

Unicont SPb Ltd

Universal digital repeater DR-209

Technical Documentation

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This Operating Manual applies to the DR-209 Universal digital repeater.

This Manual is intended to assist in the familiarization with the design, operating principles and procedures established for the convection heater during its intended use or maintenance. This Manual can also be used as a source of information about сведений об устройстве to draw up corresponding sections in the operational documentation for the equipment, в которой this product may be used as its component part.

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1. Purpose

The Universal Digital Repeater DR-209 is designed for displaying information supplied in form of NMEA sentences from various devices to LQ display in form easy to user and for retransmitting information received in form of NMEA sentences through communication channels.

2. Delivery Set

1. Universal Digital Repeater	1 piece
2. Bracket	1 piece
3. “Fly nuts” for bracket fixation	2 pieces
4. Mate connectors for connecting:	
DB-9F	4 pieces
DB-15F	1 piece
5. 5. Technical documentation	1 piece.

3. Technical characteristics

Input:

Interface: 4 x RS-422 (asynchronous serial)with galvanic coupling

Data: NMEA 0183 with line checksum

Supported sentences: \$xxAPB, \$xxBWC, \$xxBWR, \$xxDBK, \$xxDBS, \$xxDBT, \$xxDPT, \$xxGGA, \$xxGLC, \$xxGLL, \$xxGTD, \$xxHDT, \$xxHDG, \$xxHDM, \$xxMDA, \$xxMTW, \$xxMWV, \$xxRMB, \$xxROT, \$xxRMC, \$xxVBW, \$xxVDR, \$xxVHW, \$xxVTG, \$xxVLW, \$xxVWR, \$xxVWT, \$xxXTE, \$xxZDA.

Output:

Interface: 4 x RS-422 (asynchronous serial) with galvanic coupling

Data: NMEA, repeat input data (retransmission through channels respectively).

Interface settings:

Parity bit: no/ even / odd
 Stop bits: 1 or 2
 Rate: 4800/9600/19200/38400/57600 bit/s

Indicator:

Type:	LCD (LC) display
Resolution:	240x128
Controls:	brightness/contrast on keyboard
Sub screens:	simultaneously displayed data types - 4 pcs
Set up screens:	5 (set up by user)

Keyboard:

Type:	film-type
Keys:	9

Power supply:

Voltage:	10...36 VDC
Coupling:	Galvanic coupling
Power:	12 W max.

Overall dimensions:

without bracket	211 x 117 x 63.5 mm
with bracket	255 x 143.5 x 71 mm
Weight:	no more than 2 kg
Temperature of operation:	-20..+55 °C
Storage temperature:	-55..+75 °C
Protection class:	IP 22

4. Installation and connection of device

1. See purpose of outputs of signal cables and power cable in Appendix 1.
2. Device installation
Install device and prepare mounting holes in accordance with drawing (see Figure 1).

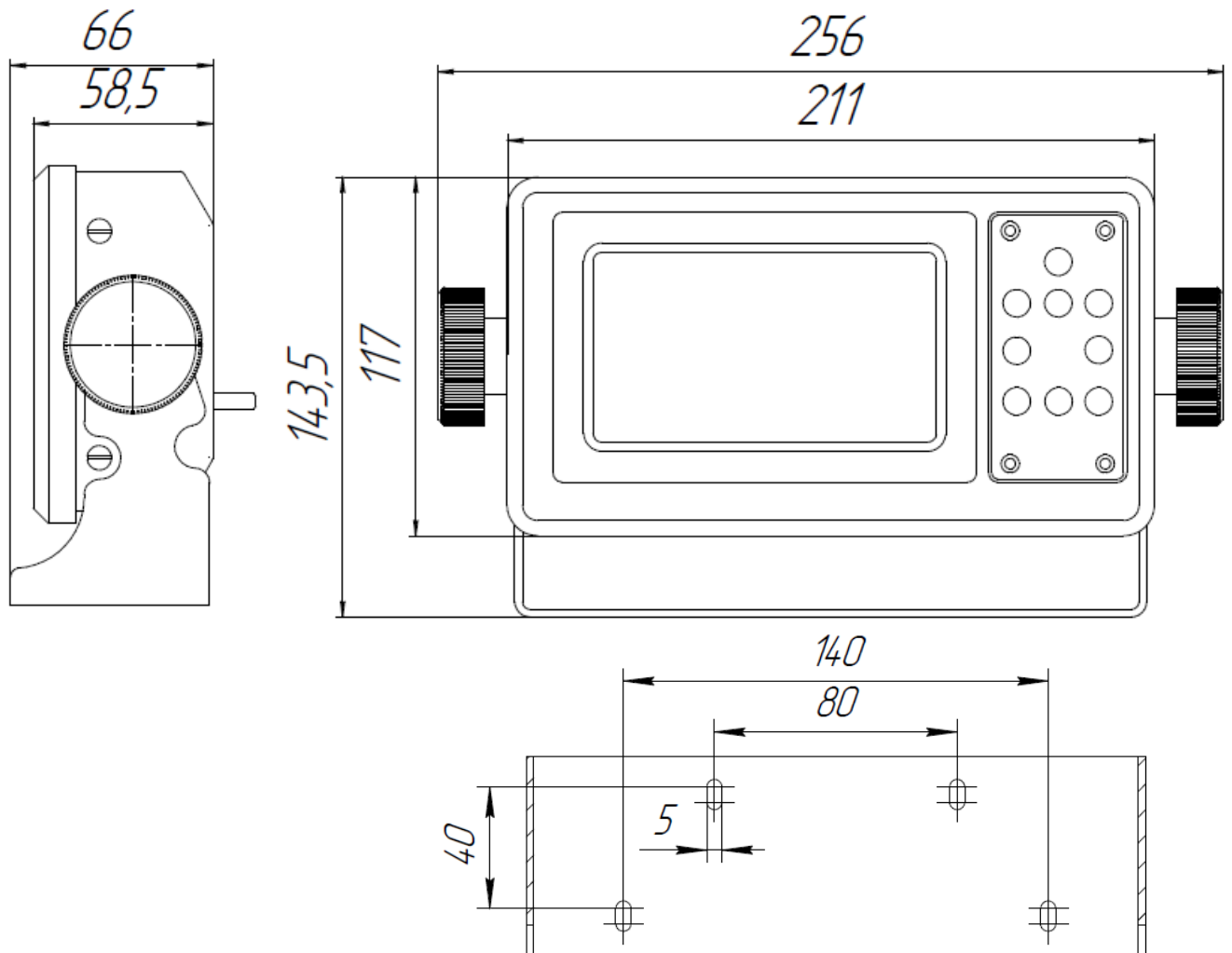


Figure 1 Dimensional drawing DR-209

Device installation and training of the mounting holes when installing the console perform according to the drawing (see Figure 2).

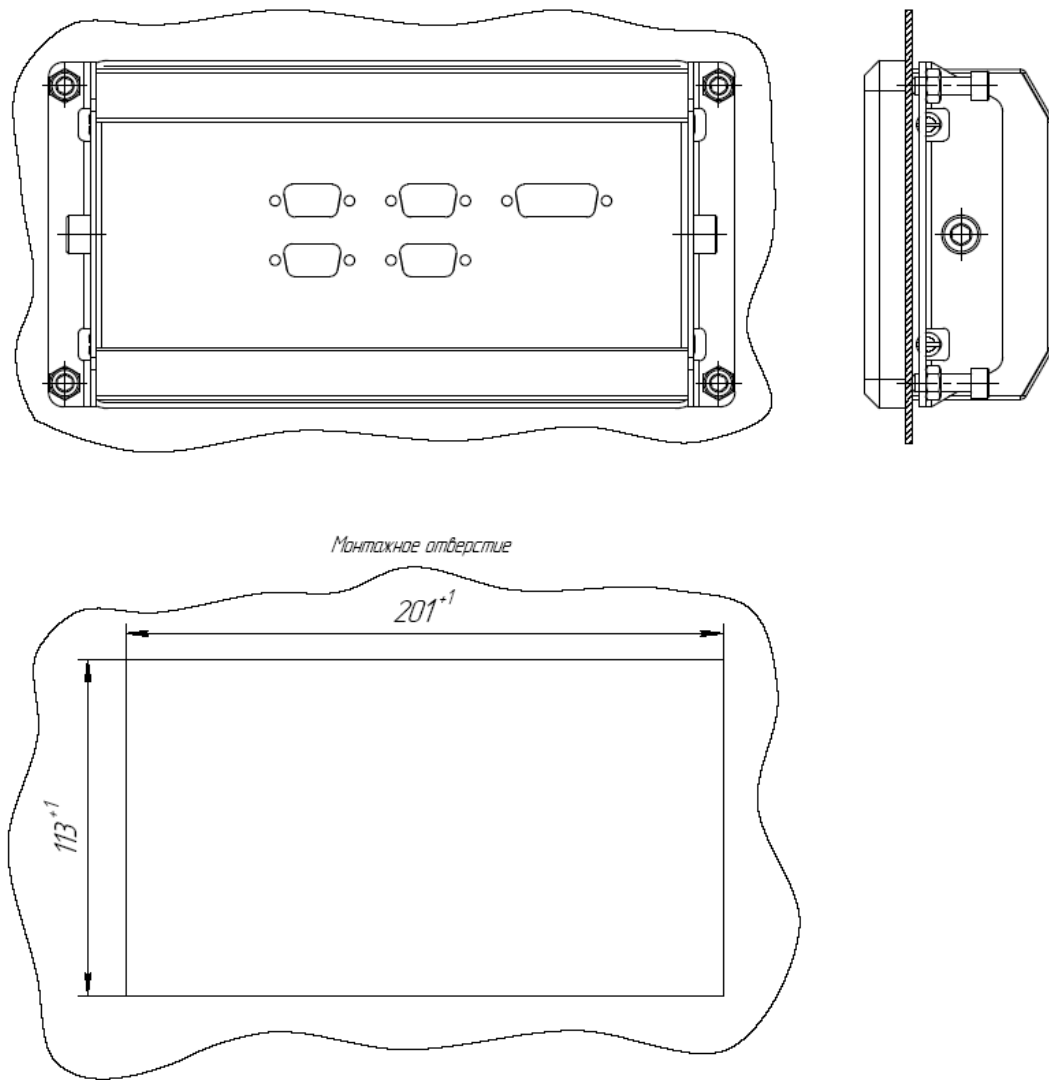
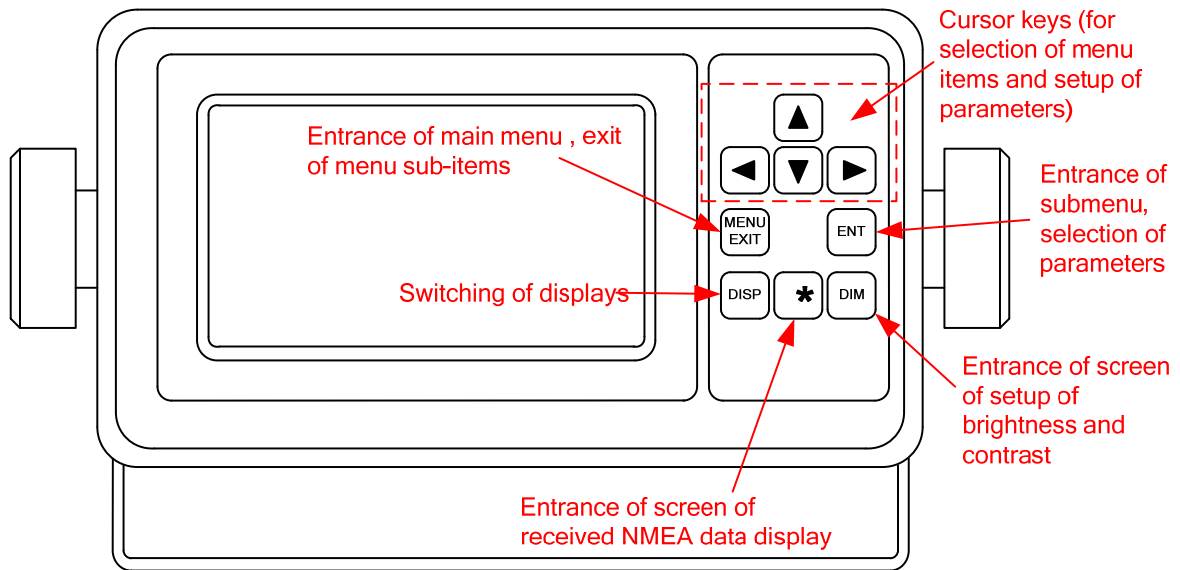


Figure 2 Mounting the repeater console

3. After device DR-209 connect connection cables of external devices.
4. Supply power to DR-209.
5. Set up device screens according to para 5.5. To do functional test of set up screens it is possible to use simulation mode (see para 5.13).
6. Set up parameters of input and output interfaces of device in accordance with para 5.14. To check data reception use display mode of NMEA received data (see para 5.6).
7. Do functional test of device (confident reception of NMEA messages, display of received data on screen).

