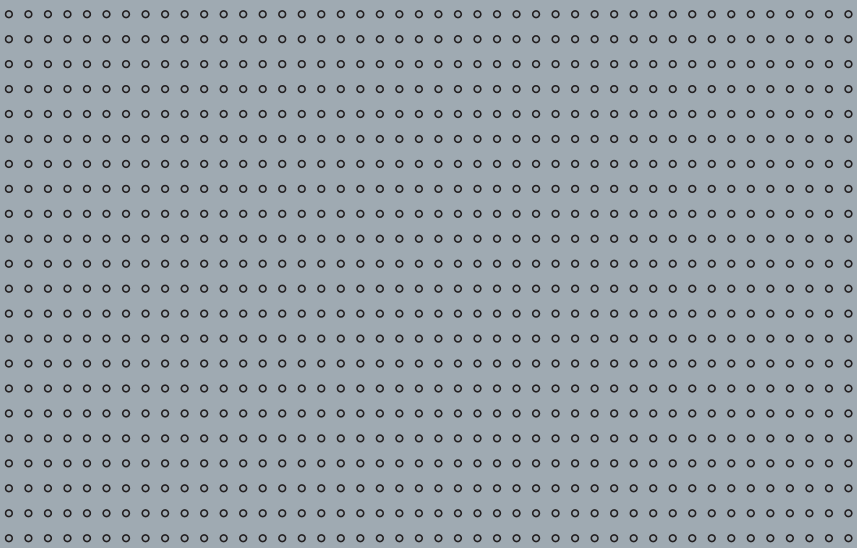
SIMRAD

Master the Elements

Manual

Simrad IS20 Graphic Multifunction display

English Sw. 1.2



Manual

Simrad IS20 Graphic Multifunction display

English Sw.1.2

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The original language for this document is English. In the event of any discrepancy between translated versions and the English version of this document, the English document will be the official version.

To the best of our knowledge, the content in this publication was correct at the time of printing.

As we are continuously improving our products we retain the right to make changes to the product and the documentation at any time. Updated manuals are available from our website www.simrad-yachting.com, and are free to download.

About this manual

This manual is a reference guide for installing and operating the Simrad IS20 Graphic instrument.

The manual does not include operator or installation procedures for sensors that can be connected to the system.

In this manual, names of menu commands, dialog box text and keys are written in boldface (e.g. **Main** menu, **Setup** command, **Left** key).

Important text that requires special attention from the reader is emphasized as follows:

Used to draw the reader's attention to a comment or some important information.

Used when it is necessary to warn personnel that a risk of damage to the equipment or hazard exists if care is not exercised.

Contents

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1 Introduction

General information

The IS20 Graphic is a multifunction instrument that displays speed, depth, heading, position, wind and environmental data measured by sensors and other equipment connected to the system.

Navigational data, engine/battery status and vessel parameters as e.g. accumulated log and rudder angle may also be displayed.

The instrument calculates speed trim, wind head/lift, trip distance and time, average speed, set and drift parameters. A race timer is also included in the IS20.

Instrument layout

The IS20 has a 130 * 104 pixels LCD. The display may be set to red or white illumination color, and the contrast and light level are adjustable.

The instrument is equipped with 2 SimNet connectors, and with one NMEA0183 input connector.

Keys

The instrument is operated by 6 keys. These are used to adjust the light, scroll between data pages, to operate the menu and to set parameter values.

Softkeys

When the basic operation of the keys is changed, softkey symbols will be displayed right above the keys to indicate the alternate function.

The softkey symbols are illustrative, and they are described under the functions as these appear in this manual. The following general softkey symbols are used:

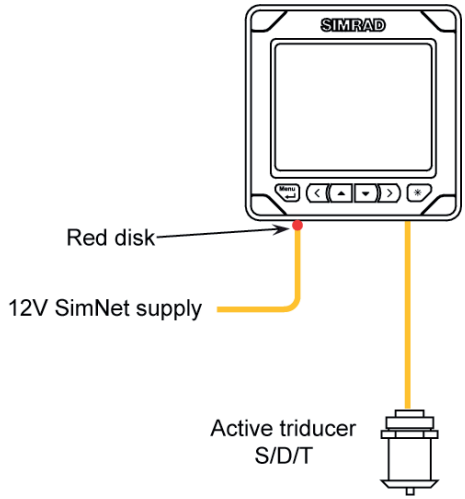
☑ OK

☒ Cancel

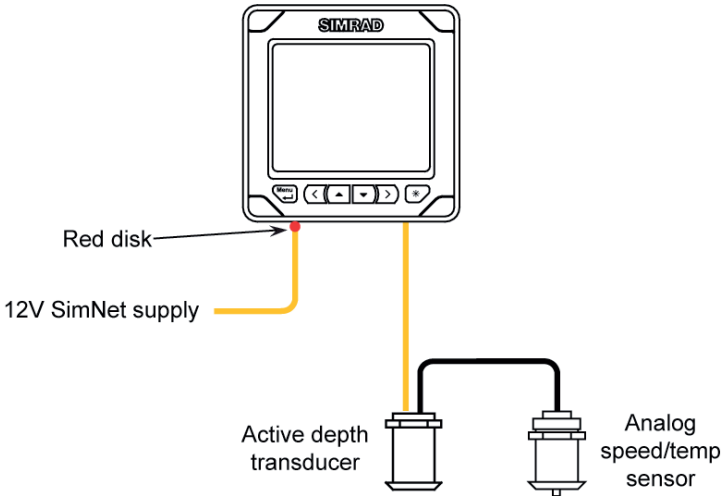
IS20 system examples

The IS20 may be installed as a stand-alone instrument system, or as part of an advanced instrument or steering system on the boat.

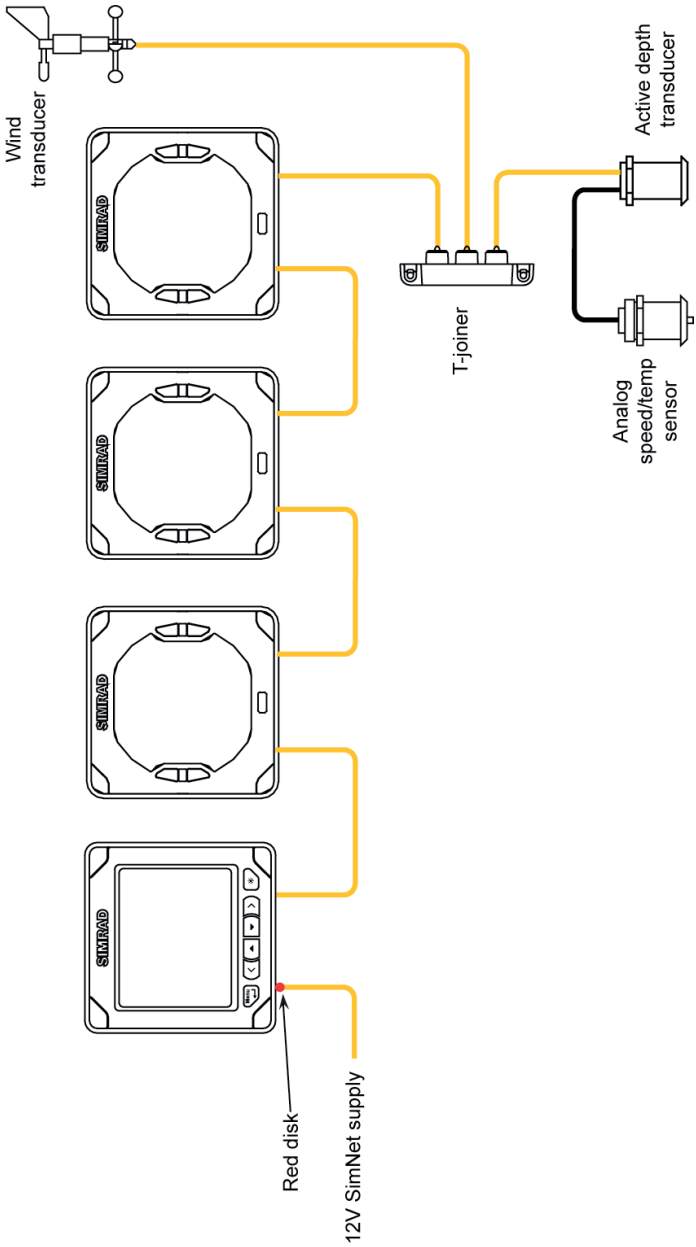
The figures on the next two pages show simplified illustrations for basic and an expanded IS20 system.



IS20 Graphic, Basic system



IS20 Graphic, Basic system with 2 sensors



IS20 Expanded system

2 Basic operation

It is required to read and understand the content in this chapter. The remaining descriptions and illustrations in this manual assumes that the user is familiar with how to operate keys and how to navigate in the menus!

Turning the IS20 on

IS20 has no power key, and will be running as long as power is connected.

The IS20 includes a power save function. Refer to page 19.

When power is connected, the start up page will show:

- Product name
- Serial number
- Software version
- Release date

After approximately 5 seconds the instrument is operative.

First time start up

Before the IS20 is ready to operate, it should be configured as described in ***Configuration***, page 57 and onwards.

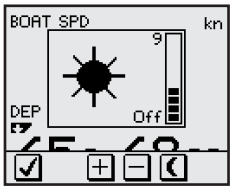
Restarting the IS20 instrument

When IS20 is re-powered the display will go directly to the last active page after the start up sequence is finished.

Backlighting

The display backlight may be adjusted at any time.

1 Press the light key



The Light level overlay window will be displayed on top of the current view.

2 Press one of the keys as described below to change the display illumination:

a The **Light** key to increase the light level by one step

b The **Up/Down** softkeys to increase/decrease the light level by one step

c The **Day/Night** softkey to toggle between day and night profile

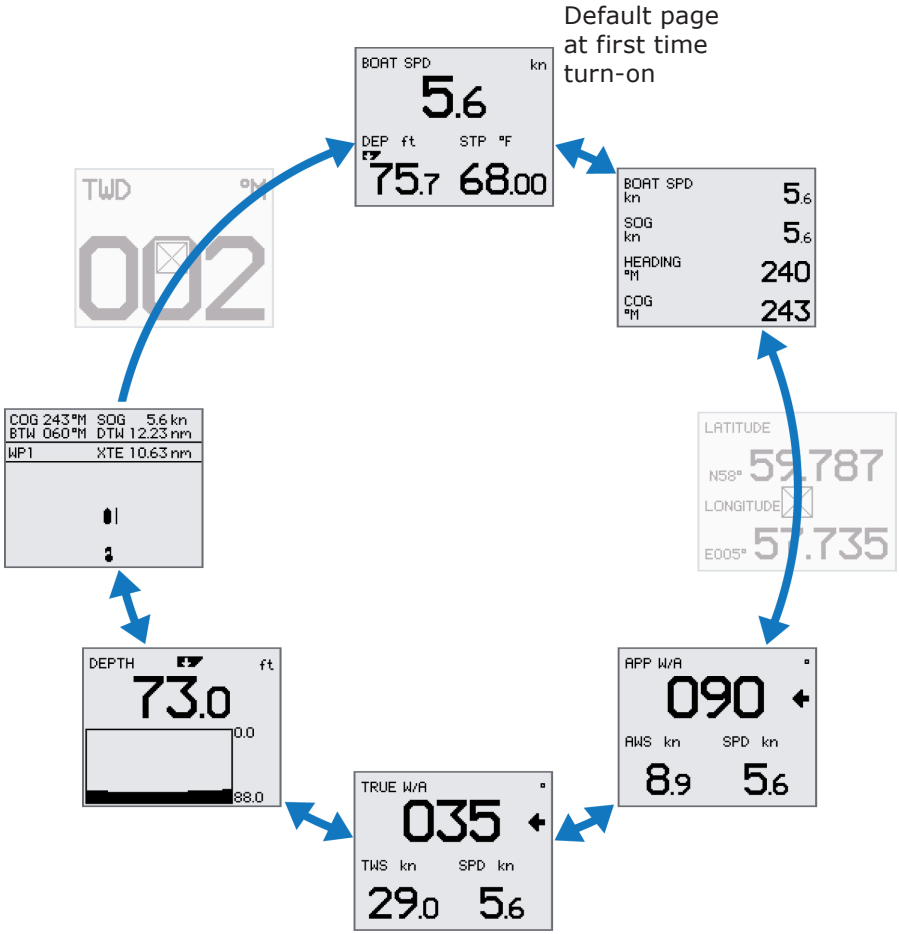
If no adjustment is performed within 3 seconds, the Light level overlay window will disappear.

