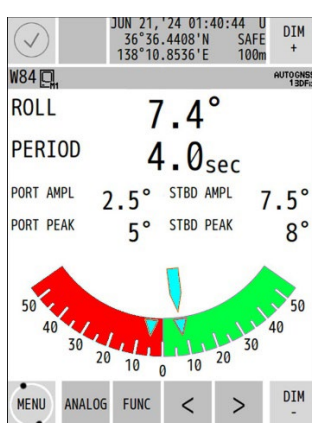
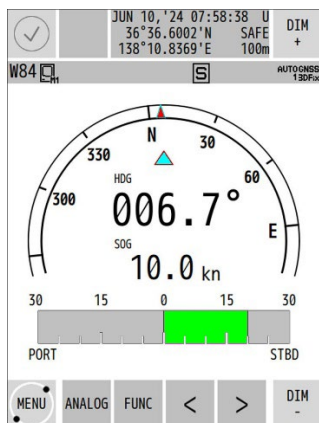
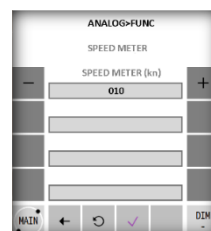
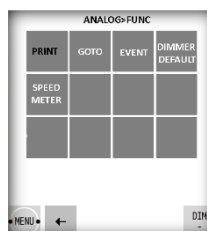
## Analog Display

Switch between the screens with   the arrow buttons.




Changing the scale of the analogue meter: Press **FUNC** and select **SPEED METER**

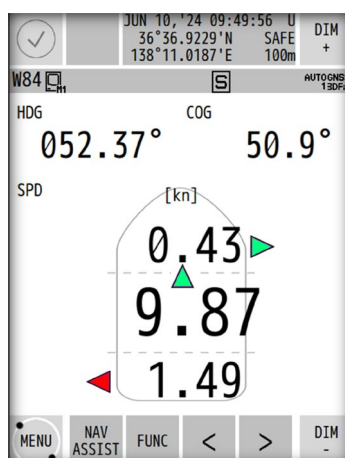
Adjust with +/- or tap on the number and dial in the value you want



## Nav Assist info screen

Switch between the screens with   the arrow buttons

NAV ASSIST 5
DIST CALC
STARTING POINT
LAT 35°42.5563'N
LOX 139°34.9947'E
TERMINAL POINT
LAT 35°36.5422'N
LOX 138°08.1036'E
SAIL RL
DIST 71.17NM
BRG 265.1°



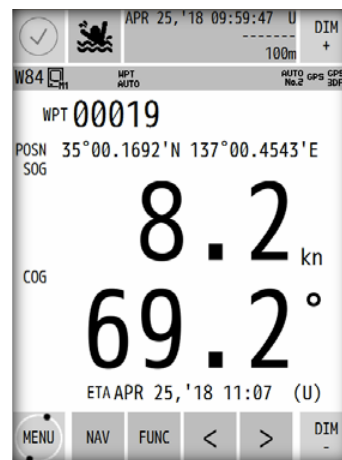
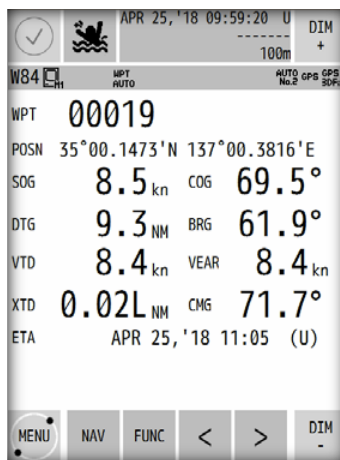
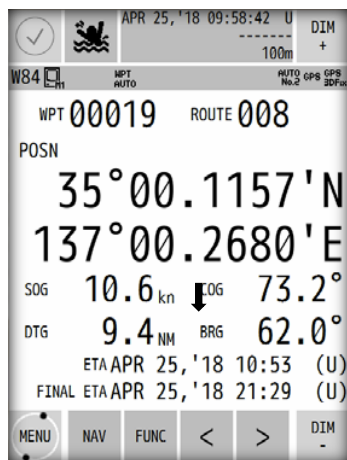
NAV ASSIST> TRIP CALC>> FUNC			
PRINT	DIMMER DEFAULT	TRIP 1 CALC START	TRIP 2 CALC START
TRIP 1 RESET	TRIP 2 RESET		