5. Device operation

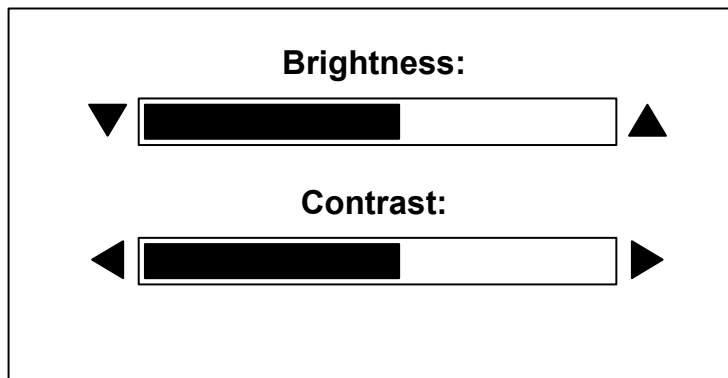
5.1 Controls



5.2 Regulation of display brightness and contrast

To regulate display brightness and contrast perform actions as follows:

In main screen mode press button “DIM”.



Using keys ▼ and ▲ set required value of display lighting brightness.

Using keys ◀ and ▶ set up required display contrast.

To return to main screen mode press button “DIM”.

5.3 Active screen selection

DR-209 allows user setting up max. 5 screens, each being configured to display required NMEA data in one of 4 available forms: digital, graphical, in form of graph and “highway” (see details in para 5.5).

User can change over screens on his own in order they were set up.

To change over screens press button “DISP”.

5.4 Examples of various data display forms

5.4.1. Digital data display form

All available NMEA data types can be displayed in digital form: water temperature, depth, speed over ground, speed through water, heading, heading relative to land, deviation from heading line, wind speed and direction, trip distance, position (latitude and longitude), time and date, destination point identifier, ship rate of turn, current speed and direction, atmospheric pressure, atmospheric temperature, humidity.

About screen setup for digital data display form see para 5.5.2.

Examples of digital screens:

Depth (ft)	546
-------------------	------------

Speed over ground (Kt)	123
-------------------------------	------------

Heading (°)	273.4
--------------------	--------------

Speed through water (Kt)	9.1
---------------------------------	------------

Heading (°)	Water temperature (°C)
128.6	19.2

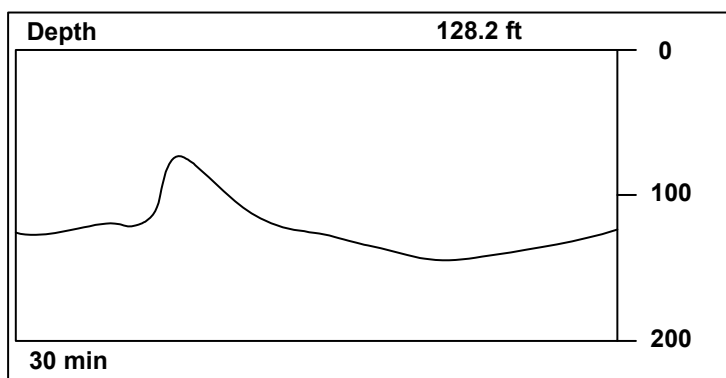
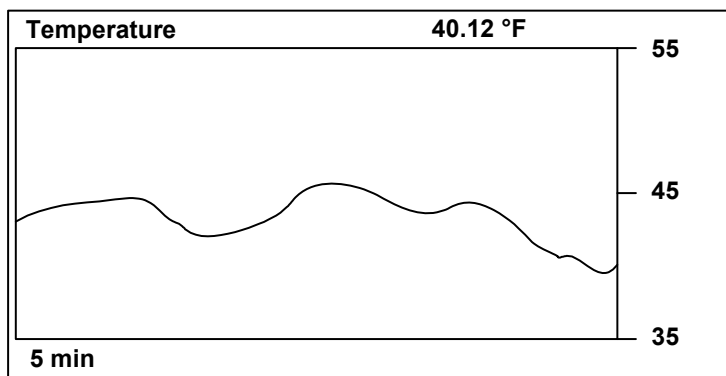
Speed over ground (Kt)	Heading (°)
0.6	45.9
Trip distance (NM)	Water temperature (°C)
3452.2	19.2

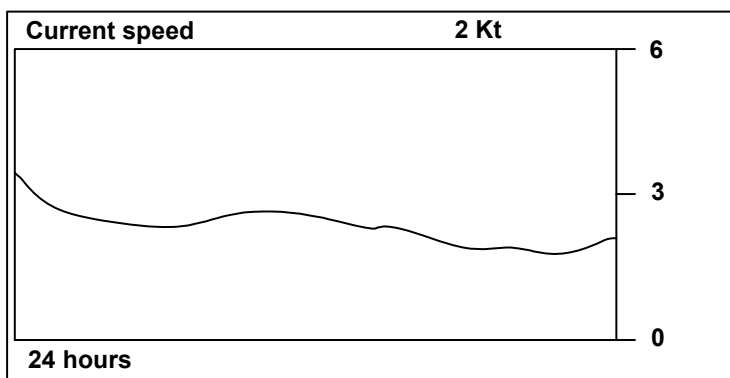
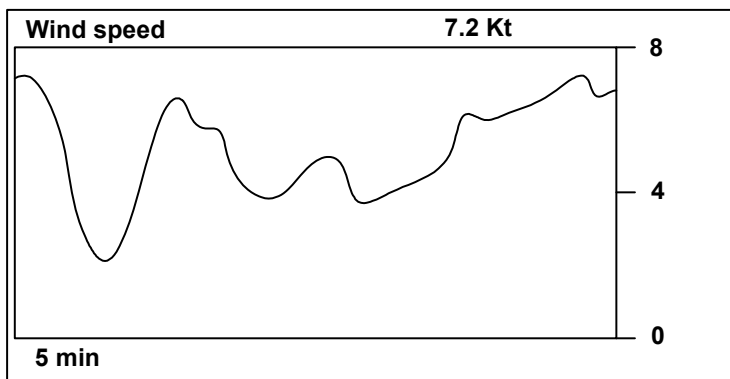
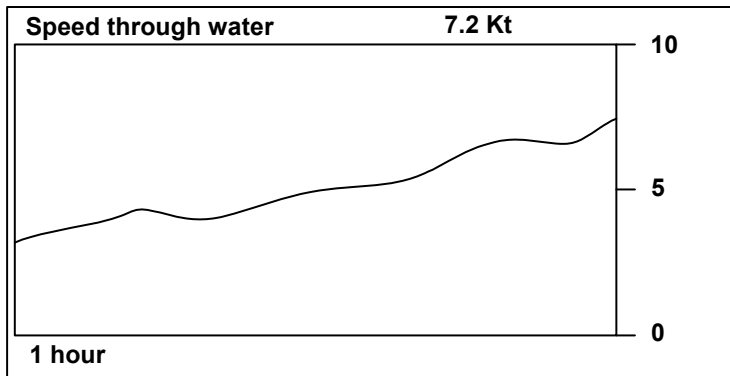
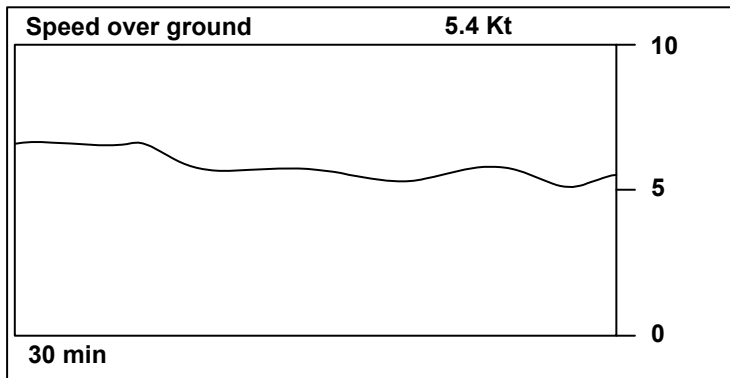
5.4.2. Graph

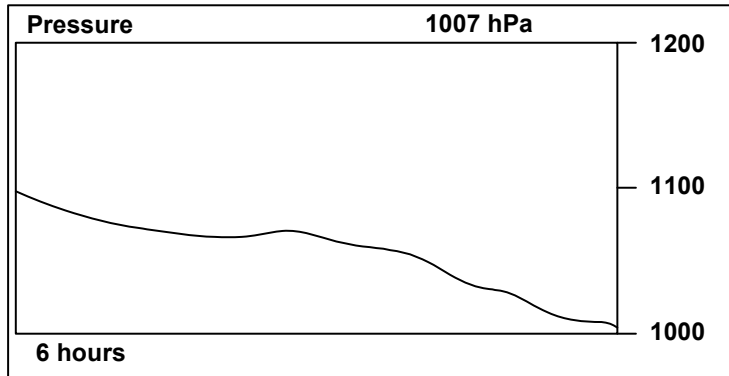
DR-209 allows user building graphs using set parameters for various time intervals. To build graphs use available data types as follows: water temperature, depth, speed over ground, speed through water, wind speed, current speed, atmospheric pressure.

About screen setup for graphical data display form see para 5.5.3.