For contrast and day/night settings, refer to ***Changing the display settings***, page 39.

Scrolling through data pages

The IS20 Graphic is pre-configured with 8 instrument pages, of which 2 are disabled.

The instrument will scroll through the pages by using the **Up** and **Down** keys .



Note that the pages shown with a ☒ are disabled and will not be visible when scrolling through the pages!

Resetting a data page

When a data page is active, the **Right** key may be used to reset any calculated data.

The following data types may be reset:

- Head/Lift
- Speed trim
- Trend graph

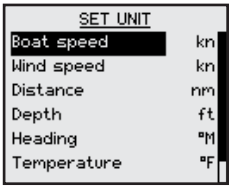
*Pressing the **Right** key will have no effect if the active data page not includes any calculated data!*

Operating the menu system

All functions and settings in the IS20 are available from the menu system, activated by pressing the **Menu/Enter** key.

The main menu items give further access to sub menus and various settings.

The set values are usually presented in the window's right column, but could also be listed in an overlay window.



Unit settings presented in the window's right column

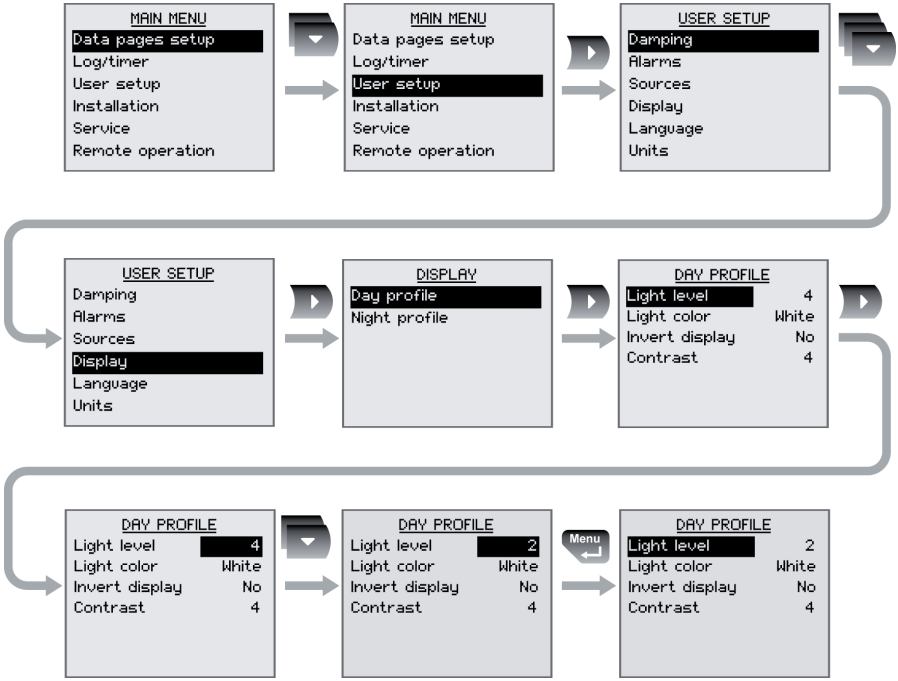
Language settings presented in an overlay window

Use the keys as shown below to navigate in the menu system:

Key	Single press	Press and hold
	Confirm a selection/parameter setting	
	Go to next menu level/parameter settings	
	Go to previous menu level/ parameter listing	Return to normal operation and the last active data page
	Go to previous/next menu item, increase/decrease parameter value	

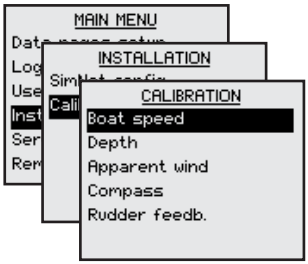
When the basic operation of a key is changed, a softkey symbol will be displayed right above the key to indicate the alternate function.

The illustration below shows how to change the light level from 4 to 2.



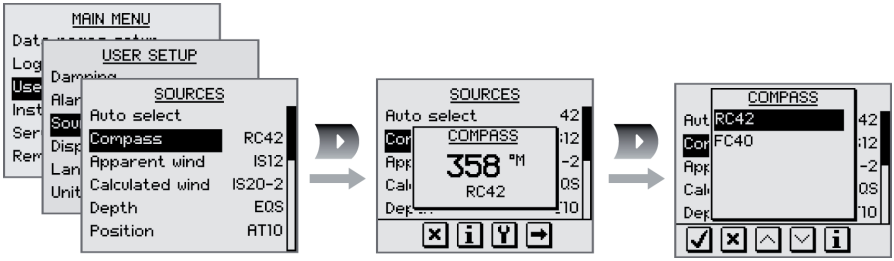
*Press and holding the **Left** key will always return the display to normal operation and the last active page!*

Menu illustrations



In this manual, the first steps in a menu operation are illustrated by overlapping menu windows.

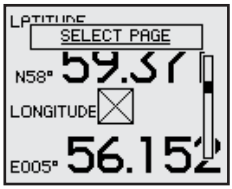
When more detailed illustrations are required to show key presses and screens, this is shown as below:



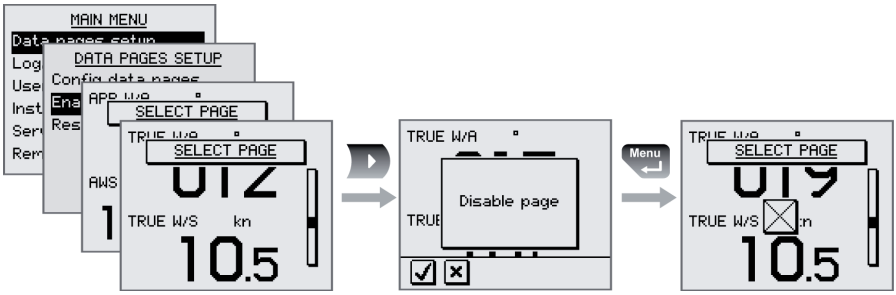
Disabling/enabling data pages

By disabling a data page, the number of pages will be reduced when scrolling through the data pages.

☞ *A disabled page is only visible when using the **Enable/Disable** item in the **DATA PAGES SETUP** menu, and is then indicated with a crossed rectangle!*

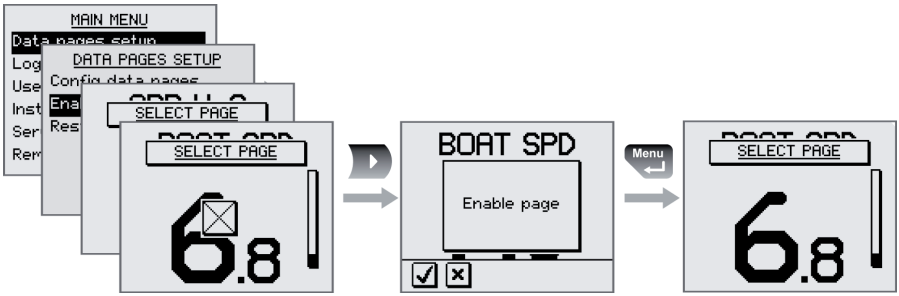


Disabling pages



Continue to select pages and repeat the procedure if more pages are to be disabled.

Enabling a page



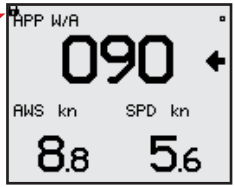
Continue to select pages and repeat the procedure if other pages are to be enabled.

Locking and unlocking the keys

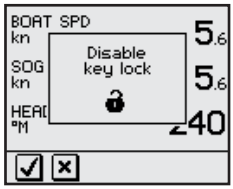
The IS20 keys may be locked to prevent any unintended operation.

The key lock function is enabled by pressing the **Menu**/**Enter** and the **Light** keys simultaneously.

A locked instrument has a padlock symbol in the upper left corner.

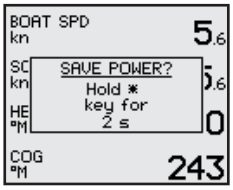


When the keys are locked, any key press will activate the **Disable key lock** overlay window. The key lock function is then disabled by pressing the **Menu/Enter** key.



Power save function

The power save function is activated by pressing and holding the Light key for 3 seconds.



A dialog will show how long the **Light key** has to be pressed before the function is acivated.

When power save is activated, the display will be turned off.

Any key press or activated alarm will disable the power save function.

Blank page

3 Advanced operation

☞ *The advanced features described in this section are not required for basic operation of the instrument!*

Customizing the data pages

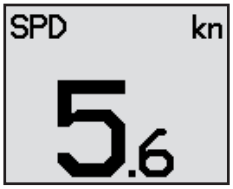
IS20 Graphic is capable of displaying 8 pages. These are pre-configured from factory, but they are all user configurable.

The number of pages may be reduced by disabling one or more pages. Refer to ***Disabling pages***, page 18.

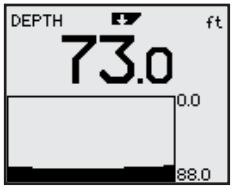
Data page windows

Each page may be set with numeric data items in up to 4 windows, with a combination of one numeric data window and a trend window, or with a graphic "highway" view.

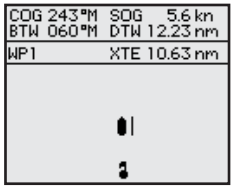
The illustrations below show examples of pages with the various page options.