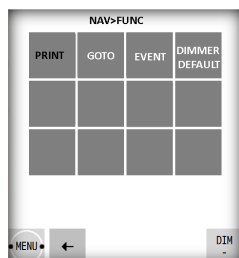


# JLR-41 English User Manual

## ROUTE NAVIGATION





## FUNC menu for NAV

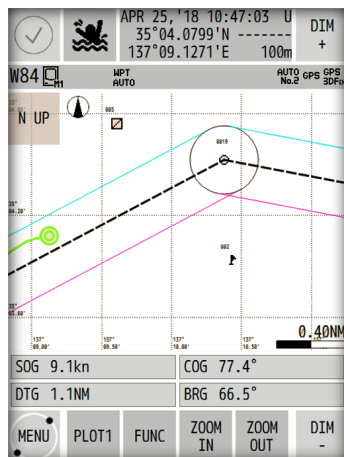


# JLR-41 English User Manual

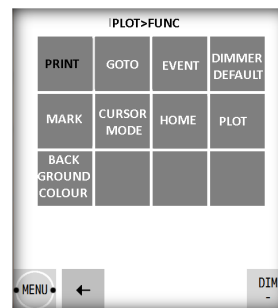
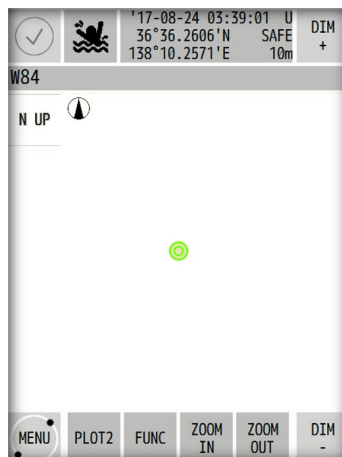
## Plot screen

Switch between the screens with   the arrow buttons

Plot 1



Plot 2



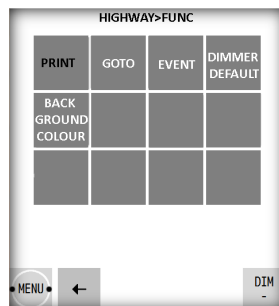
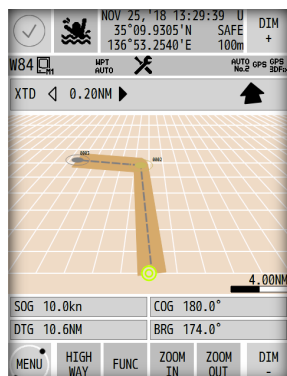
FUNC MENU

Change scale with



## Highway/ Highway

Change scale with



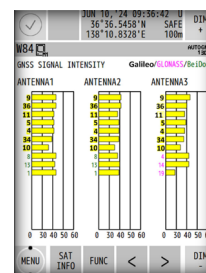
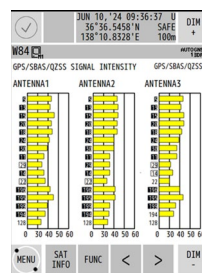
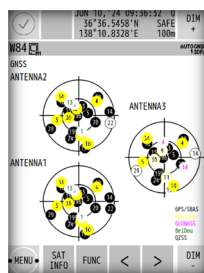
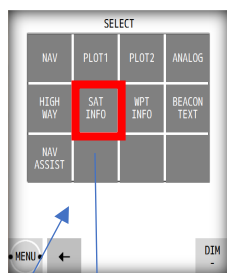
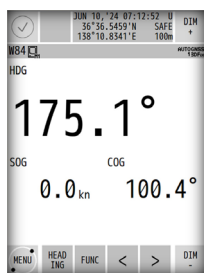
# JLR-41 English User Manual

## Satellite info

GNSS satellite heading and elevation

GPS, SBAS, QZSS signal level.