Examples of graphs:





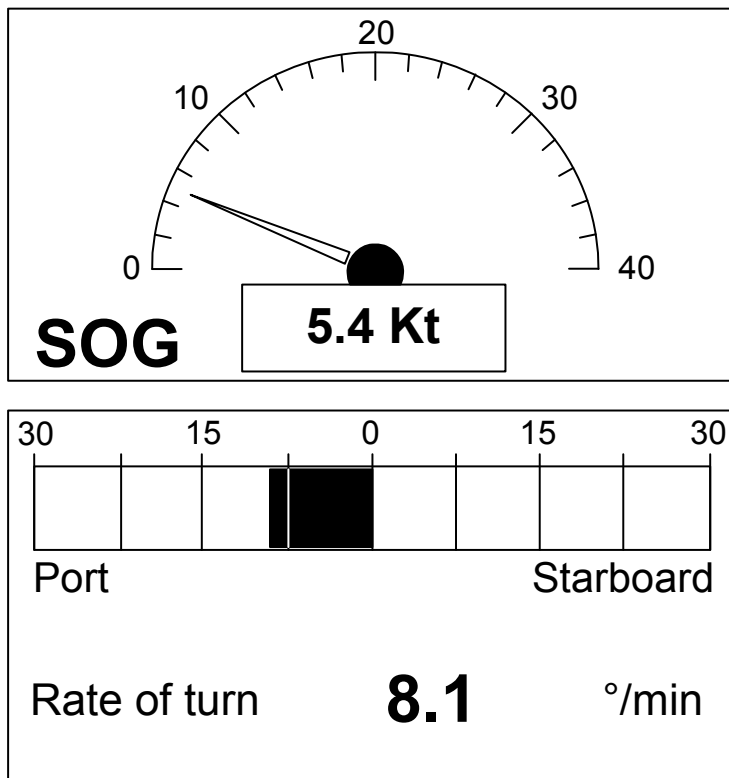


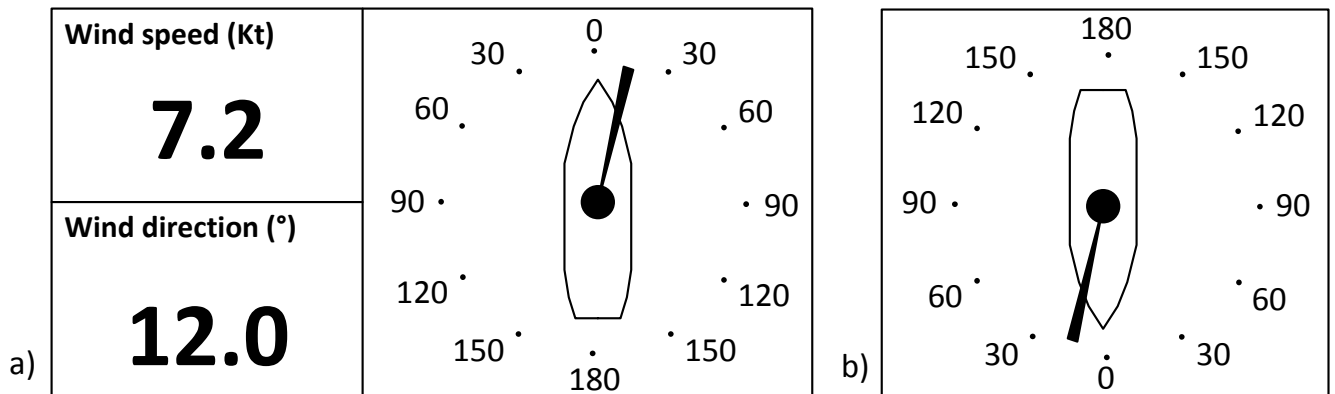
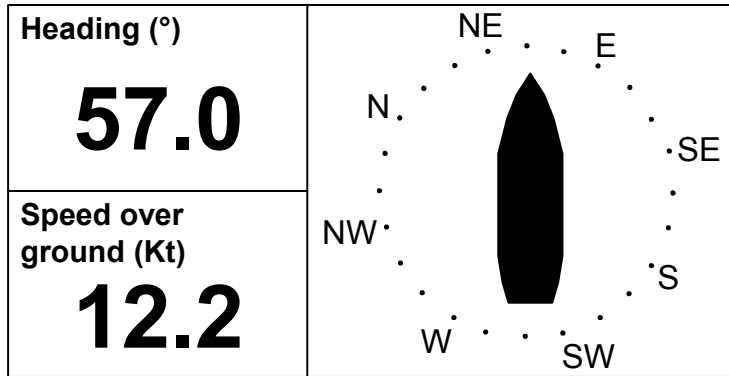
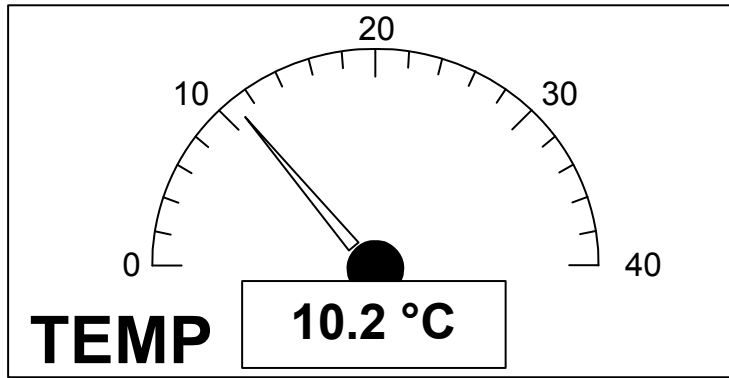
5.4.3. Graphical data display form

In graphical data display mode DR-209 simulates indicators of analogue devices (repeaters). In this mode the following data types can be displayed: speed, water temperature, wind speed and direction, current speed and direction.

About screen setup for graphical data display form see para 5.5.4.

Examples of graphical displays:

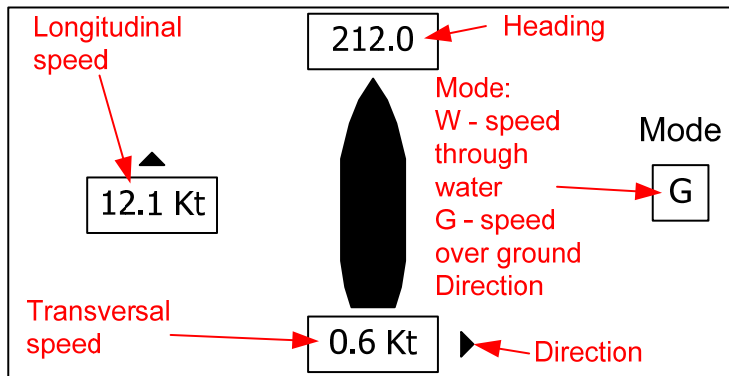
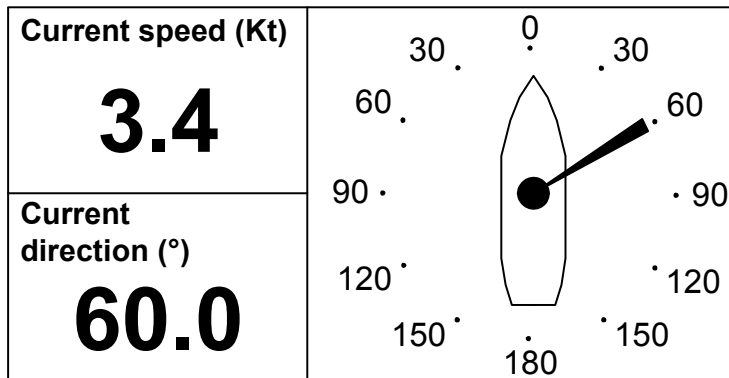




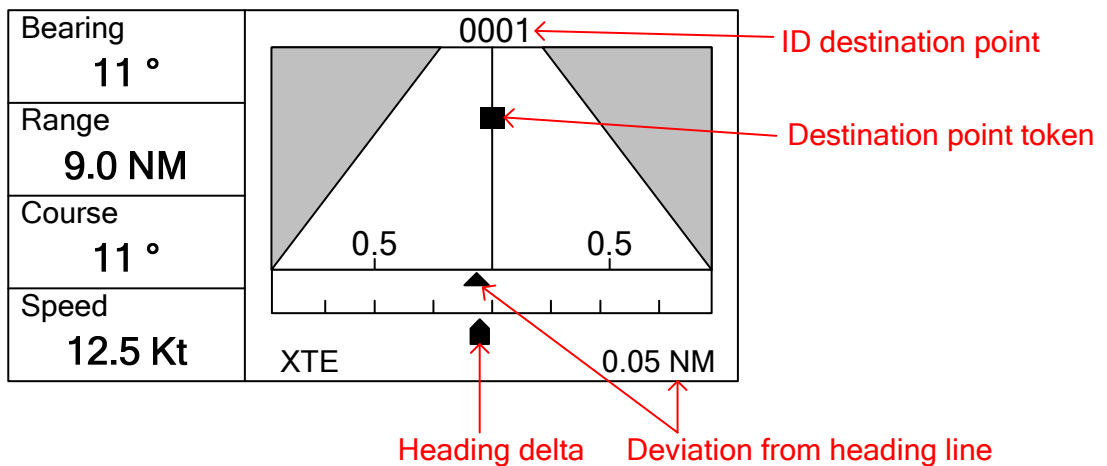
Repeater is supplied with one of two forms of the wind direction data display (see figure a, b) - wind direction relative to the bow (figure a) and to the stern (figure b) of a vessel.

Please, specify required form of data display when ordering the repeater.

Note! By default, repeater with display of wind direction relative to the bow is supplied (see figure a).



5.4.4. "Highway"



5.5 Display setup

User of DR-209 can access 4 types of displays: "digital", "graphical", "graph" and "highway-display".

For display of "digital" type user may select display from 1 to 4 data types on one screen; user can set up data arrangement on screen arbitrarily and select data types to be displayed.

"Graphical" display allows data output in form of pointer indicator, compass card etc. depending on type of displayed data selected by user.

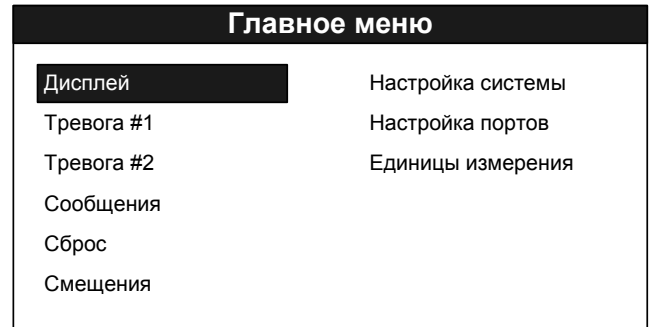
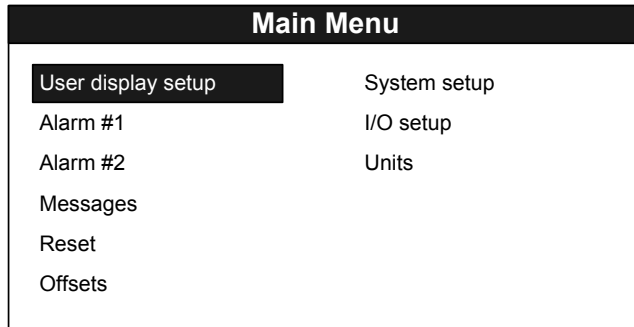
Display of “graph” type is convenient for display of variation of any parameter in time; user can set up graph time range arbitrarily and select data required for processing.

“Highway-display” cannot be set up by user.