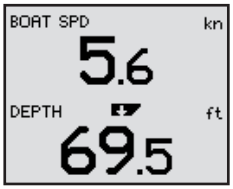
Single window



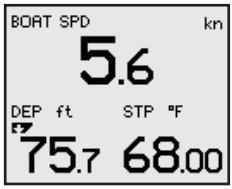
Single window/ trend



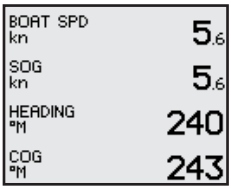
Single window/ highway



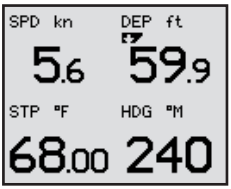
2 windows



3 windows



4 windows/ horizontally

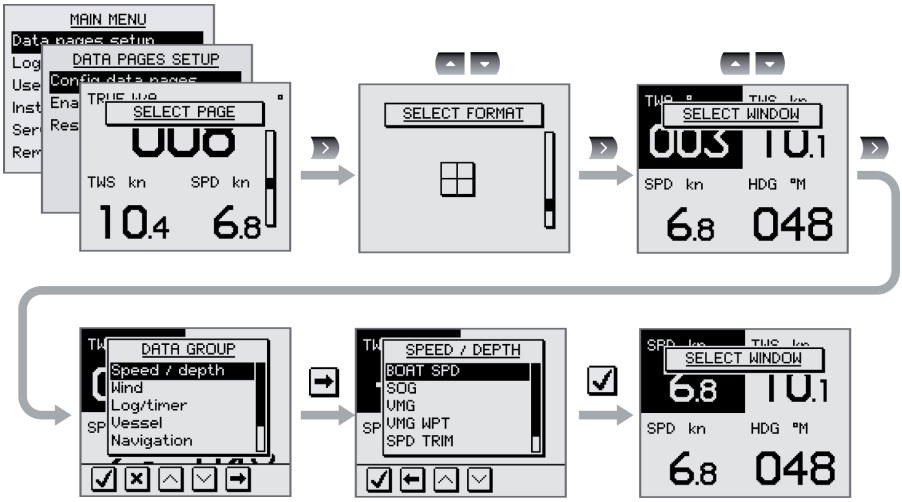


4 windows/ square

Changing the page layout

All data pages are user configurable.

The illustrations below show how a 4-window page is configured.

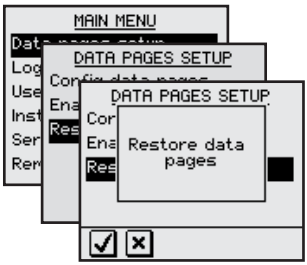


Press and hold the **Left** key to leave the menu and return to normal operation when all windows are defined.

For a list of all available data groups and data items, refer to **Data groups and data items**, page 78 and onwards.

Restoring factory default pages

All user defined data pages may be restored to factory default layout and content.



☑ ☒ Use the keys to confirm or cancel and return to the menu.

Remote operation

This function is for future use.

SimNet group function

The SimNet group function provides global control of groups of units. This option is used on larger vessels where many units are connected via the SimNet network.

By assigning several units to the same group, a function change or update on one unit will have the same effect on the rest of the group members.

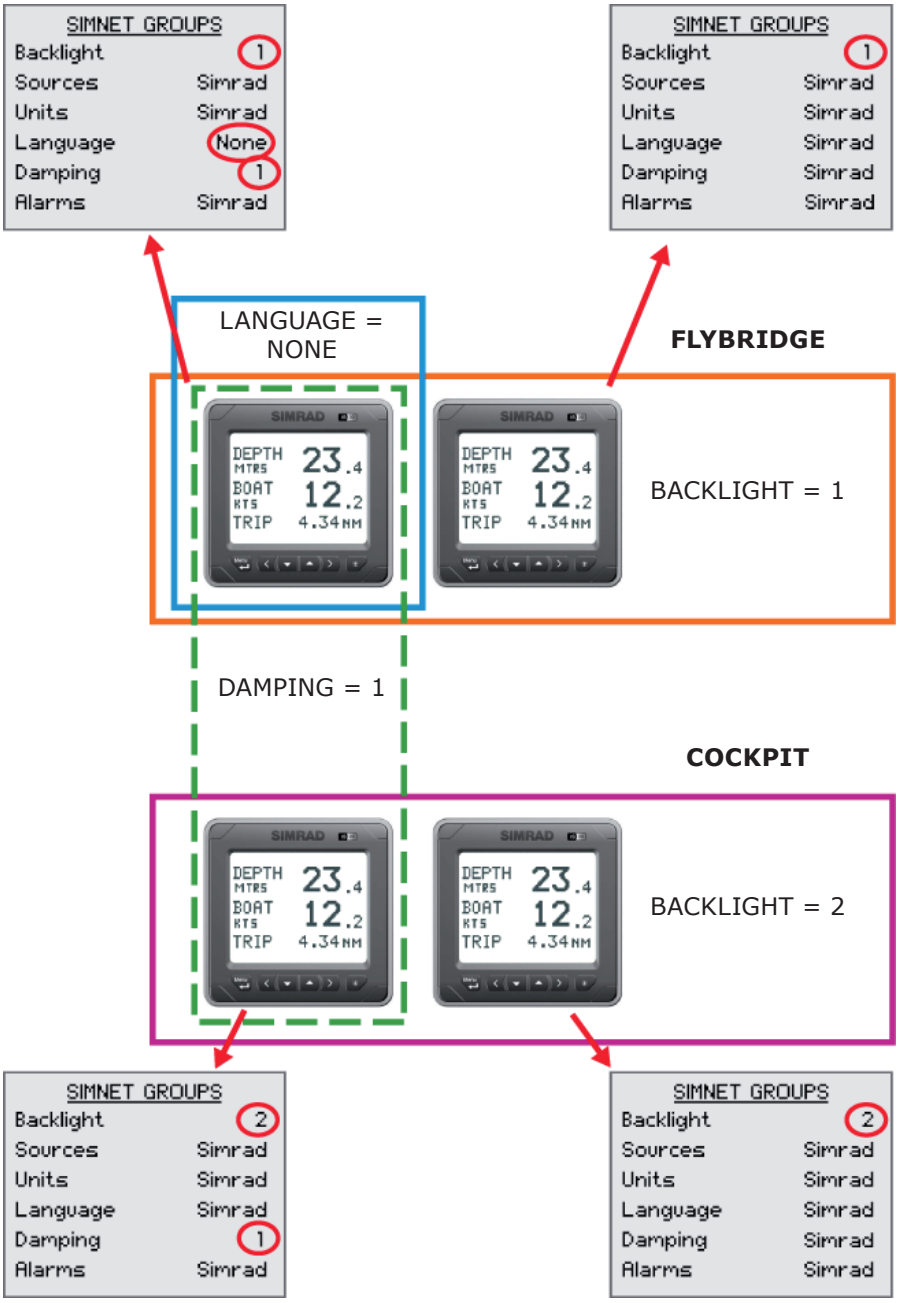
The table below shows available SimNet groups.

Function	Groups	Default
Display	Simrad, None, 1-6	Simrad
Sources	Simrad, None	Simrad
Units	Simrad, None, 1-6	Simrad
Language	Simrad, None, 1-6	Simrad
Damping	Simrad, None, 1-6	Simrad
Alarm	Simrad, None, 1-6	Simrad
Power save	Simrad, None, 1-6	None

- Simrad: Default group for IS20
- None: Not assigned to a group
- 1–6: Group numbers

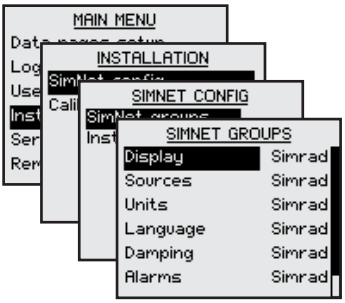
The figures on next page illustrates how the instruments on a flybridge and in a cockpit are assigned to separate language, damping and display groups, and how this affects the setup for the different instruments.

☞ *The SimNet groups are configured during system configuration. Further information about how to set up the groups are found in* ***SimNet groups****, page 67.*


SIMNET GROUPS
Backlight 1
Sources Simrad
Units Simrad
Language None
Damping 1
Alarms Simrad
SIMNET GROUPS
Backlight 1
Sources Simrad
Units Simrad
Language Simrad
Damping Simrad
Alarms Simrad
LANGUAGE = NONE
FLYBRIDGE
SIMRAD
DEPTH MTRS 23.4
BOAT KTS 12.2
TRIP 4.34NM
BACKLIGHT = 1
DAMPING = 1
COCKPIT
BACKLIGHT = 2
SIMNET GROUPS
Backlight 2
Sources Simrad
Units Simrad
Language Simrad
Damping 1
Alarms Simrad
SIMNET GROUPS
Backlight 2
Sources Simrad
Units Simrad
Language Simrad
Damping Simrad
Alarms Simrad

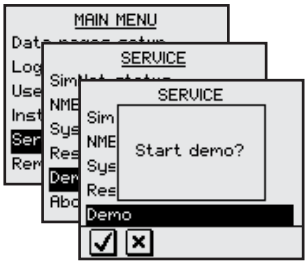
Changing the SimNet group setup

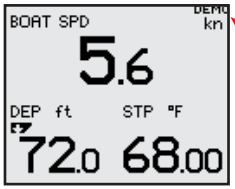
The SimNet groups are normally configured during installation, but may be changed at any time.



Demo mode

The IS20 includes a demo mode, useful for demonstrations and on show.





Active demo mode is indicated with flashing **DEMO** text in the upper right corner of the page. The demo indication will flash more frequently on the demo source than on units that are reading the demo values.

☞ *When demo mode is selected on a unit in a system of interconnected SimNet products, they will all go to Demo mode.*

Demo mode is turned OFF by using the menu as illustrated above. An automatic source selection will then be performed.

☞ *Demo mode must be turned OFF on the same unit where Demo mode was turned ON!*

4 The log/timer functions

The timer function

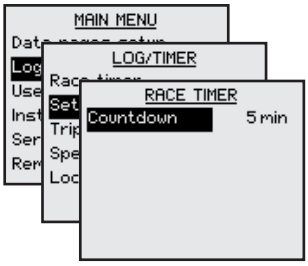
The timer function is used to measure time and distance after a race start.

When a timer page is displayed, basic key operation is replaced by functions indicated by softkeys.

☞ *The timer is by default shared between interconnected SimNet units, and all timer values will be identical. The units can however be set up in separate SimNet Display groups as described on page 23.*

The softkey functions are further described in the following pages.

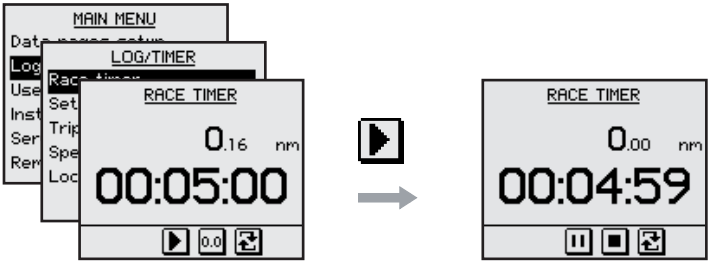
Setting the countdown time



Range	Change per step	Default value
20 min - 1	1 min	5 min

☞ *If the countdown time is set to OFF, the timer function will work as a passage log and timer!*

Starting the race timer



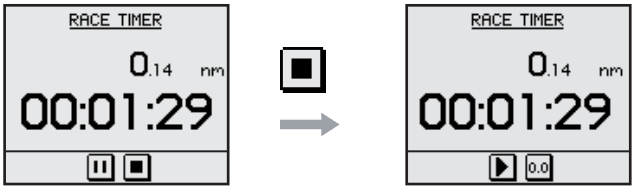
*The race timer will continue to run until the **Stop** softkey is pressed even if the race timer page is replaced by another page!*

When the counter turns zero, the race log starts to log the distance, the **Synchronize** softkey is removed and the timer function will work as a race timer!

Stopping and restarting the timer

Stop the timer by pressing the **Stop** softkey.