Galileo, GLONASS, BDS signal level.



Displays signal strength and bearing elevation on the satellites. Normally, the signal strength is greatest on the satellites straight up and less down just above the horizon.

## Jamming/Spoofing Alarms.

Jamming and Spoofing alerts can be improved if software add-ons are purchased, but simple alerts are enabled by default. There is also a time-limited test opportunity of neon months.

But if someone is doing Jamming/forgery or re-sending of the GPS signal, the position can be lost or incorrect.

Normal Variable signal strength

Jamming Loss of signals due to loud signal noise.

Meaconing Re-sending of GPS sign. Everything looks OK, but the position is wrong.

The signal strength can also be approximately the same on all the satellites.

Spoofing Spoofing Attempts to change GPS signal or data, with the result that the position and/or time is incorrect.

The signal strength does not have to be the same.

The picture below shows how the re-transmission of the Satellite signal can be experienced. Picture is taken from Jammertest at Andenes/Bleik 2023 (Test held by the Norwegian Public Roads Administration) where the position on GPS was moved 2.4 km. PS! The boat's AIS reported the new position and the boat renamed "Noah-sjark".



If you want to test Spoofing software with advanced notification can, you can get a time-limited free unlock code to open Spoofing sw. This can be obtained by contacting ProNav or a local dealer who needs to install the software.



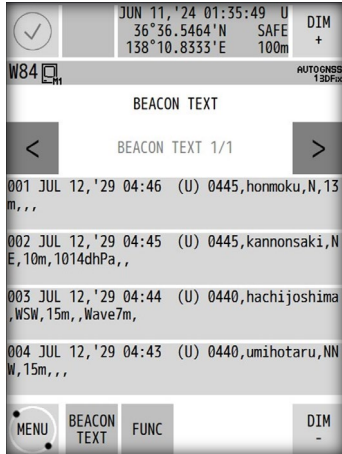
1680



Start spoofing sw: You are given a few choices, set where they choose the threshold how sensitive the alarm should be Alert Mode 1 – Alert Mode 5. (Alert Mode 2 is the default))and Sound On/Off.

# JLR-41 English User Manual



## BEACON TEXT

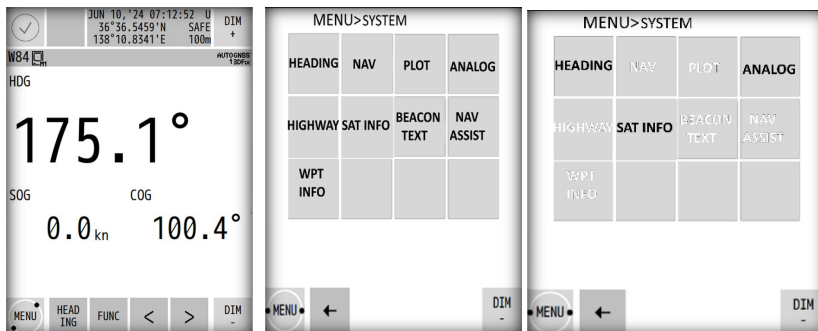


Use only in Japan to receive messages.

## Select Active screen

Press the button to the right of  showing active window .

Here you will see which menus have been opened to appear, gray color is window that is closed.  Missing screenshots  13.



n

# JLR-41 English User Manual

## Missing screenshots / Selection of Screen info.

If any of the above options are missing, they are deactivated in the setup menu, to open or close access:



To enter a password, tap: and the display setup menu will appear. Choose with < > top choice to switch sides.



## Heading information screen

The course information screen shows the ship's course, speed and course.

A sub-screen can be displayed using < or >.

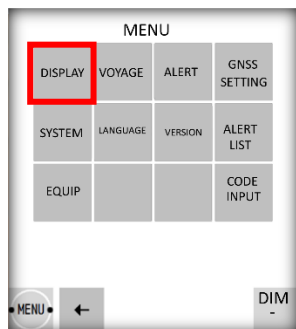
The sub-screen shows rolling, pitching, heaving, and ROTING.