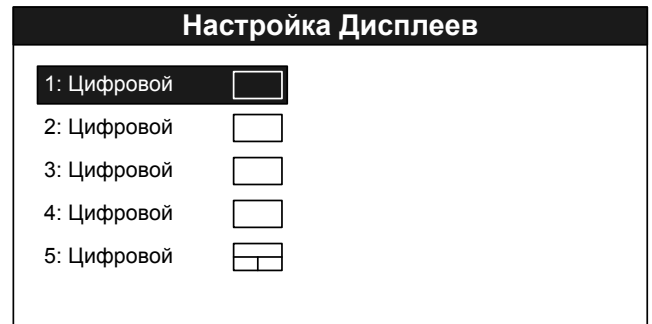
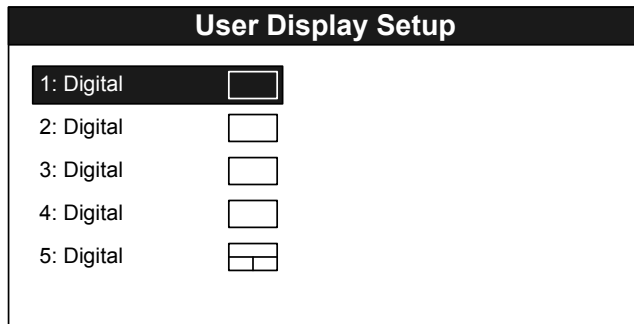
5.5.1. Display type selection

Step 1:

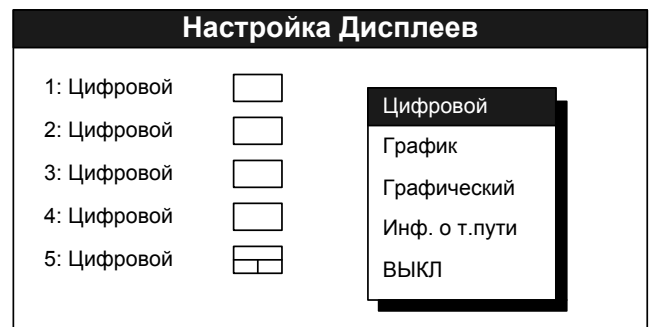
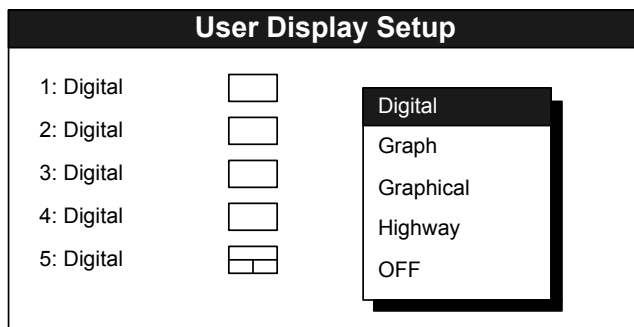
Press button “MENU” to enter main menu of device.



Using arrow keys select menu item “User display setup” and press key “ENT”. Figures in right column show display number, text - display type, picture – display format.



Using arrow keys select display with required number and press key “ENT”.



Select required screen type (Digital, Graph, Graphical, Highway, OFF – display not used) and press key “ENT”.

Further actions will be determined by selected display type (see below).

5.5.2. Setup of digital display

Select “digital” display type according to p. 5.5.1.

User Display Setup

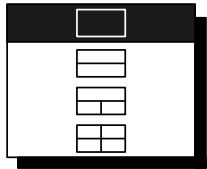
1: Digital

2: Digital

3: Digital

4: Digital

5: Digital



Настройка Дисплеев

1: Цифровой

2: Цифровой

3: Цифровой

4: Цифровой

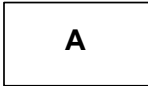
5: Цифровой



Select required screen format in dropdown list. Each screen fragment will display a certain data type (1, 2, 3 and 4 – respectively). Press key “ENT”.

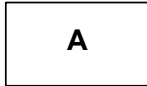
User Display Setup

A: Water temperature



Настройка Дисплеев

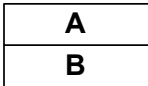
A: Температура воды



User Display Setup

A: Water temperature

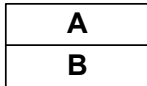
B: Depth



Настройка Дисплеев

A: Температура воды

B: Глубина

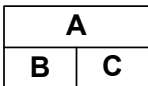


User Display Setup

A: Water temperature

B: Depth

C: Speed over ground

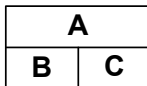


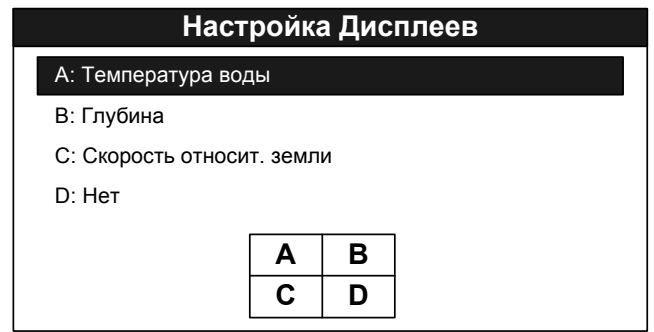
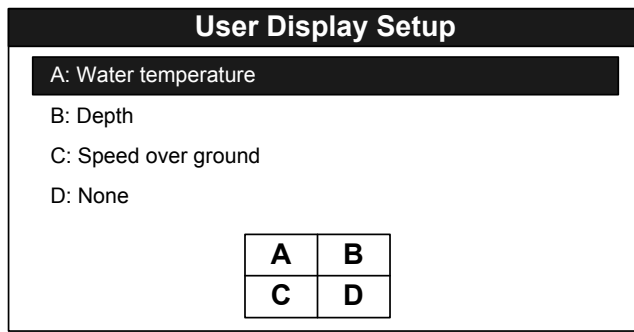
Настройка Дисплеев

A: Температура воды

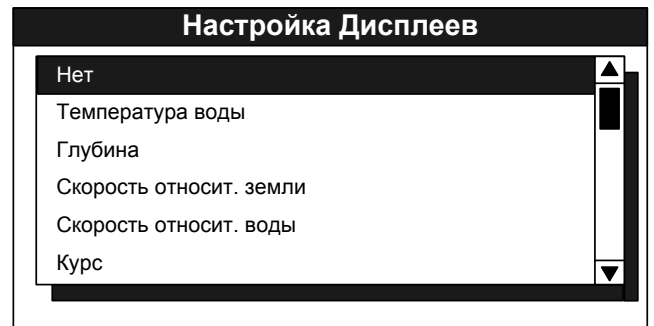
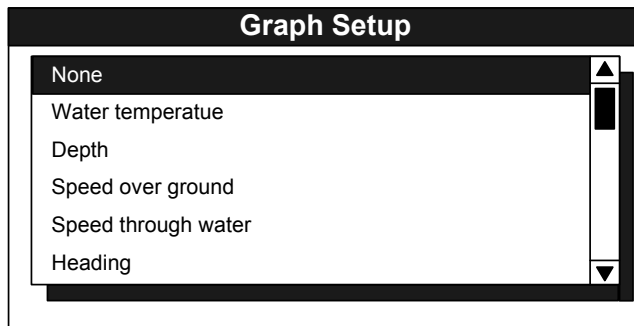
B: Глубина

C: Скорость относит. земли





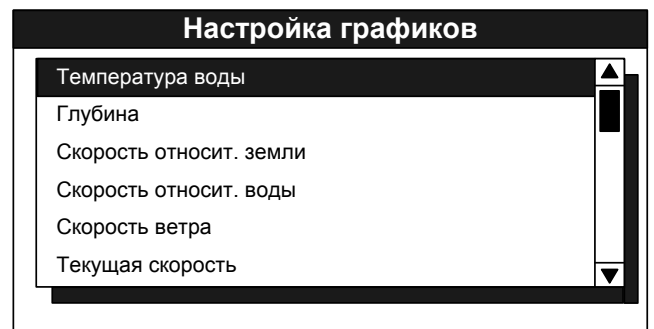
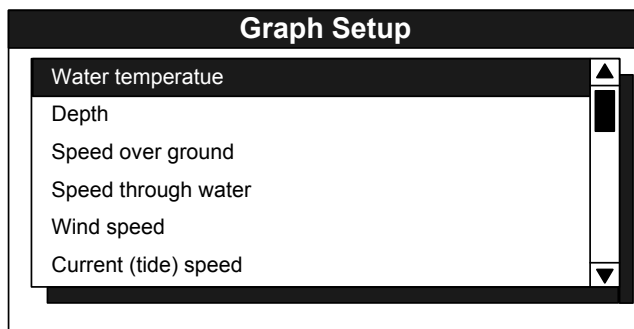
One of above windows will be displayed depending on configuration selected. Using arrow keys select required screen fragment (according to diagram below device screen) and press key “ENT”.



Using arrow keys select required type of data displayed and press key “ENT”. Then you will return to previous menu for selecting next screen fragment.

5.5.3. Setup of "graph" type display

Select “graph” display type according to p. 5.5.1.



Using arrow keys select data type required for graph building, then press key “ENT”. Further menu view will depend on data type selected.

Temperature

Graph Setup	
< Temperature >	
Start from:	+ 50 °F
Max. range:	10 °F
Period:	5 min

Настройка графиков	
<Температура воды>	
Начать с:	+ 50 °F
Мак. диапазон:	10 °F
Период:	5 мин

Depth

Graph Setup	
< Depth >	
Start from:	+ 0 ft
Max. range:	100 ft
Period:	5 min

Настройка графиков	
<Глубина>	
Начать с:	+ 0 Фут
Макс. значение:	100 Фут
Период:	5 мин

Speed over ground

Graph Setup	
< Speed over ground >	
Start from:	+ 0 kt
Max. range:	20 kt
Period:	5 min

Настройка графиков	
<Скорость относит. земли>	
Начать с:	+ 0 Уз
Макс. значение:	20 Уз
Период:	5 мин

Speed through water

Graph Setup	
< Speed through water >	
Start from:	+ 0 kt
Max. range:	20 kt
Period:	5 min

Настройка графиков	
<Скорость относит. воды>	
Начать с:	+ 0 Уз
Макс. значение:	20 Уз
Период:	5 мин

Wind speed

Graph Setup

< Wind speed >

Start from: **+ 0 kt**

Max. range: 20 kt

Period: 5 min

Настройка графиков

<Скорость ветра>

Начать с: **+ 0 Уз**

Макс. значение: 20 Уз

Период: 5 мин

Current speed

Graph Setup

< Current (tide) speed >

Start from: **+ 0 kt**

Max. range: 20 kt

Period: 5 min

Настройка графиков

<Текущая скорость>

Начать с: **+ 0 Уз**

Макс. значение: 20 Уз

Период: 5 мин

Atmospheric pressure

Graph Setup

< Pressure >

Start from: **+ 800 hPa**

Max. range: 1200 hPa

Period: 5 min

Настройка графиков

<Давление>

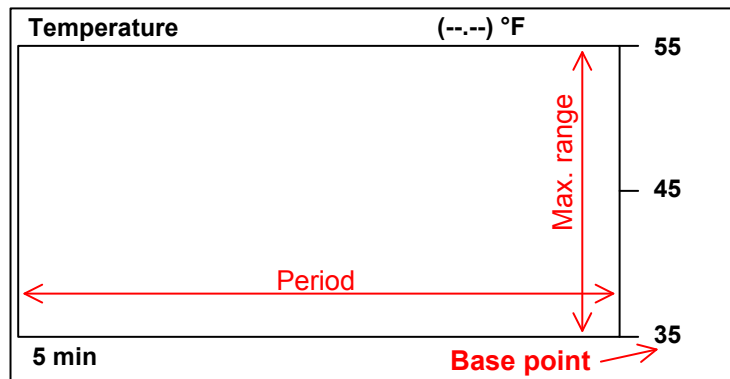
Начать с: **+ 800 гПа**

Макс. значение: 1200 гПа

Период: 5 мин

▶ Select required parameter using keys ▼ and ▲, change their values using keys ◀ and ▶.