- The timer will stop counting, and the softkeys will change status



Restart the race timer from the stopped time by pressing the **Start** softkey.

The race timer and race log can be stopped when counting down or counting up!

Resetting the timer

A stopped or paused timer is reset to the pre-set countdown time by pressing the **Reset** softkey.

Synchronizing the timer

The countdown timer may be synchronized to the nearest whole minute at any time by pressing the **Sync** softkey.

The synchronize softkey will not appear if the counter has turned zero!

Freezing the display

The timer display may be frozen at any time while the timer is running. When the display is frozen, the timer remains counting in the background.

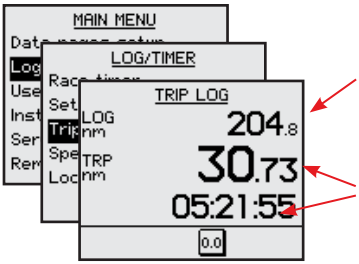
Freeze the timer display by pressing the **Freeze** softkey.

The **Freeze** softkey will appear as depressed

Re-press the **Freeze** softkey to return to the countdown view.

Trip logging

The trip log display shows:



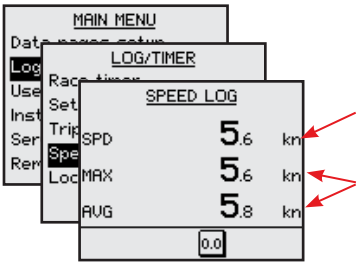
- accumulated total distance since the instrument was installed or from a factory reset
- distance and time since the trip log was started/ reset

Resetting the trip log

0.0 The trip log is reset to zero by pressing the **Reset** softkey.

Speed logging

The speed log display shows:



- Current speed
- Max and average speed since the speed log was reset

Resetting the speed log

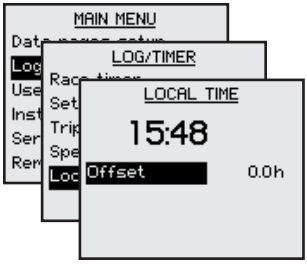
The speed log will automatically reset when the race timer function is active and turns zero.

0.0 The speed calculation is manually reset to zero by pressing the **Reset** softkey.

Setting the time offset

The time function in IS20 is only available when a GPS is connected to the system.

The GPS runs on UTC time, and can be adjusted to show local time by entering a UPC offset value.



Range	Change per step	Default value
+14 h - –12 h	0.5 hours	0 hours

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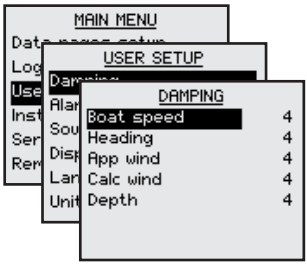
5 Changing the default settings

General

The factory default settings may all be changed from the **User setup** command in the **Main** menu.

☞ *Updating the settings will affect all instruments in the SimNet group. Refer to* ***SimNet group function****, page 23.*

Setting the damping factors



The damping factors indicate how fast the display will respond to changes.

The higher damping factor the more stable display reading on the instrument.

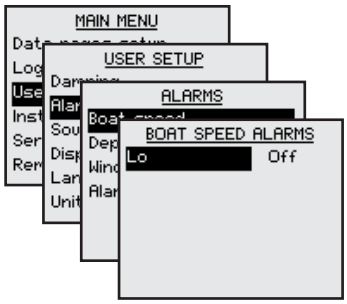
Range	Change per step	Default value
0-9	1	4

Alarm setup

The IS20 may be set up to sound an alarm if vessel or environmental parameters exceeds preferred values.

The alarm monitoring is disabled by setting the value to **Off**.

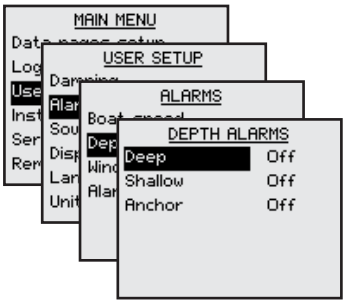
Boat speed alarm



Used to give alarm if the boat speed goes beyond a selected value.

Range	Change per step	Default value
Off - 50 kn	1 kn	Off
50 - 60 kn	5 kn	Off

Depth alarm



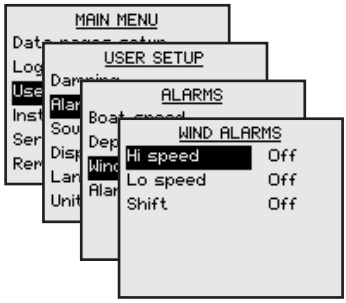
The depth alarm can be set up for deep and shallow water limits.

An anchor alarm can be activated to warn if the boat is drifting. The alarm will sound when during a 40 seconds time period there is a change in depth of 2-3 meters (6–10 ft).

☞ *The Anchor alarm should be turned Off when the boat is not at anchor!*

Alarm	Range	Change per step	Default value
Deep	Off - 650 ft	1.6-5: 0.1 ft 5-10: 0.5 ft 10-50: 1 ft 50-100: 5 ft 100–500: 10 ft 500–650: 50 ft	Off
Shallow	Off – 320 ft	1.6-5 0.1 ft 5–10: 0.5 ft 10–50: 1 ft 50–100: 5 ft 100–320: 10 ft	Off
Anchor	Off – On	-	Off

Wind alarm



The wind alarm can be set for high and low wind speeds.

The wind shift alarm will monitor the wind angle. The reference angle is set when the alarm is turned on, and reset to present wind angle when an alarm is acknowledged.

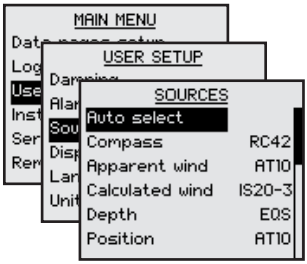
Alarm	Range	Change per step	Default value
High speed	Off - 60.0 kn	1–50: 1 kn 50–60: 5 kn	Off
Low speed	Off - 60.0 kn	1–50: 1 kn 50–60: 5 kn	Off
Shift	5° - 90°M	1°M	Off

Updating the data sources

A data source can be a sensor or a device connected to SimNet, providing information and commands to other SimNet devices.

The data sources are normally configured at first time turn on. It should only be necessary to update this data if a new source is added, if a source is missing (sensor failure), or if a source has been switched off/on.

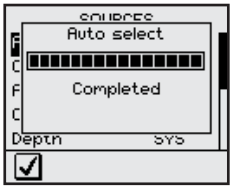
Automatic source update



The **Auto select** option will look for all sources connected to the instrument system. If more than one source is available for each item, the IS20 will automatically select from an internal SimNet priority list.

1 Verify that all interfaced units are powered on

2 Press the **Menu/Enter** key to start the auto select procedure



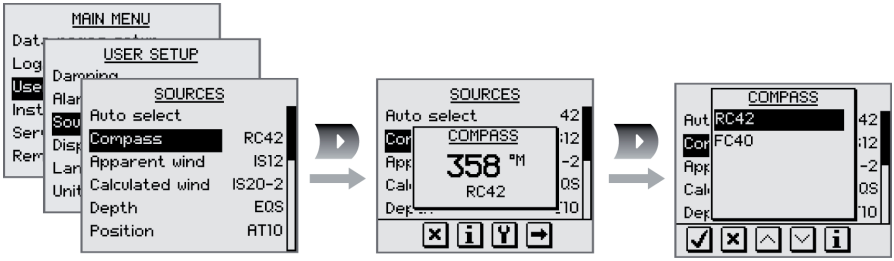
The operator will be noted when the Auto select process is completed.

If more than one source is found for each source item, see ***Manual source selection****, page 38.*

Manual source selection

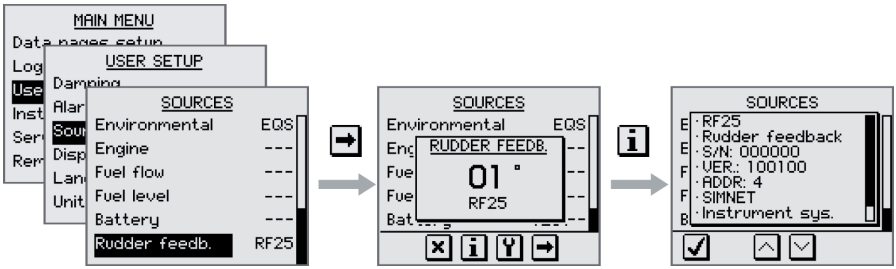
If more than one source is available for each item, the preferred source may be selected manually.

As an example, the following illustrations show how the compass source is changed.



☑ Select the preferred data source and confirm with the **OK** softkey.

Displaying source information



Changing the display settings

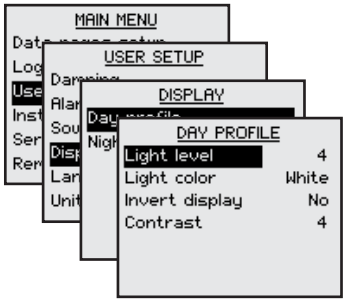
The display is controlled by two user profiles that can be individually adjusted.

The profiles are **Day profile** and **Night profile**. The profiles can be optimized for readability under different light conditions, and you can quickly switch between the two using the Light key. Refer to ***Backlighting***, page 12.

For each profile you can:

- Adjust light level
- Select white or red light color
- Invert the display
- Adjust the contrast

☞ *The display settings also apply for the keys!*

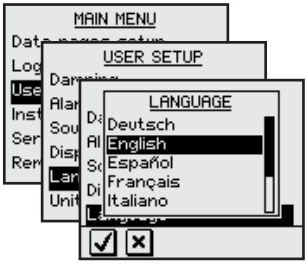


Setting	Range	Change per step	Default value
Light level	9 – Off	1	3 (Day) 5 (Night)
Light color	White/Red	-	White (Day) Red (Night)
Invert display	Yes/No	-	No
Contrast	0 - 9	1	4

Language selection

The language is usually selected when the instrument is turned on for the first time. Refer to ***First time start-up***, page 57.

It is, however, possible to change the language at any time.



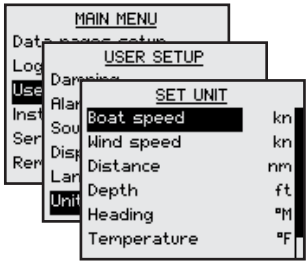
The following languages may be selected:

- Deutch (German)
- English (English)
- Español (Spanish)
- Français (French)
- Italiano (Italian)
- Nederlands (Dutch)
- Norsk (Norwegian)
- Svenska (Swedish)

The language names are listed alphabetically in their own language.

Default language: English

Changing the units of measure



Parameter	Options	Default value
Boat speed	- kn - kmh - mph	kn
Wind speed	- kn - m/s - mph	kn
Distance	- nm - mi - km	nm
Depth	- m - ft	ft
Heading	- °M - °T	°M
Temperature	- °C - °F	°F
Volume	- gal - L	gal

☞ *The display unit for heading data is not solely determined by the user. If true heading is wanted, but the selected compass is a magnetic compass, then the magnetic variation must be available from a position source. The same applies if the user wants to read magnetic heading, but receives true heading from the compass.*

If magnetic variation is required, but not available, the compass decides which unit to display.

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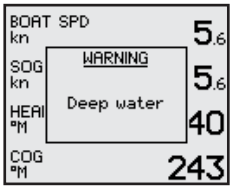
6 IS20 Alarm system

Alarm indication

The alarm system in IS20 Graphic is activated if any alarm settings are exceeded. Refer to ***Alarm setup***, page 34.