Display screen list

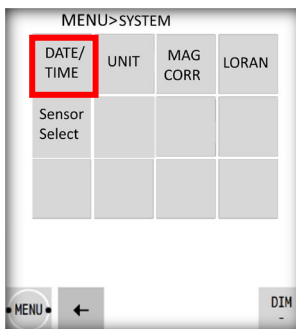
	Course info			The boat's course and roll and pitch	
COURSE SEARCHFor over ground		COGKcourse over ground			

# JLR-41 English User Manual

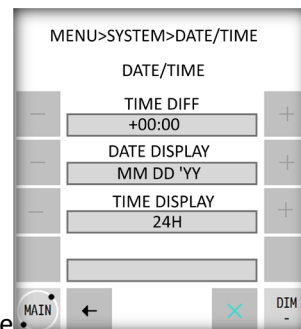
## Date/time adjustment.



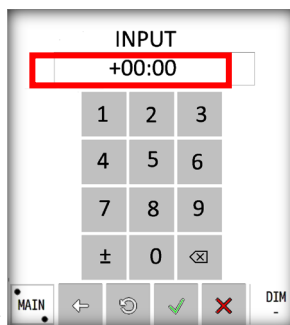
Code 1650



Select Date/Time



Click



in the time diff field and adjust

# JLR-41 English User Manual

## Selection of GNSS system for multi mode

Multi-GNSS mode

- a) GPS+QZSS
- b) GPS+GLONASS
- c) GPS+QZSS
- d) GPS+QZSS or GLONASS

1. Set positioning system to multi GNSS
2. Differential Receive Setup, Pressure:



3. In the menu shown in the table below, select which differential signal you want to use.

GNSS Mode	Description
AUTO 1	Uses the three GNSS (Core) antennas on the JLR-4101 for an optimal combination for the best position and heading. (RECOMMENDED). Core 1: GPS+QZSS+Galileo+BeiDou Core 2: GPS+QZSS+Galileo+BeiDou Core 3: GPS+QZSS+Galileo+GLONASS. GLONASS is not used for heading calculation.
AUTO 2	Uses the three GNSS (Core) antennas on the JLR-4101 for an optimal combination for the best position and heading. (When QZSS is not needed) Core 1: GPS+Galileo+BeiDou Core 2: GPS+Galileo+BeiDou Core 3: GPS+Galileo+GLONASS. GLONASS is not used for heading calculation.
GPS	Operates in GPS mode. GPS ONLY is in use.
GALILEO	Operates in GALILEO mode. ONLY GALILEO is in use.
GLONASS	Operates in GLONASS mode. ONLY GLONASS is in use. Heading/Heading calculation is not possible with GLONASS only.
GPS+Galileo+GLONASS	GPS, Galileo, and GLONASS have been used at the same time. GLONASS is not used for heading calculation.
GPS+Galileo+BDS	Operates in multi-GNSS mode. GPS, Galileo, and BeiDou are used at the same time.
GPS+QZSS+Galileo+GLONASS	Operates in multi-GNSS mode. GPS, QZSS, Galileo, and GLONASS have been used at the same time. GLONASS is not used for heading calculation.
GPS+QZSS+Galileo+BDS	Multi GNSS mode with GPS+QZSS+Galileo+BDS

# JLR-41 English User Manual

## GNSS SYSTEMS

GPS: Global Positioning System. Positioning system that is operated by the U.S.A.

Galileo: Positioning system that is operated by EU.

QZSS: Quasi-Zenith Satellite System (Michibiki). Positioning system that is operated by Japan.

GLONASS: Global Navigation Satellite System. Positioning system that is operated by Russia.

BeiDou: Positioning system that is operated by China.

QZSS may not be received due to future broadcast plans.