Set up parameters determine graph characteristics as follows:



Permissible values for various data types:

Data	Values for basic point	Values for maximum
------	------------------------	--------------------

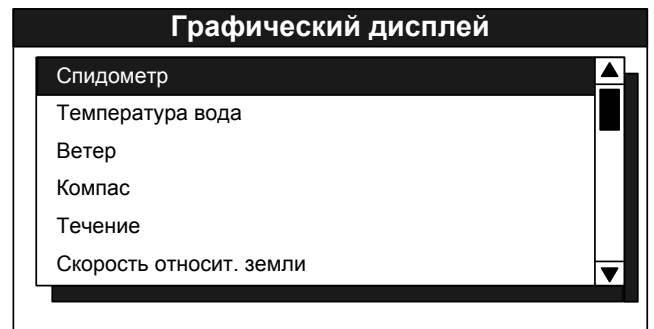
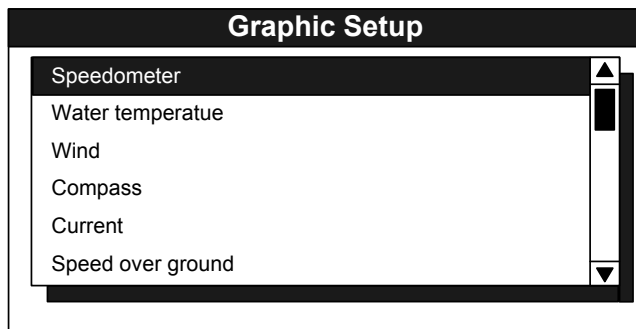
	(Start from)	range (Max. range)
Temperature	-99...+999	1-900
Depth	0-9999	1-9999
Speed over ground	0-998	0-30
Speed through water	0-998	0-30
Wind speed	0-998	0-30
Current speed	0-998	0-30
Atmospheric pressure	800-1199	801-1200

Permissible values of graph period: 5 min., 30 min., 1 hour, 3 hours, 6 hours, 12 hours, 24 hours, 48 hours, 72 hours, 120 hours.

To exit graph settings menu press key “MENU”.

5.5.4. Setup of graphical display

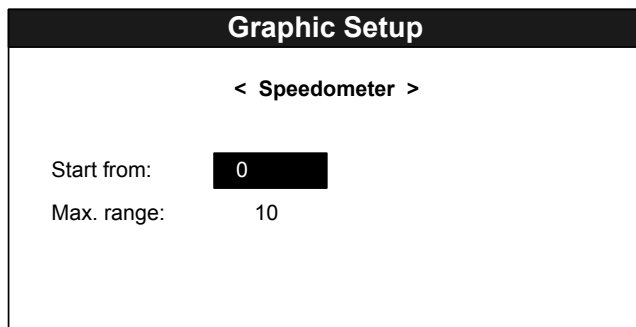
Select “graphical” display type according to p. 5.5.1.



Using arrow keys select required type of graphical display. Press key “ENT”.

Part of graphical displays does not need additional setup, and once they are selected, device will change over to previous menu. Following screens need setup:

Speedometer



Water temperature

Graphic Setup

< Water temperature >

Start from:

Max. range:

Графический дисплей

<Температура воды>

Начать с:

Макс. значение:

Rate of turn

Graphic Setup

< Rate of turn >

Max. range:

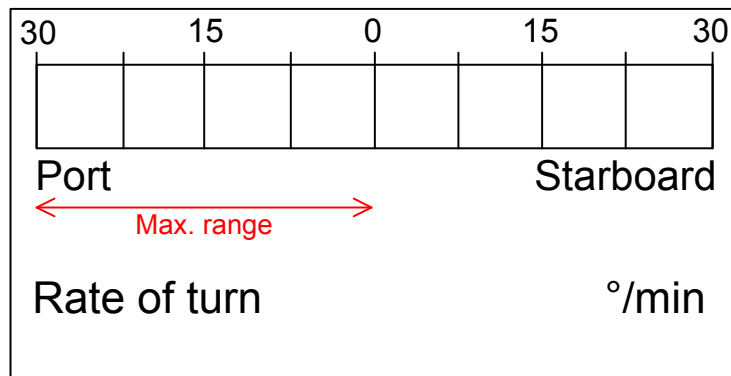
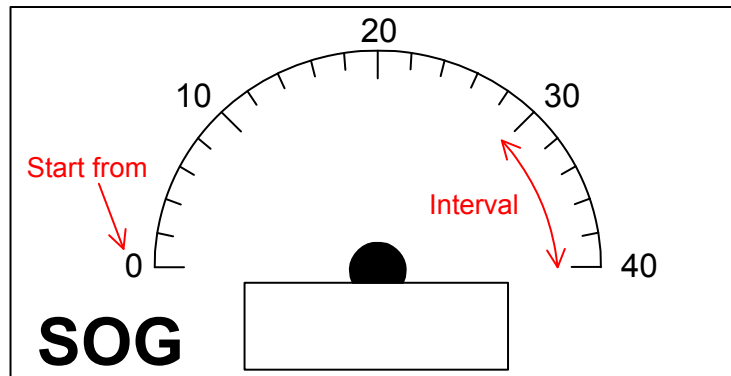
Графический дисплей

<Скорость поворота>

Макс. значение:

► Select required parameter using keys ▼ and ▲, change their values using keys ◀ and ▶.

Value of set up parameters:



5.6 Display of received data

NMEA sentences received by device can be output on screen after pressing key “*” in main operation mode.

COM1 324	
COM2 324	
COM3 0	\$TEHDT,0.00,T*03 \$TEVTG,0.00,T,0.00,M,0.00,N,0.00,...
COM4 324	

Each screen segment displays data received by device through respective port. Supported sentences that do not have much space on screen will automatically be shortened and conventional designation “...” will be added at the end.

Time (in seconds) since last information reception will be displayed under name of each port.

5.7 In-built alarms

DR-209 has in-built alarms for 10 conditions set up by user. Alarm actuation rules can be set up for following data types: speed, water temperature, tracking of arrival/withdrawal from set point, deviation from heading, trip distance, timer and time.

Device allows both visual and light alarms for each set rule.

5.7.1. Selection of acoustic alarm type

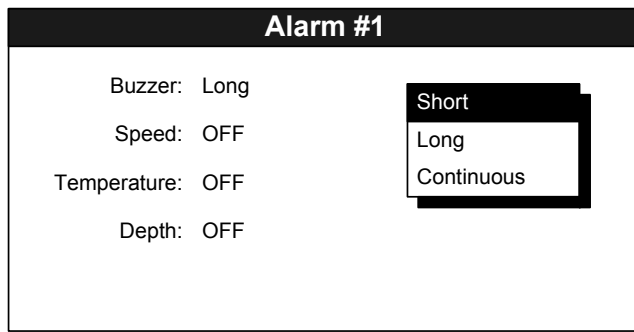
To set up acoustic alarm type proceed as follows:

- Press key “MENU” in main screen mode.
- Select menu item “Alarm#1” and press key “ENT”.

Alarm #1	
Buzzer:	Long
Speed:	OFF
Temperature:	OFF
Depth:	OFF

Тревога #1	
Сигнал	Длинный
Скорость	ВЫКЛ
Температура	ВЫКЛ
Глубина	ВЫКЛ

- Using arrow keys select item “Buzzer” and press key “ENT”.



– Using keys ▼ and ▲ select required acoustic alarm type and press key “ENT”. To exit to main menu from alarm setup menu press key “MENU”.

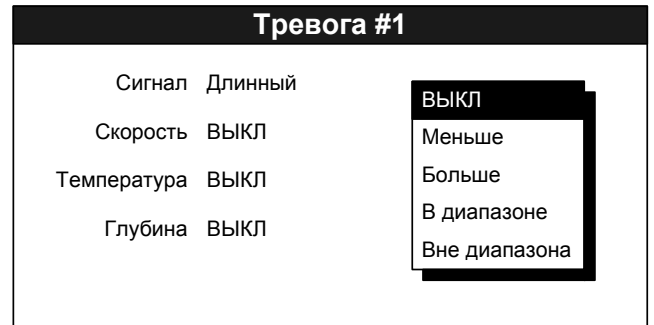
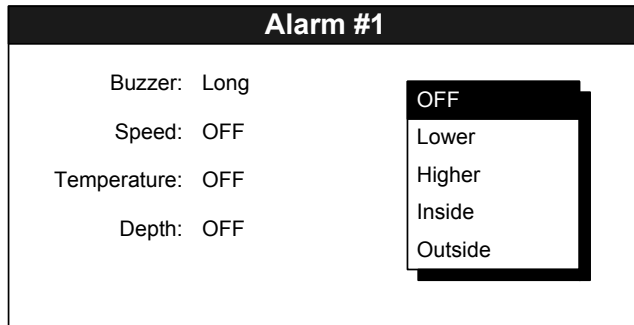
Available acoustic alarm types:

Short	Short sound signals
Long	Long sound signals
Continuous	Continuous sound signal

5.7.2. Alarm with respect to depth, temperature and speed values

To set up acoustic alarm type proceed as follows:

- Press key “MENU” in main screen mode.
- Select menu item “Alarm#1” and press key “ENT”.
- Using keys ▼ and ▲ select required parameter (speed, temperature, depth) and press key “ENT”.



– Select required rule type in menu appeared and press key “ENT”.

Brief description of rules:

OFF	Rule not set. Alarm for parameter is not used.
Lower	Alarm is on; if current parameter value is lower than set value.
Higher	Alarm is on, if current parameter value is higher than set value.
Inside	Alarm is on, if current parameter value is within set range.
Outside	Alarm is on, if current parameter value is out of set range.

– For selected rule types “Lower” and “Higher” parameter value setup field appears to the right of type designation. Select this value using keys ◀ and ▶, then press key “ENT”.

Alarm #1	
Buzzer:	Long
Speed:	Lower 10.00 ◀▶
Temperature:	OFF
Depth:	OFF

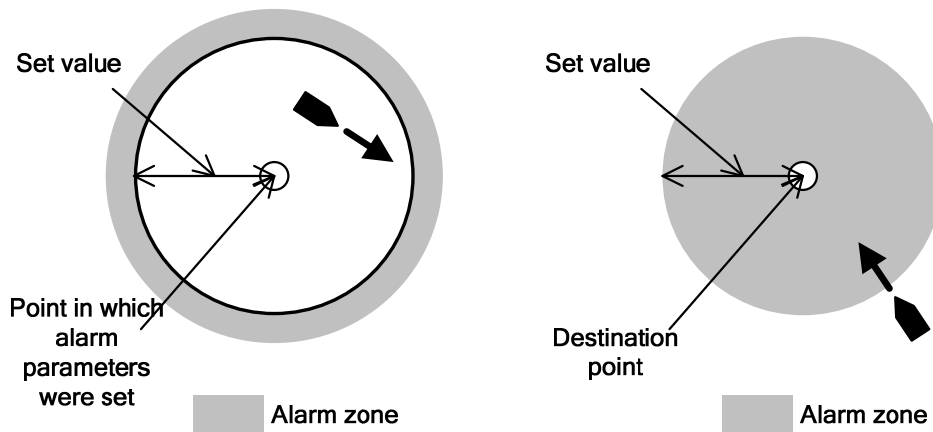
Тревога #1	
Сигнал	Длинный
Скорость	Меньше 10.00 ◀▶
Температура	ВЫКЛ
Глубина	ВЫКЛ

- Use keys ◀ and ▶ for “coarse” setup of value (at high variation rate) and keys ▼ and ▲ for “fine” setup.
- Press key “ENT” to confirm entered changes or key “MENU” for cancellation.
- For selected rule types “Inside” and “Outside” 2 setup fields for lower and upper range limits appear to the right of type designation. Values variation is analogue to value variation for rules types “Lower” and “Higher”.

5.7.3. Alarm of arrival at destination point/withdrawal from set point

Alarm of arrival at destination point actuates when distance between ship and destination point is less than value set by user. Alarm actuation zone is determined by a circle radius of which is equal to value set by user, and centre is in destination point.