When an alarm is notified, the alarm will be indicated with an alarm text and with an audible alarm.

The different alarm indications are shown in the table below.

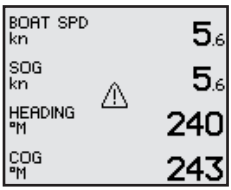
Alarm type	Sound	Light	Reminder interval
Vital alarm	Alternating between 2 tones	Switching on/off	10s
Important alarm			20s
Standard alarm			40s
Warning	Single beep		60s
Light warning	Single beep		

If IS20 Graphic is connected to other SimNet units, any alarm in the system will be displayed on the instrument.

If no specific alarm text is displayed, an alarm code will appear. Refer to ***Alarm codes***, page 44.

Acknowledging an alarm

An alarm is acknowledged by pressing any key. This will remove the alarm notification (text, light and sound) from all units that belongs to the same alarm group. Refer to ***SimNet group function***, page 23.

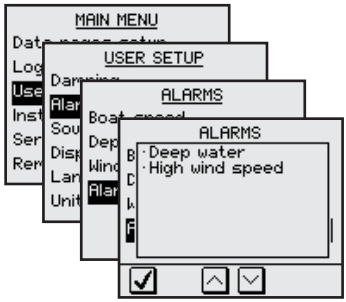


A reminder will reappear at given intervals for as long as the alarm condition exists.

☞ *An alarm received from other SimNet units must be rectified on the unit generating the alarm!*

Viewing active alarms

A list of any existing alarm condition may be displayed at any time.



Alarm codes

If the alarm is received from other units connected to SimNet, the alarm text may not be displayed. The alarm condition will then be indicated in a code.

A description for available codes is listed in the table on the next page.

Alarm ID	Alarm
10	Shallow water
11	Deep water
12	Anchor alarm
13	Wind shift
14	True wind speed too high
15	True wind speed too low
16	Boat speed too low
17	Voltage too high
18	Voltage too low
19	Depth data missing
20	Wind data missing
21	Nav data missing
22	Compass data missing
23	Off course
24	Rudder data missing (RF25)
25	Rudder feedback failure (RF300)
26	Rudder response failure
27	Drive overload
28	High temperature
29	Bypass/clutch overload
30	Bypass/clutch disengaged
31	High drive supply
32	Low drive supply
33	No active Autopilot control unit
34	No Autopilot computer
35	ACXX Menory failure
36	No connection with EVC system
37	EVC overdrive
56	RF must be calibrated

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7 Installation

Location of the unit

The IS20 should be mounted with special regard to the unit's environmental protection, temperature range and cable length. Refer to page 75.

Avoid mounting the control unit(s) where it is easily exposed to sunlight, as this may shorten the lifetime of the display.

Mechanical installation

Panel mounting

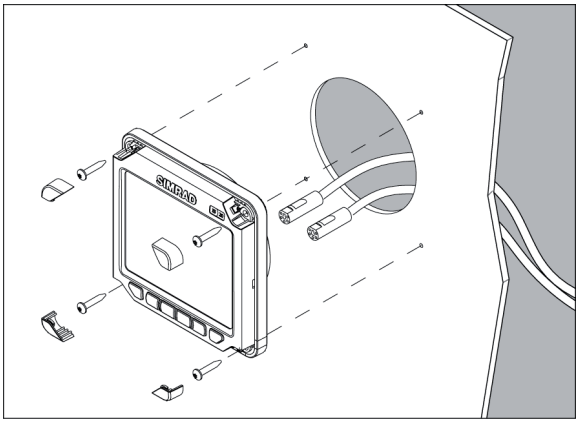
The mounting surface must be flat and even to within 0.5 mm.

1 Drill the 4 mounting holes and make a panel cut-out according to the drilling template included in the package

2 Use the supplied 19 mm selftapping screws to secure the control unit to the panel

3 Apply the front panel corners

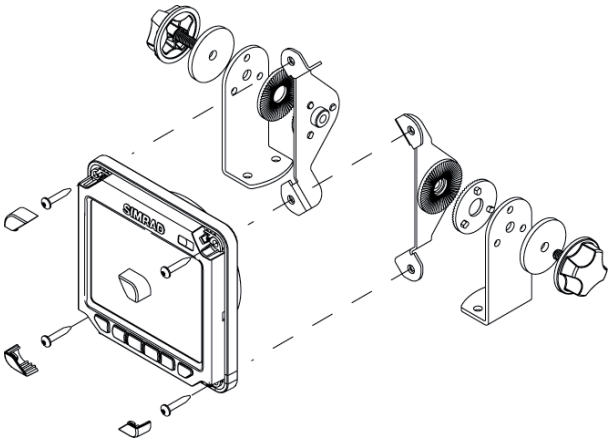
Do not over-tighten the screws!



Bracket mounting

An optional bracket is available for the IS20.

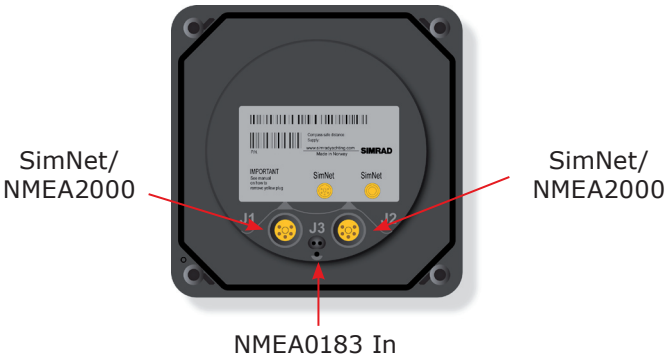
The illustration below shows the mounting details for the bracket.



Cable connection

The IS20 may be connected to:

- a SimNet network using SimNet cables
- an NMEA2000 system
- an NMEA0183 input port



SimNet

The SimNet cable system with very small plugs in both ends makes it easy to run the cables. Only 10 mm (3/8”) holes are required through panels and bulkheads.

The SimNet accessory program contains the necessary items to make a successful installation. Refer to ***SimNet cables and accessories***, page 74.

SimNet cables

A SimNet unit has one or two yellow SimNet connectors. There are no dedicated “in” or “out” connectors.

Route the SimNet cables with the figures on page 51, 52 and 53 as a guideline. Select cables and accessories from the SimNet accessory program.

Connect products with two SimNet connectors in a daisy chain and use drop cables and T-joiners when required. For cable extension in-line cable joiners are available.

☞ *Total length of SimNet cable installed in a system should not exceed 150 meter (500’)!*

If you plan to extend your SimNet system in the future it may be advantageous to prepare for it by adding a few T-joiners in central locations. The T-joiners provide easy access to the network and can be replaced with a new product, or the new product can be connected via a drop cable.

☞ *The connectors are weather proof according to IP66, when properly installed. All unused SimNet connectors must be fitted with the plastic cap to protect them against dirt and moisture.*

SimNet power and termination

The following rules should be observed when installing SimNet:

1 It must have a separate 12VDC power from the battery bus or the circuit breaker board to reduce interference

2 It must not be connected to the supply voltage terminals of the Autopilot Computer

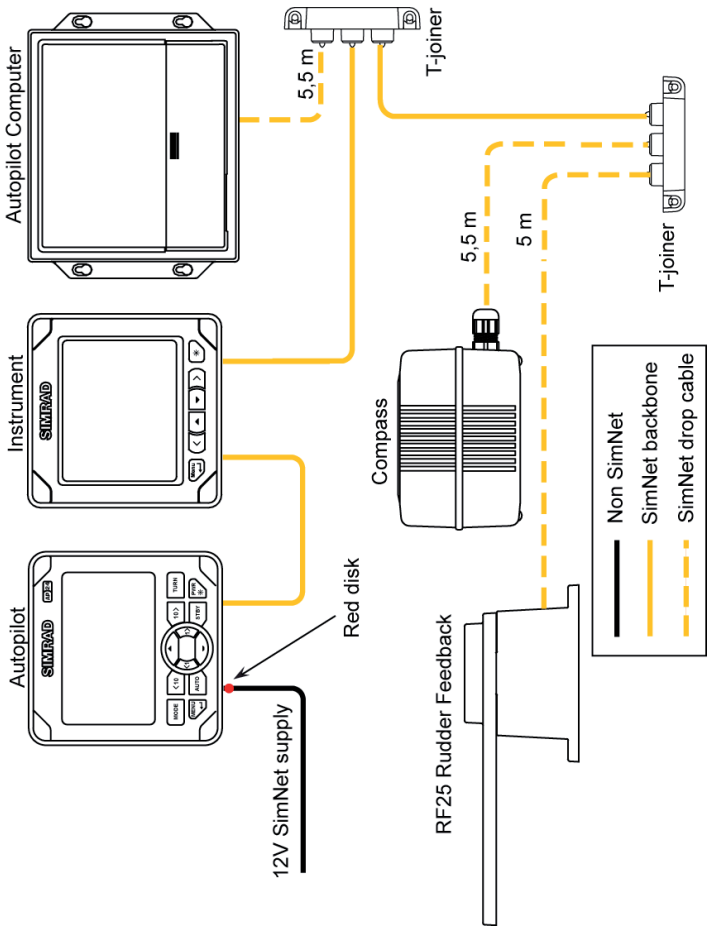
3 It will power a SimNet compatible instrument system. Hence SimNet to other equipment can be supplied via the autopilot, see the figures on page 51, 52 and 53

4 SimNet must be properly terminated, i.e. unless it is a small system (see the figure on page 51) there must be terminations at each end of the Simrad backbone