## Position fix Auto/2D/3D

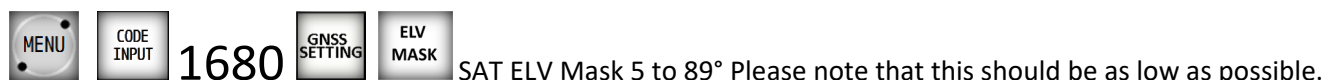


Select fix(GPS) mode

**AUTO** Switches to best mode automatically 3 or 2 D mode  
**2D** Locks for 2D North/South and East/West, NOT høyde.  
**3D** Locks for 3D North/South and East/West, and height

## Elevation Masking

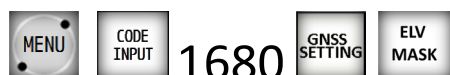
This sets the minimum elevation that the satellites can have to join the position calculation.



The program has 5° as standard. if it is set to 89°, it is not possible to get position!

## Set HDOP (Horizontal Dilution of Precision) Calculated "Accuracy" to the position

A higher value on the calculated HDOP gives an inaccurate position, but if the value is set low, you lose the position more easily than on 20. Choices are 4, 10 or 20.



## Filter time on pos, speed and course



POSITION SMOOTHING 0 – 99 seconds. Speed SMOOTHING 0 -- 99 Second. Course SMOOTHING 0 – 99 second

## Set RAIM (Receiver Autonomous Integrity Monitoring)

The limit of alarm accuracy on RAIM can be set OFF, 10m, 30m, 50m, and 100m.



Select the desired alarm value.



## JLR-41 English User Manual

Select DATE on position NB! All official maps use WGS84.



Setting the DGPS Correction mode



SELECT: OFF, AUTO BEACON SBAS.

# JLR-41 English User Manual

Menu list with reference to English manual

## 4.1 Menu List

### 4.1.1 Main Menu

MENU	Sub Menu	Sub Menu	Sub Menu	Range	Reference
DISPLAY	THEME			DAY/DUSK/NIGHT	4.3.1
	BEEP			OFF/ON	4.3.2
	DAY SCREEN			OFF/ON	4.3.3
	HEADING			OFF/ON	4.3.4
	NAV			OFF/ON	4.3.4
	PLOT			OFF/ON	4.3.4
	ANALOG			OFF/ON	4.3.4
	HIGHWAY			OFF/ON	4.3.4
	SAT INFO			OFF/ON	4.3.4
	BEACON TEXT			OFF/ON	4.3.4
	NAV ASSIST			OFF/ON	4.3.4
	WPT INFO			OFF/ON	4.3.4
HEADING /HEEL	DR TIME			OFF/1~5min	4.10.1
	HEADING SMOOTH			0~10	4.10.2
	ROT SMOOTH			0~100	4.10.2
	HEADING OFFSET			-180~180	4.10.3
	ROLL OFFSET			-30~30	4.10.3
	PITCH OFFSET			-30~30	4.10.3
	ROLL SMOOTH			0~100	4.10.2
	PITCG SMOOTH			0~100	4.10.2
	RESTORATION			MANUAL/AUTO	4.10.4
	INTERRUPT NMEA			NULL/STOP	4.10.5
	CHECK SUM			OFF/ON	4.10.6
	DOUBLE ENDED			FORE/BACK	4.10.7
	MAX PERIOD			30~100	4.10.8
	MIN PERIOD			0.1~5.0	4.10.8
	AVERAGE			1~20	4.10.8
ALERT	SYETEM	SET		OFF/ON	4.6.1
		SOUND		OFF/ON	4.6.1
	HEADING	SET		OFF/ON	4.6.1
		SOUND		OFF/ON	4.6.1
	DGPS	SET		OFF/ GPS→DGPS/ DGPS→GPS/ GPS⇄DGPS	4.6.1
		SOUND		OFF/ON	4.6.1
	HDOP	SET		OFF/THRESHOLD	4.6.1
		SOUND		OFF/ON	4.6.1
	SPD	SET		OFF/OVE/UNDER/ IN RANGE/ OUT RANGE	4.6.1
		SOUND		OFF/ON	4.6.1
	SPOOFING	SET		OFF/ WARNING MODE 1/2/3/4/5	4.6.2
		SOUND		OFF/ON	4.6.2
	CCRP	SET		OFF/ON	4.6.1
		SOUND		OFF/ON	4.6.1
	HEEL	SET		OFF/THRESHOLD	4.6.2
		SOUND		OFF/ON	4.6.2



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