Alarm of withdrawal from set point actuates when distance between point, in which set alarm was, and ship current position exceeds value set by user. Alarm actuation zone is beyond circle radius of which is equal to value set by user, and centre is in alarm setup point.



To set up alarm of arrival/withdrawal proceed as follows:

- Press key “MENU” in main screen mode.
- Select main menu item “Alarm#2” and press key “ENT”.

Alarm #2	
Arrival/anchor:	OFF
XTE:	OFF
Trip:	OFF
Odometer:	OFF
Time:	OFF
Countdown:	OFF

Тревога #2	
Прибытие/отдаление:	ВЫКЛ
Отклонение от курса:	ВЫКЛ
Расстояние:	ВЫКЛ
Одометр:	ВЫКЛ
Время:	ВЫКЛ
Обратный отсчёт:	ВЫКЛ

– Using keys ▼ and ▲ select item “Arrival/anchor” and press key “ENT”.

Alarm #2	
Arrival/anchor:	OFF
XTE:	OFF
Trip:	OFF
Odometer:	OFF
Time:	OFF
Countdown:	OFF

OFF
 Arrival
 Anchor

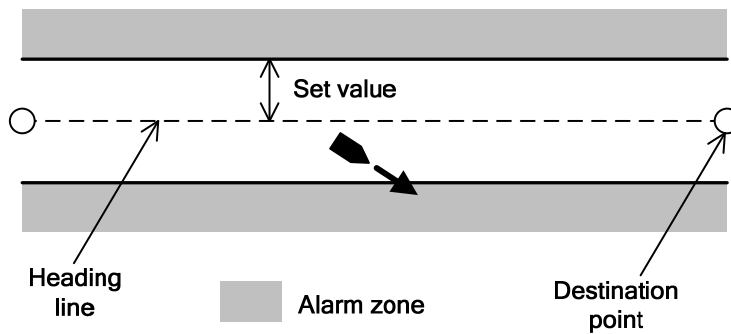
Тревога #2	
Прибытие/отдаление:	ВЫКЛ
Отклонение от курса:	ВЫКЛ
Расстояние:	ВЫКЛ
Одометр:	ВЫКЛ
Время:	ВЫКЛ
Обратный отсчёт:	ВЫКЛ

ВЫКЛ
 Прибытие
 Отдаление

- Using keys ▼ and ▲ select required alarm type (Off – switched off, Arrival – arrival at destination point, Anchor – withdrawal from set point) and press key “ENT”.
- Set up distance value in field appeared to the right similarly to setup of value in para 0.

5.7.4. Alarm of heading deviation

Alarm actuates when ship deviates from heading line for distance exceeding set distance.



To set alarm proceed as follows:

- In main screen mode press key “MENU” to enter main menu.
- Select menu item “Alarm#2” and press key “ENT”.
- Using keys ▼ and ▲ select menu item “XTE”. Press key “ENT”.
- Select item “ON” in dropdown list and press key “ENT”.
- Set up alarm actuation value in field appeared to the right similarly to setup of value in para 5.7.3.

5.7.5. Alarm of covered distance

Device has alarm of trip distance of two types: alarm as per data on trip distance received from NMEA-signal sources, and alarm of trip distance calculated directly by device DR-209. Alarm of first type is called “Trip alarm”, alarm of second type – “Odometer alarm”.

To set alarm of trip distance proceed as follows:

- In main screen mode press key “MENU” to enter main menu.
- Select menu item “Alarm#2” and press key “ENT”.
- Using keys ▼ and ▲ select menu item “Trip” or “Odometer” depending on required alarm type (see above). Press key “ENT”.
- Select item “ON” in dropdown list and press key “ENT”.
- Set up alarm actuation value in field appeared to the right similarly to setup of value in para 5.7.3.

5.7.6. Time alarm

Time alarm actuates at moment when time value received from NMEA-signal source coincides with time set by user.

To set alarm of this type proceed as follows:

- In main screen mode press key “MENU” to enter main menu.
- Select menu item “Alarm#2” and press key “ENT”.
- Using keys ▼ and ▲ select menu item “Time”. Press key “ENT”.
- Select item “ON” in dropdown list and press key “ENT”.
- Point cursor at field appeared to the right and press key “ENT”.
- To change hours use keys ◀ and ▶, to change minutes use keys ▼ and ▲. After setting alarm time value press key “ENT”.

5.7.7. Timer alarm

Timer alarm actuates on completion of time interval set by user (i.e. it is “countdown” alarm).

To set timer alarm proceed as follows:

- In main screen mode press key “MENU” to enter main menu.
- Select menu item “Alarm#2” and press key “ENT”.
- Using keys ▼ and ▲ select menu item “Countdown”. Press key “ENT”.
- Select item “ON” in dropdown list and press key “ENT”.
- Point cursor at field appeared to the right and press key “ENT”.
- Select one of three possible values (5 min, 10 min, 15 min) and press key “ENT”.

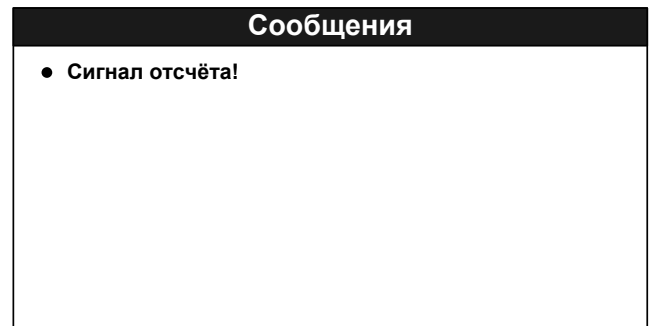
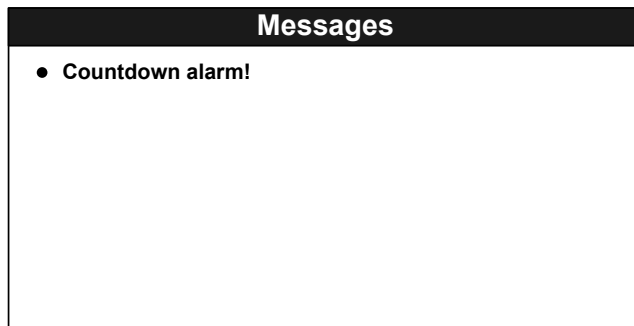
5.8 Alarm messages

On alarm actuation sound signal selected by user will be switched on and alarm notification will appear in upper part of screen. For alarm acknowledgement (switching-off of sound message) press any key of device, however visual notification will anyway remain on screen unless alarm actuation cause is eliminated.

User can overview current alarm messages in appropriate item of main menu.

To overview messages proceed as follows:

- In main screen mode press key “MENU” to enter main menu.
- Select menu item “Messages” and press key “ENT”.



- To exit alarm message overview window press key “MENU”.

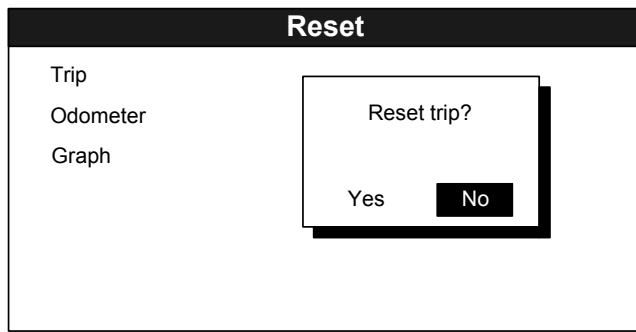
5.9 Reset of device data

User can reset values of covered distance, odometer, and erase information of graphs. To reset above data proceed as follows:

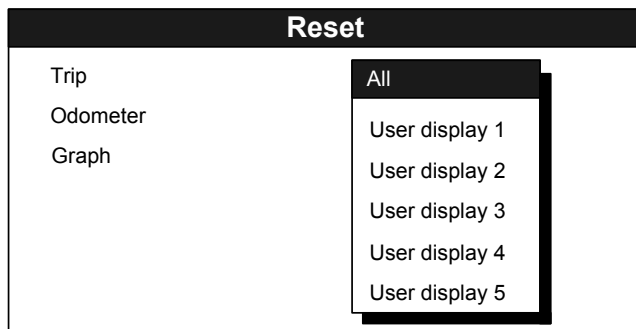
- In main screen mode press key “MENU” to enter main menu.
- Select menu item “Reset” and press key “ENT”.



- Using keys ▼ and ▲ select required menu item (Trip – covered distance, Odometer, Graph – graph data). Press key “ENT”.



- Confirm reset of required data by selecting item “Yes” by means of keys ◀ and ▶ and by pressing key “ENT”.
- In case of selection of menu item “Graph” additional window will open:

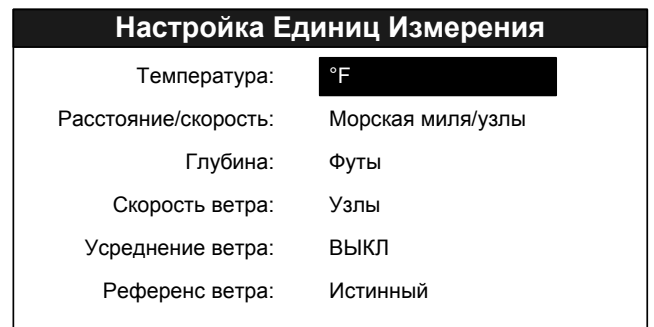
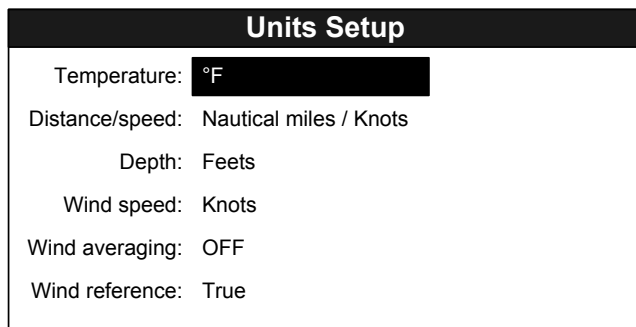


- Using keys ▼ and ▲ select required display with graphs (or “All” to reset data of all displays) and press key “ENT”.

5.10 Selection of measure units

Device DR-209 can display received data in different measure units. To set up device measure units that are convenient to user proceed as follows:

- In main screen mode press key “MENU” to enter main menu.
- Select menu item “Units” and press key “ENT”.



- Select data type for which measure units must be changed. Press key “ENT”.
- One of below pulldowns will appear depending on data type selected:

Data type	Menu English version	Menu Russian version
«Temperature» («Температура»)		

«Distance/speed» («Расстояние/скорость»)	Nautical miles / Knots Kilometers / Km/h	Морская миля/Узлы Километры / Км/ч
«Depth» («Глубина»)	Feets Fathoms Meters	Футы Морская сажень Метры
«Wind speed» («Скорость ветра»)	Knots Kilometers per hour Meters per second	Узлы Километры в час Метры в секунду
«Wind averaging» («Усреднение ветра»)	OFF 1 min 5 min 10 min	ВЫКЛ 1 мин 5 мин 10 мин
«Wind reference» («Референс ветра»)	True Apparent	Истинный Видимый

- Select required measure units and press key “ENT”.

5.11 Data correction (offset)

Device DR-209 is provided with correction of data received from NMEA signal sources. By default correcting variables are zeroed, and device displays unchanged data.

Admissible correction of following data types: time, speed through water, speed over ground, temperature, depth, wind direction, wind speed.

To correct received data proceed as follows:

- In main screen mode press key “MENU” to enter main menu.
- Select menu item “Offsets” and press key “ENT”.