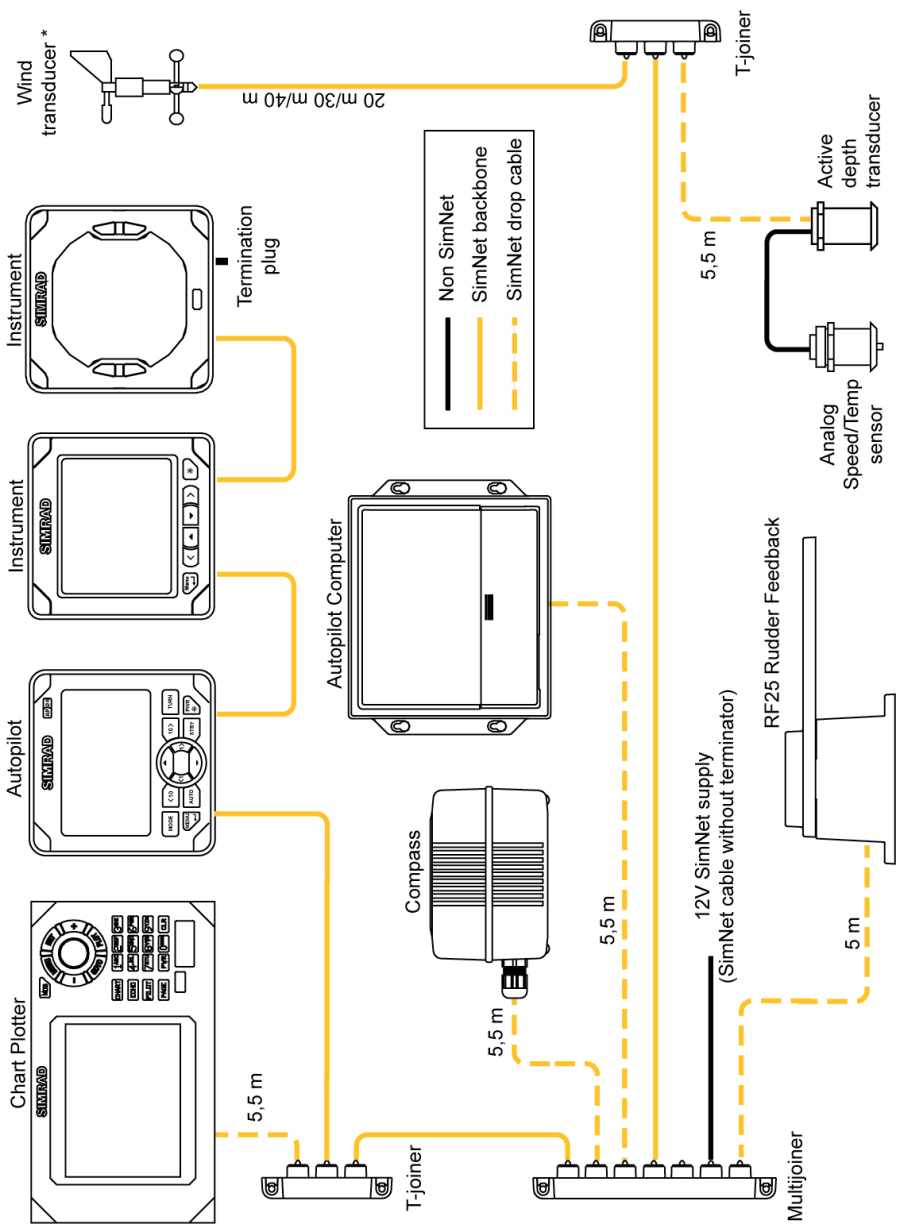
The SimNet network has to be terminated according to the number and type of products connected.

In a small system consisting of maximum 5 SimNet products and a total length of 5 m SimNet backbone cable, you only need the SimNet power cable with built-in termination (red disc on cable plug).

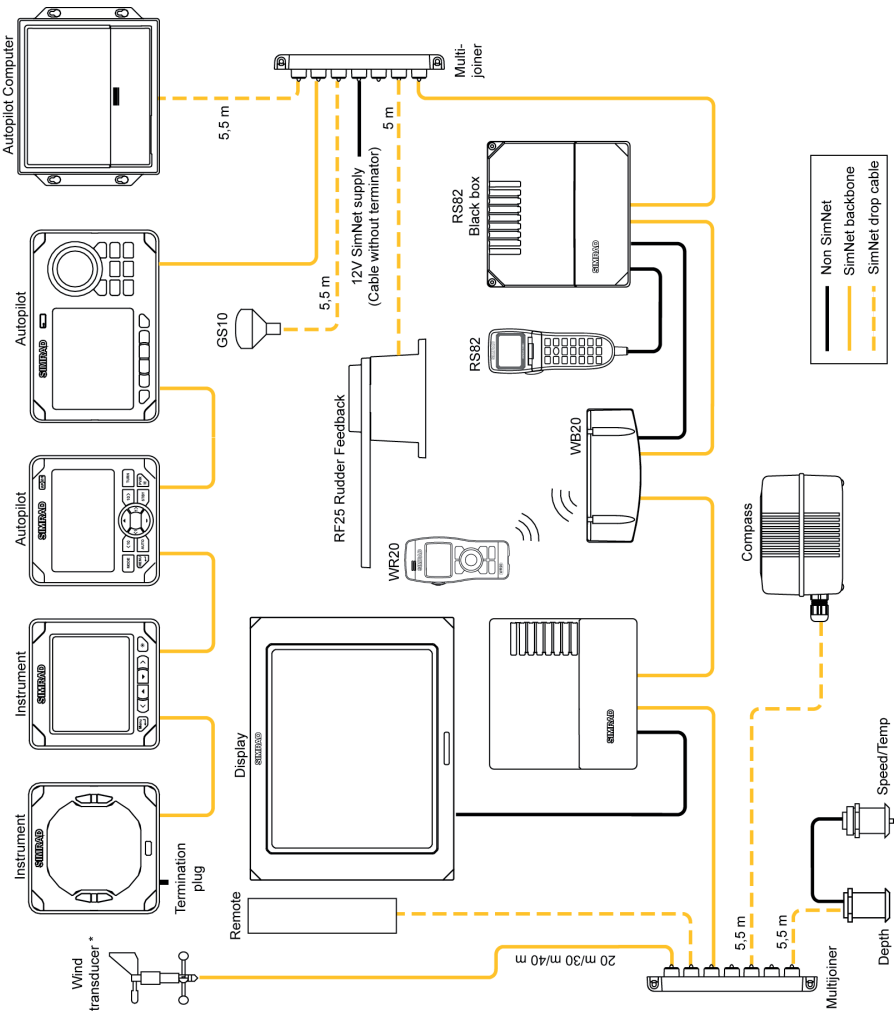
For additional information about SimNet, ask for the separate SimNet Manual.



SimNet network, small system



SimNet network, medium system



SimNet network, expanded system

1 *Maximum total length of SimNet cables is 150 m (500 ft.)*

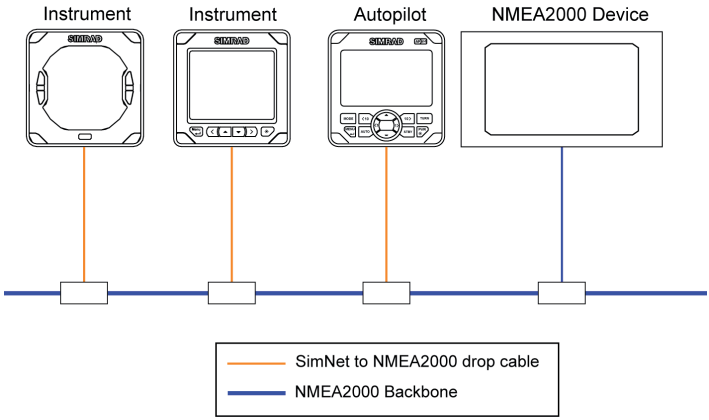
2 *Drop cables must not exceed 6 m (19 ft) of length and the total length of drop cables must not exceed 60 m (200 ft).*

3 *Equipment should not be daisy-chained in a drop cable.*

4 *The wind transducer (*) has a built-in terminator.*

Connecting IS20 to an NMEA2000 network

No daisy-chain connection is permitted between SimNet units when connected to an NMEA2000 network!

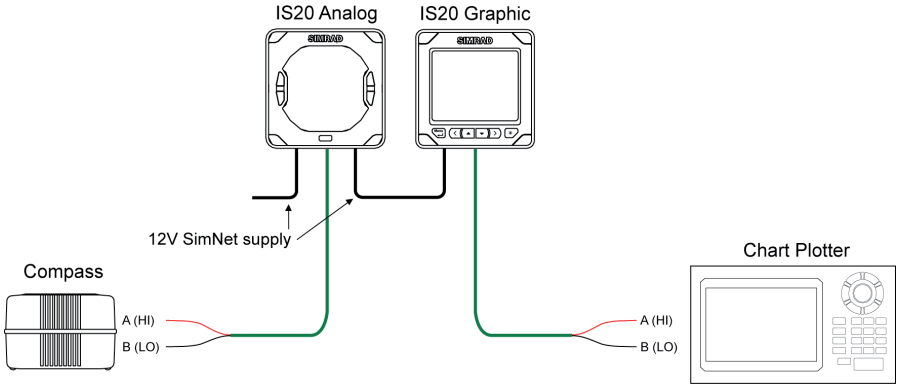


Use the SimNet cable (part no. 24005729) to connect the IS20 to an NMEA2000 network.

Connecting IS20 to an NMEA0183 output unit

The IS20 instrument may be used as repeater for data from a device with an NMEA0183 output port (NMEA "talker").

Use a repeater that is dedicated for the type of data you want to present and the way you want it presented, i.e. digital or analog, multiple data from a GPS/Chart plotter or heading from a compass.



Use the NMEA0183 Interface cable (part no. 22098495) to connect an NMEA0183 output device to IS20.

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8 Configuration

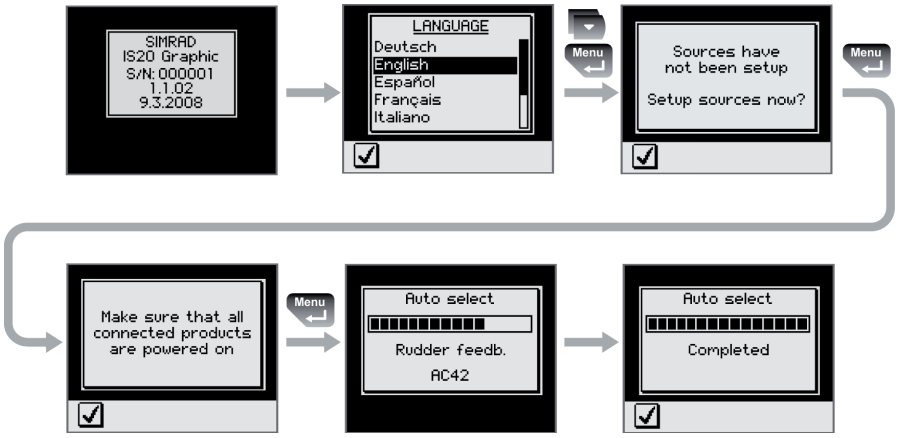
First time start-up

When the IS20 is powered on for the first time, the instrument will run through an automatic start-up sequence, presenting:

1 Product name, serial number, software version, release date

2 Language selection

3 Automatic data source selection



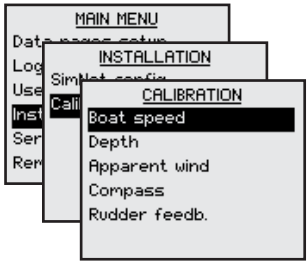
Menu

Press the **Menu/Enter** key when the start-up procedure is completed. This will change the display to the default Speed/Depth/Temperature page.

Calibration

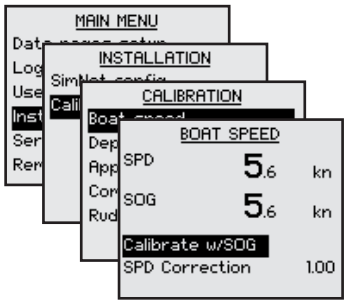
After installation, certain functions in the system must be calibrated to adapt to the physical position and type of sensors installed.

All calibration is initiated from the **CALIBRATION** sub menu.



Boat speed

The hull shape or the location of the speed sensor may cause incorrect speed readings, and calibration is required to ensure that correct speed and log readings are displayed.



Calibrate by speed over ground

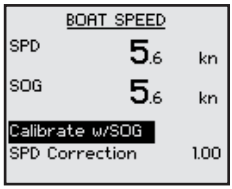
With a GPS connected to the system, the speed may be automatically set identical to the speed over ground value.

This adjustment should be made in calm sea with no effect from wind or tidal current.

1 Bring the boat up to cruising speed (above 5 knots)

2 Select **Calibrate w/SOG** and press the **Menu/ Enter** key to start the calibration

3 When the calibration is completed the **SPD Correction** factor is set to 1.00



Manually adjust the speed value

If you experience an incorrect speed reading this can be manually re-adjusted as follows:

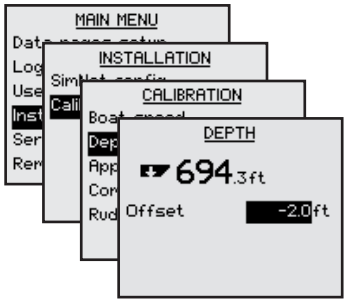
- Compare the speed reading with that on another boat
- Run the boat at constant speed over a known distance in both directions and average the speed reading

Then adjust the **SPD Correction** factor to get the correct speed reading.

Range	Change per step	Default value
-0.50 - +1.50	0.01	1.00

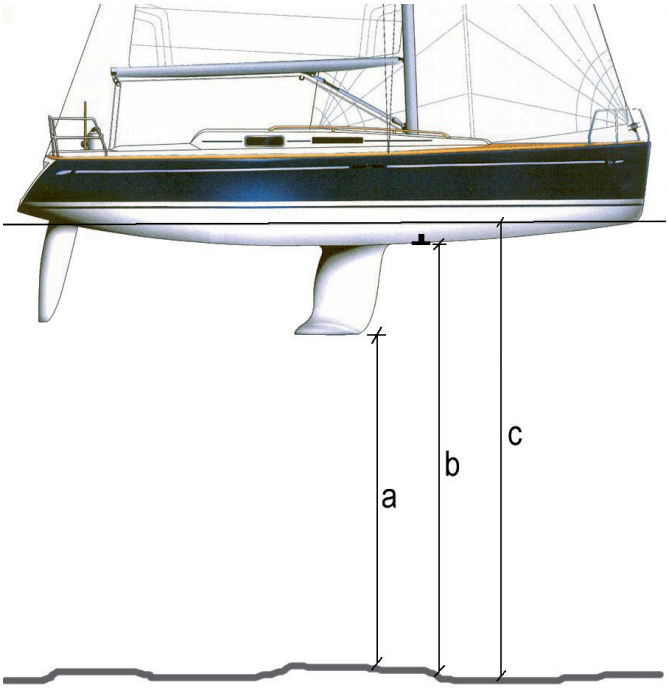
Depth

The default value for the depth offset is 0.0, which indicates the displayed depth from the transducer to the seabed (b). Refer to the illustration on the next page.



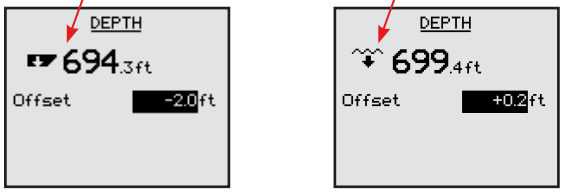
The value should be increased or decreased, depending on whether the depth reading should be from the water line or from the keel, respectively:

- A negative offset equal to the vertical distance from the transducer to the keel will display the depth as measured from the vessel's keel (a)
- A positive offset equal to the vertical distance from the transducer to the water line will display the depth as measured from the water line (c)



The symbol in front of the depth reading will change to indicate that the depth is measured from:

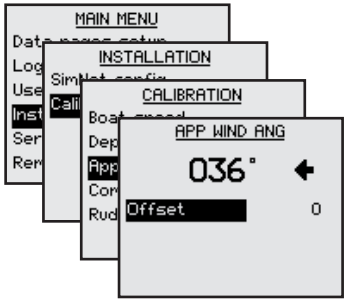
the keel or the water line



Range	Change per step	Default value	Units
-10 - +10	0.1	0.0	m, ft

Apparent wind offset

Any residual error in the apparent wind angle display can be corrected manually by entering the required offset.



A positive value indicates starboard offset angle, a negative value indicates port offset angle.

Range	Change per step	Default value	Units
-180 - +180	1	0	°

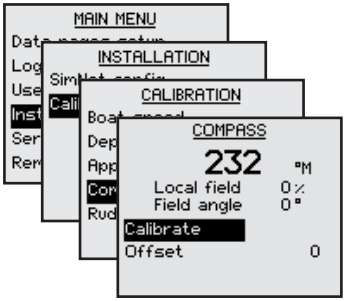
Compass

The compass calibration and the heading offset function affects the compass that is selected as heading source.

If more than one compass is connected to the system, each compass have to be manually selected as compass source (sensor) and calibrated separately. Refer to ***Manual source selection***, page 38.

☞ *The calibration procedure will have no effect on earlier compass models from Simrad and non-Simrad compasses!*

Compass calibration



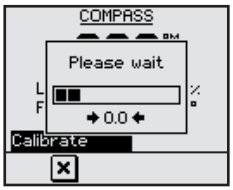
Before the compass calibration is started, make sure that there is enough open water around the vessel to make a full turn.

The calibration should be done in calm sea conditions and with minimal wind to obtain good results. Use about 60-90 seconds to make a full circle.

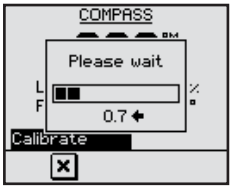
1 Highlight the **Calibrate** line in the dialog

2 Begin turning the boat to port or starboard

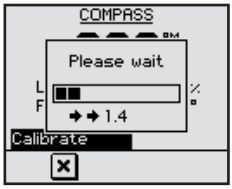
3 Press the **Menu/Enter** key to start the automatic compass calibration



An information window will be displayed while the calibration procedure is running.
The digits below the bargraph will read **0.0** when the turn rate is correct. Too high or too too low speed is indicated as follows:



Turn rate too high, turning cw



Turn rate too low, turning cw

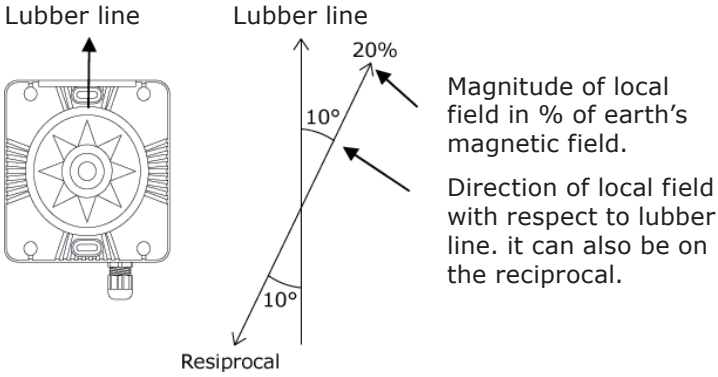
4 The automatic calibration is completed when the information window disappears from the display

☞ *The FC40 and RC42 compasses will store the calibration and offset data in their own memory.*

During the calibration, the compass will measure the magnitude and direction of the local magnetic field. If the local magnetic field is stronger than the earth's magnetic field (the local field is reading more than 100%), the compass calibration will fail. If the local field is reading more than 30%, you should look for any interfering magnetic objects and remove them, or you should move the compass to a different location. The (local) field angle will guide you to the local interfering magnetic object. See illustration on next page.

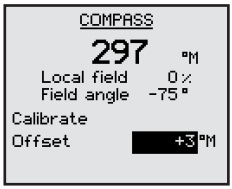
☞ *Calibration is made on the active compass.*

If another model compass from Simrad or another manufacturer is installed, refer to the instruction for that compass regarding calibration.



Mounting offset

After compass calibration, the heading should be checked against a known reference, a compensated compass or a bearing.

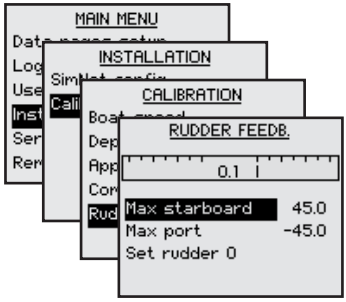


If the compass reading has a fixed offset, use the **Offset** parameter to compensate.

Range	Change per step	Default value	Units
-180 - +180	1	0	°

Rudder

The rudder calibration is used to compensate for any non-linearity in the transmission between the rudder and the rudder feedback unit.

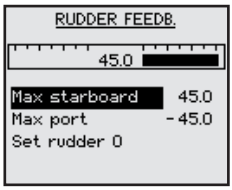


Adjusting the maximum rudder angle

1 Select **Max starboard** and press the **Menu/Enter** key to start the calibration

2 Manually turn the rudder to h.o. starboard position

3 Confirm that the actual rudder angle is identical to the readout. Adjust the reading if necessary



4 Repeat the procedure for port rudder angle

Setting rudder zero position

This adjustment should be made in calm sea and side forces from wind or current should be avoided.

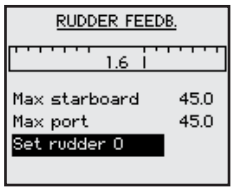
1 Bring the boat up to cruising speed, and head directly into the wind

2 If the boat has twin engines, synchronize the engine RPM's

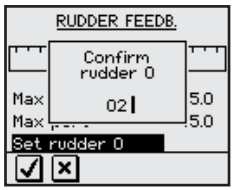
3 Set the trim tabs and stabilizers to have no effect on the boats heading

4 Steer the boat manually on a steady course

5 Select **Set rudder 0** and press the Menu/Enter key to confirm



6 Confirm the rudder zero position

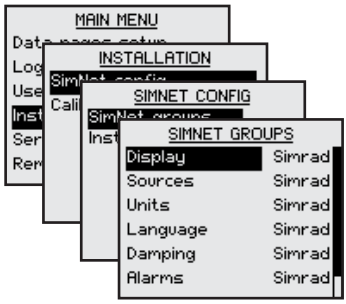


SimNet groups

The SimNet group function is used to globally control parameter settings in groups of units. The function is used on larger vessels where several units are connected via the SimNet network.

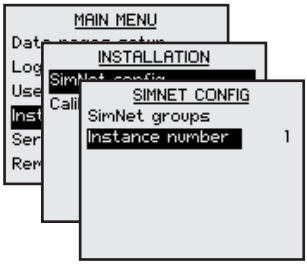
By assigning several units to the same group, a parameter update on one unit will have the same effect on the rest of the group members.

For additional information about SimNet groups, refer to ***SimNet group function***, page 23 and onwards.



Setting the unit's instance number

The instance number is used to identify multiple units of the same model when connected to a SimNet or NMEA2000 network. The instance number is added to the product name e.g. IS20-3 for easy identification of the unit.



Range	Change per step	Default value
0-63	1	0

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9 Maintenance

General maintenance

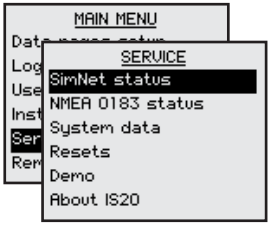
The IS20 instruments are “repair by replacement” units, and the operator is therefore required to perform only a very limited amount of preventive maintenance.

If the unit requires any form of cleaning, use fresh water and a mild soap solution (not a detergent). It is important to avoid using chemical cleaners and hydrocarbons such as diesel, petrol etc.

Make sure that all open SimNet connectors are fitted with a protection cap (part no. 24006355).

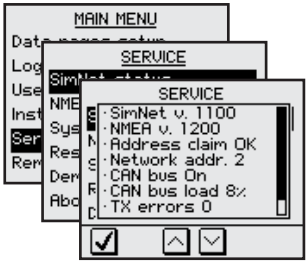
Always put on the weather cover when the unit is not in use.

Service information



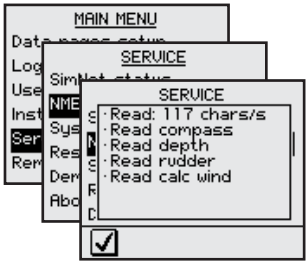
The main menu includes a **Service** item giving access to several options for displaying data used when testing or trouble shooting the system.

SimNet status



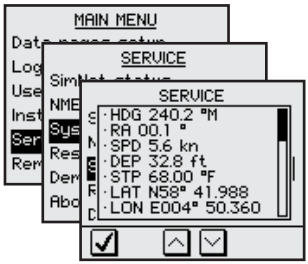
The SimNet status screen provides status information about the different SimNet messages used by the system.

NMEA0183 status



The NMEA0183 status screen lists status information about available data type, checksum error and NMEA0183 version.

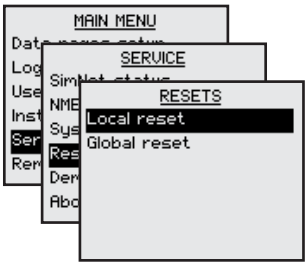
System data



The System data screen provides status information about the different NMEA messages used by the system.

Resetting the instrument system

The reset options will reset the instrument to default settings.



The Installation and Setup procedures must be repeated after a reset has been performed!

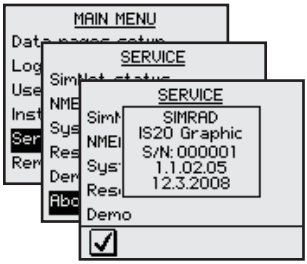
Two different reset options are available:

Local reset: Resets the selected instrument

Global reset: Resets parameters on the selected instrument and all other units that share parameters with this instrument.

Displaying instrument information

By selecting the **About IS20** menu item, an information window will display instrument model, software version number (1.0.), software release (02) and date of release.



The shown readout is only an example!

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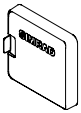
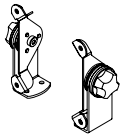
10 Spare parts

Spares and auxiliaries

Part no.		Description
22096010		IS20 Graphic instrument head
22096630		IS20 mounting kit including: - 4 screws - 6 corners - 1 SimNet blocking plug
22096515		IS20 Weather cover
22096820		IS20 Mounting bracket
24006355		SimNet blocking plug
22098495		NMEA0183 Interface cable 2.5 m (8’)

SimNet cables and accessories

Art. no.	Description
24005829	0.3 m (1’) SimNet cable (SDC:0.3M)
24005837	2 m (6.6’) SimNet cable (SDC:02M)
24005845	5 m (16.6’) SimNet cable (SDC:05M)
24005852	10 m (33’) SimNet cable (SDC:10M)
24005860	SimNet T-joiner (SDJ) (3p)
24006298	SimNet Multijoiner (7p)
24006306	SimNet Bulkhead T-connector
24005878	SimNet cable gland
24005886	SimNet protection plug
24005894	SimNet termination plug
24005902	2 m (6.6’) SimNet power w/termination
24005910	2 m (6.6’) SimNet power w/o termination
24005936	AT10 Universal NMEA0183 converter
24005944	AT15 Active T-connector, IS15
24005928	SimNet cable protection cap
24005729	SimNet cable to Micro–C male Cable that connects a SimNet product to a NMEA2000 network
24006199	SimNet cable to Micro-C female cable that connects a NMEA2000 product to SimNet
24006363	SimNet cable, 5.5 m (18’), with 1 plug

11 Specifications

Technical specifications

Weight: ..... 0.3 kg (1.1 lbs)

Power consumption: ..... 1.3 W

SimNet Network Load (NL): ..... 2 NL

Color: ..... Black

Display:

- Type: ..... Backlit LCD matrix display
- Resolution: ..... 130 x 104 pixels
- Illumination (Red or white): ..... Adjustable in 10 steps

Environmental protection:

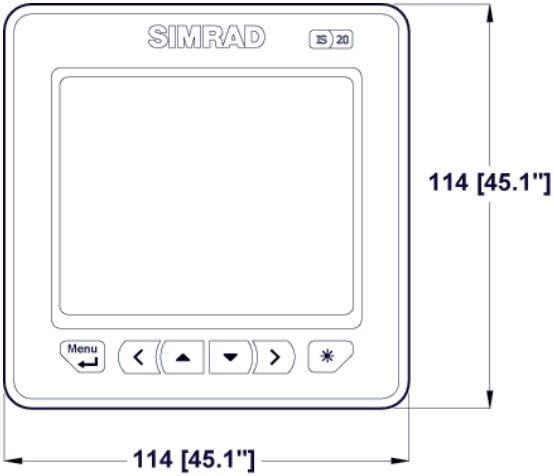
- Front: IP56
- Back: IP43

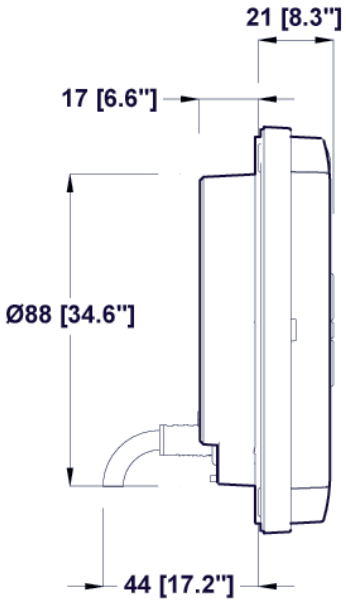
Safe distance to compass: ..... 0.3 m (1.0 ft.)

Temperature:

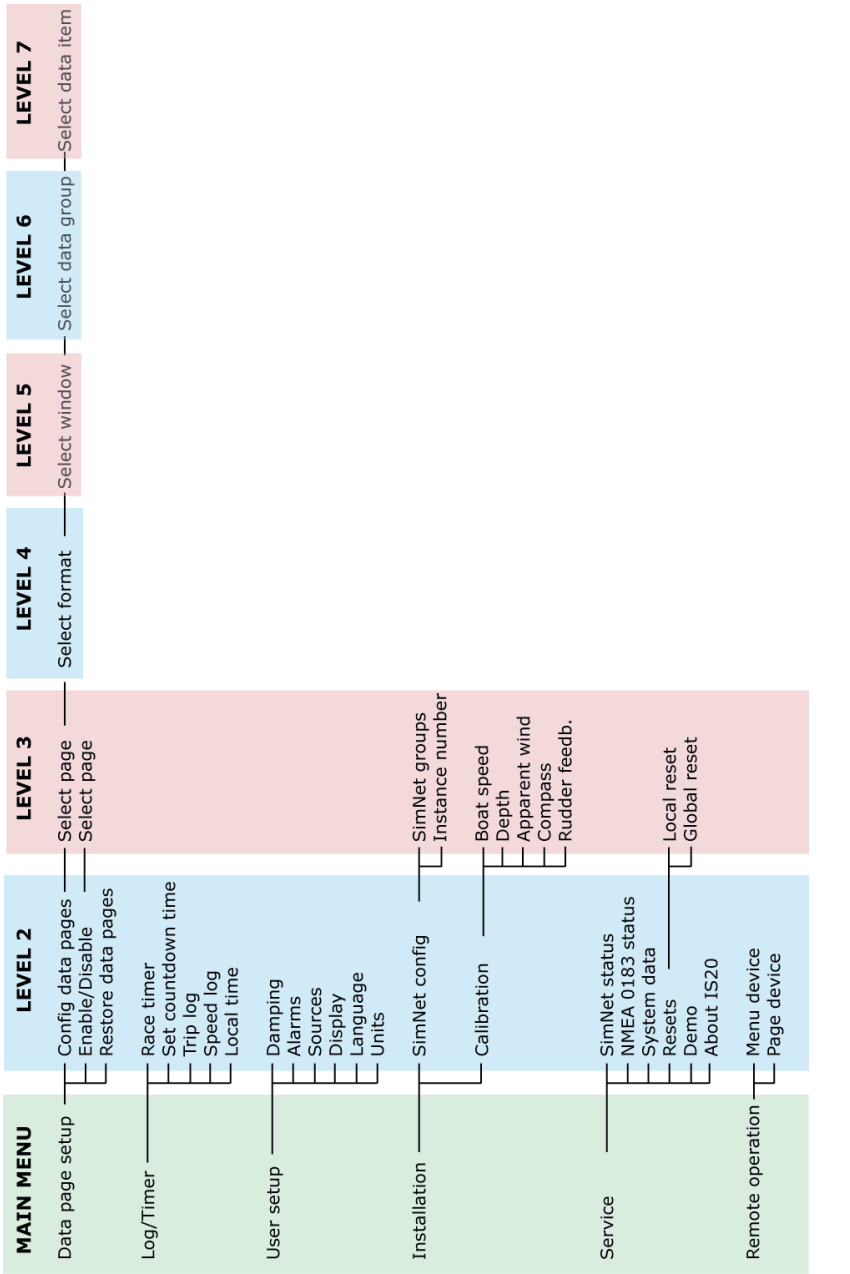
- Operating: ..... 0 to +55 °C (+32 to +130 °F)
- Storage: ..... –30 to +70 °C (–22 to +158 °F)

Dimensional drawings





Menu flow chart



Data groups and data items

DATA GROUP	DATA ITEM	DESCRIPTION
Speed/Depth	BOAT SPD	Boat speed
	SOG	Speed over ground
	VMG	Velocity made good to wind
	VMG WPT	VMG to waypoint (Waypoint Closure Velocity, WCV)
	SPD TRIM	Speed trim
	DEPTH	Current depth
Wind	APP W/S	Apparent wind speed
	APP W/A	Apparent wind angle
	TRUE W/S	True wind speed
	TRUE W/A	True wind angle
	TRUE DIR	True wind direction
	HEAD LFT	Head lift
	TACK HDG	Tack heading
Log/Timer	STD LOG	Stored log
	TRIP LOG	Trip log
	TRIPTIME	Trip time
	AVG SPD	Average speed
	MAX SPD	Max speed
	RACE TMR	Race timer
	RACE LOG	Race log
Vessel	HEADING	Heading
	RUDANGLE	Rudder angle
	COG	Course over ground
	MAGVAR	Magnetic variation
	SET	Direction of current flow
	DRIFT	Speed of current
	LATITUDE	Latitude
	LONTUDE	Longitude
	UTC	Coordinated Universal Time
	TIME	Local time at vessel position

DATA GROUP	DATA ITEM	DESCRIPTION
Navigation	BRG WPT	Bearing to next waypoint
	DST WPT	Distance to next waypoint
	XTE	Cross track error
	ETA WPT	Estimated time to next waypoint
	TIME WPT	Time to next waypoint
	WPT	Next waypoint number and name
Engine/Battery	ENG1 RPM	Engine 1 RPM
	ENG2 RPM	Engine 2 RPM
	LEVEL 1	Fuel level tank 1
	LEVEL 2	Fuel level tank 2
	ENG1 RTE	Engine 1 fuel rate
	ENG2 RTE	Engine 2 fuel rate
	VOLTS 1	Battery voltage 1
	VOLTS 2	Battery voltage 2
Environment	SEA TEMP	Sea temperature
	AIR TEMP	Air temperature
	BARO PR	Barometric pressure
	HUMIDITY	Outdoor humidity

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SIMRAD

Master the Elements