Offsets	
Time difference:	+00:00
Speed over ground:	+0.0
Speed through water:	+0.0
Temperature:	+0.00
Depth:	+0.0
Wind direction:	+0.0
Wind speed:	+0.0

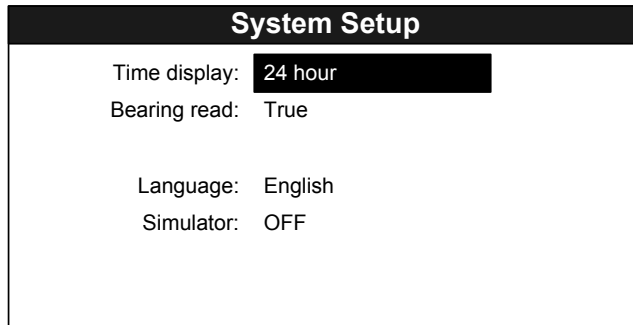
Смещение	
Разница во времени:	+00:00
Скорость относительно земли:	+0.0
Скорость относительно воды:	+0.0
Температура:	+0.00
Глубина:	+0.0
Направление ветра:	+0.0
Скорость ветра:	+0.0

- Select required type of data to be corrected (offset). Press key “ENT”. Variation of values will be realised similarly to value variation in para 5.7.3.

5.12 Change of time output format

DR-209 can display information both in 24-hour, and 12-hour formats. User can select format convenient to him as follows:

- In main screen mode press key “MENU” to enter main menu.
- Select menu item “System Setup” and press key “ENT”.



- Select menu point “Time display” and press key “ENT”.
- Select required time format (12 hour or 24 hour) in pulldown. Press key “ENT”.
- To return to main menu press key “MENU”.

5.13 The choice of language output

DR-209 can display information in both English and Russian. The user can choose the most convenient for himself the language by following these steps:

- Go to the menu «System Setup» («Настройки системы») pursuant to paragraph 5.12.
- Select «Language» («Язык») and press «ENTER».
- In the drop-down list, select the language display information (English (Английский) or Russian (Русский)) and press «ENTER».
- To return to the main menu, press the «MENU».

5.14 Simulator mode

There is a special operation mode – simulator – designated for convenient device setup. In this mode DR-209 ignores received data and displays navigation information generated by it.

To switch on simulator mode proceed as follows:

- Enter menu “System Setup” in accordance with para 5.12.
- Select menu item “simulator” and press key “ENT”.
- Select menu item “ON” in dropdown list and press key “ENT”.
- To return to main menu press key “MENU”.

Note! Do not forget to switch off simulator after device setting up! To switch off simulator perform above steps, but select item “OFF” in dropdown list.

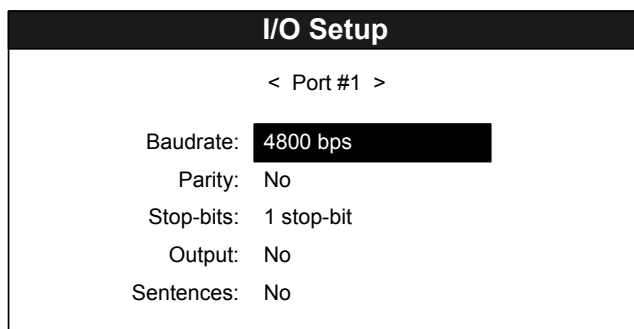
5.15 Setup of input/output ports

In “I/O Setup” menu user can set up parameters of ports of device DR-209, types of received NMEW 0183 supported sentences, and input/output data diagrams.

Attention! Device has limited input buffer capacity; therefore buffer may overflow when receiving big messages, which will result in data loss. To prevent this situation it is advised to connect each source of NMEA signal to individual device port.

To set up input/output ports proceed as follows:

- Press key “MENU” in main screen mode.
- Select menu item “I/O Setup” and press key “ENT”.



- Select required port using keys ◀ and ▶, and required parameter by means of keys ▼ and ▲. Press ENT.

– Select required value for parameters baud rate (data receive/transfer rate), parity, stop-bits (number of stop-bits) in dropdown list and press key “ENT”:

«Baudrate» («Скорость»)	4800 bps 9600 bps 19200 bps 38400 bps 57600 bps	4800 бит/с 9600 бит/с 19200 бит/с 38400 бит/с 57600 бит/с
«Parity» («Четность»)	No Even Odd	Нет Чет Нечет
«Stop-bits» («Стоп-бит»)	1 stop-bit 2 stop-bits	1 стоп-бит 2 стоп-бит

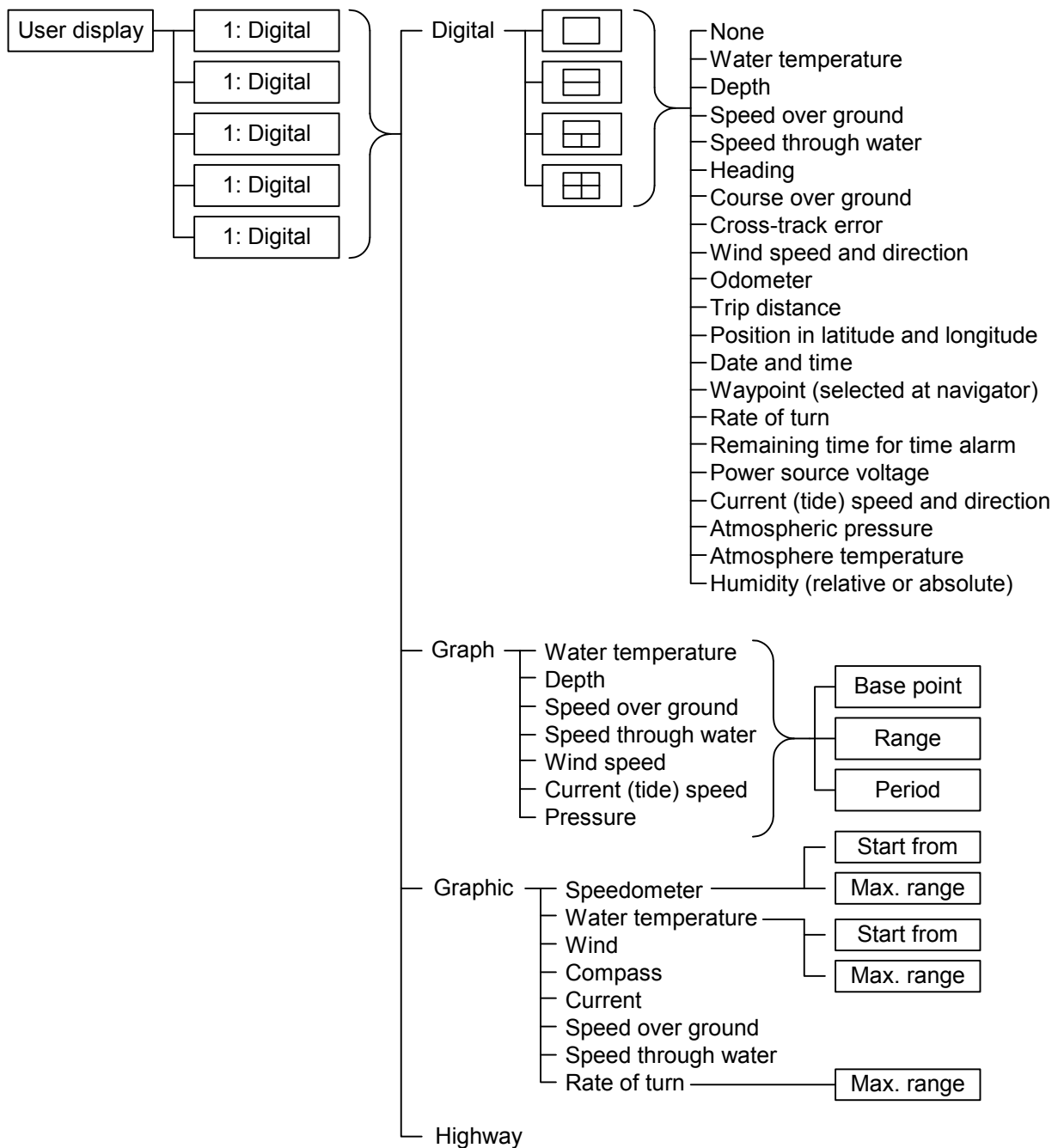
– Parameter “Output” sets up data acquisition from device ports to transfer them via current (selected) port. For example: if current port is #1, and parameter “Output” is set up in mode “2+3”, then data received from ports #2 and #3 will be delivered via port #1.

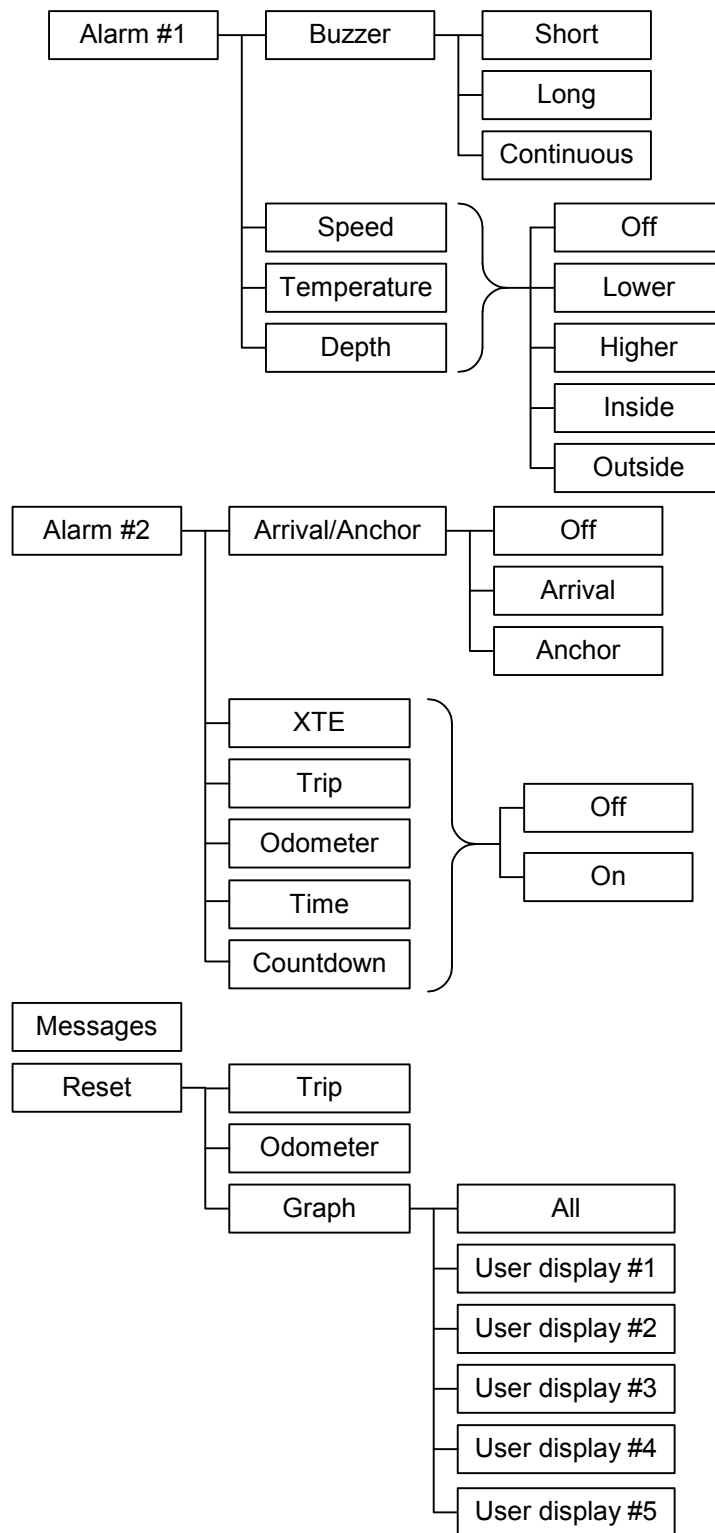
- To select port in opened dropdown list use keys ▼ and ▲, to switch on/off data acquisition from port press key “ENT”:

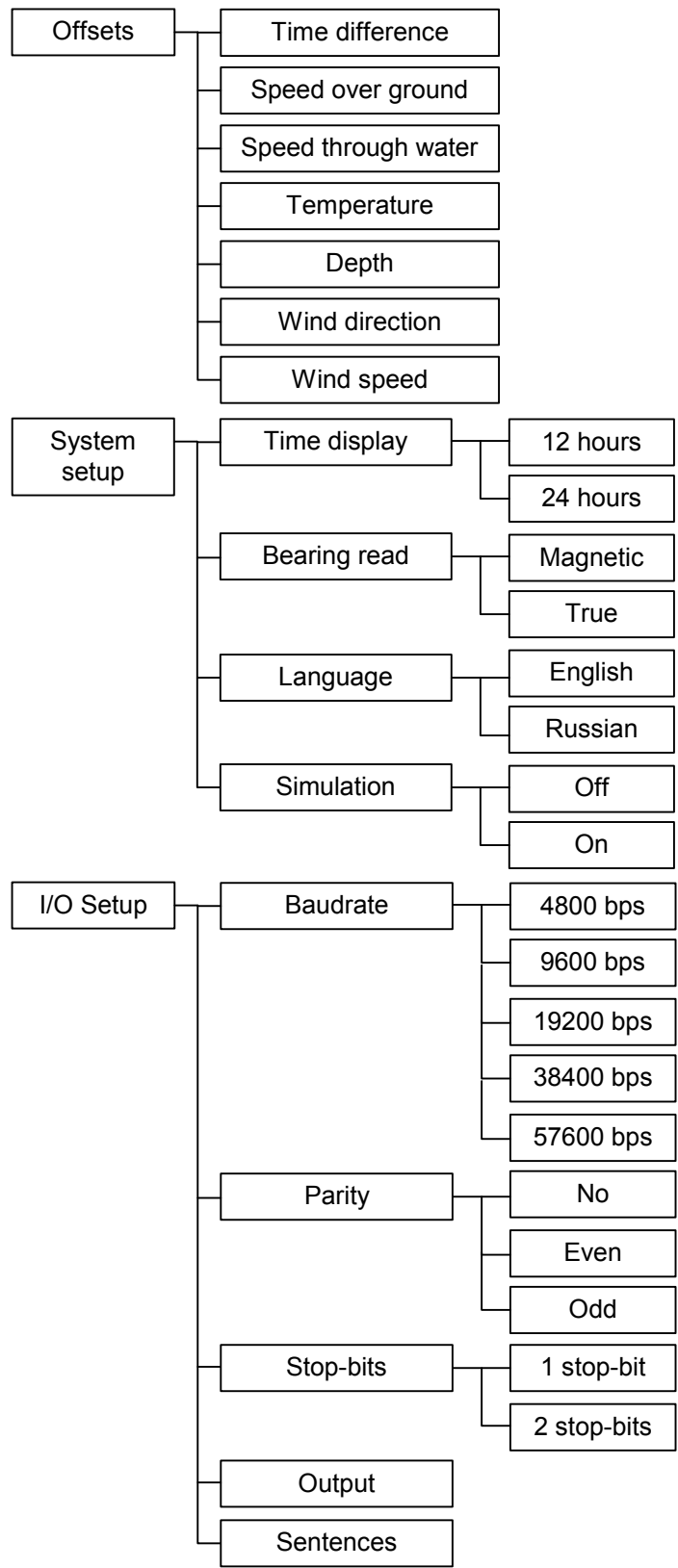
Port #1: On	Порт #1: Вкл
Port #2: Off	Порт #2: Выкл
Port #3: On	Порт #3: Вкл
Port #4: Off	Порт #4: Выкл

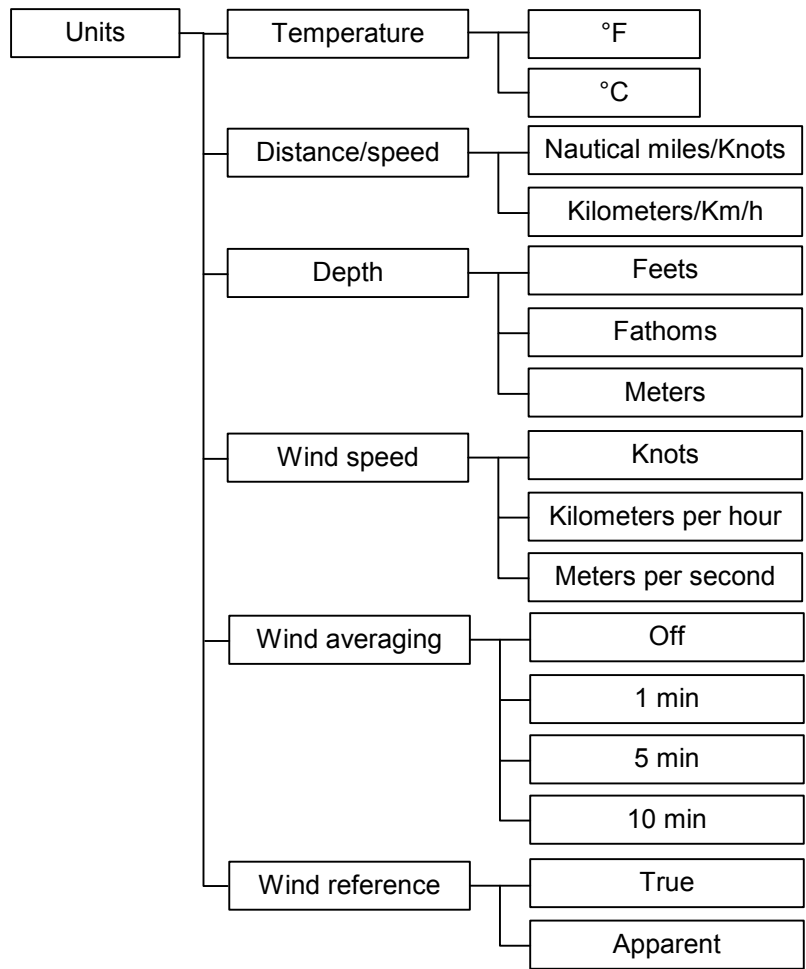
– To return from dropdown menu press key “MENU”.

6. User menu structure









7. Transportation and Storage

The device shall be stored in heated space at air temperature of +5 °C to +35 °C (maximum values of -55 °C to +70 °C), at relative humidity of air not exceeding 95 % at temperature of +25 °C and content of dust, oil, moisture and aggressive admixtures in the air not exceeding the norms envisaged by GOST 12.1.005-88 for the working zone of production areas.

The device shall be transported in transport container of the manufacturer in closed transport.

Means of transport:

- automobile and railway closed transport (covered wagons, universal containers)
- by air (in pressurized and heated bays of airplane)
- by sea (in dry service spaces).

The device shall be transported in accordance with the transport regulations in force for the particular transport.

During handling operations and transportations strictly observe the requirements of handling marks on boxes and do not allow bumps and impacts which can affect preservation and serviceability of the device.

Packed devices shall be reliably secured in vehicles.

After storage in stores or transportation at temperature below +10 °C the devices shall be unpacked only in heated spaces after keeping them unpacked in under normal climatic conditions for 12 hours.

8. Recycling

Do not recycle the packing of a new product, its parts with defects identified during its operation as well as the overage product as common household waste since they contain materials and raw materials suitable for their recovery.

Decommissioned and unused components should be delivered to a specialized waste collection center licensed by local authorities. You can also send the overage equipment to the manufacturer for its further recycling.

Proper recycling of the product components will prevent potential negative consequences for human health and the environment, as well as provide recovery of the product component materials while substantially saving on energy and resources.

The product does not endanger human life and health or the environment during and after its service life.

This product should be recycled following the requirements applicable to electronic equipment.



Products marked with a crossed-out recycle bin should be recycled apart from common household waste.

9. Warranty

The manufacturer guarantees the unit DR-209 complies with this manual provided that the operation, transportation and storage conditions are adhered to during the warranty period.

The unit's warranty period expires 24 months from the date of its shipping from the manufacturer's storehouse.

Within the warranty period, the owner is entitled for a free repair, or a replacement of a separate part, provided that the malfunction occurred through the manufacturer's fault.

Warranty repair is provided if the unit is submitted with the manufacturer's label and a legible serial number available on it, as well as this operating manual.

The manufacturer is not responsible and cannot guarantee the unit's operation:

1. After the warranty period is over;
2. In case of the failure to observe the unit's operation, transportation, storage and installation rules and conditions;
3. If the unit is in an unmarketable condition, or has a damaged body, and other causes beyond the manufacturer's control;
4. If self-made electrical devices were used.
5. If there was an attempt to repair the unit by a person who is not an authorized representative of the manufacturer.

If the owner loses this operating manual or the manufacturer's label with a serial number, the manufacturer shall not provide their copies, and the owner shall be divested of the right for a free repair during the warranty period.

Upon the warranty expiry, the manufacturer shall facilitate the repair of the unit at the owner's expense.

Note: in case of warranty repair, the unit's disassembling from the installation site and its delivery to the manufacturer's service center are done at the owner's expense.

Visit the manufacturer's website www.unicont.spb.ru (section "support/warranty") to find:

- forms to fill in claims,
- full warranty description;
- full description of the warranty service rendering procedure.

The manufacturer service center's address and contact details:

Unicont SPb, Ltd.

Bld. 26E Kibalchich Str., Saint Petersburg, 192174, Russia

tel.: + 7 (812) 622 23 10, +7 (812) 622 23 11

fax: +7 (812) 362 76 36

e-mail: service@unicont.spb.ru

10. DATE OF PACKING

Universal digital repeater	DR-209	№
name of article	designation	serial number

Packed Unicont SPb Ltd., Russia.
 Manufacturer

according to the requirements of the current technical documentation.

post	signature	clarification of signature
------	-----------	----------------------------

 year, month, day

11. ACCEPTANCE DETAILS

Universal digital repeater	DR-209	№
name of article	designation	serial number

was manufactured and accepted in accordance with the regulatory requirements of the state standards and applicable technical documentation, and is suitable for operation.

Quality control representative

Stamp here signature	clarification of signature
------------------------------	----------------------------

 year, month, day

12. DATE OF COMMISSIONING

Universal digital repeater	DR-209	№
name of article	designation	serial number

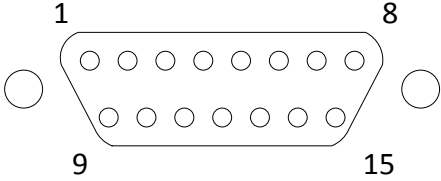
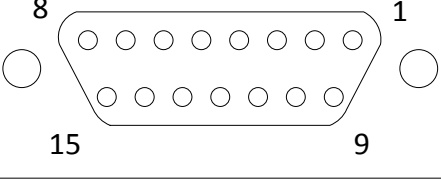
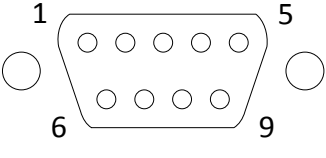
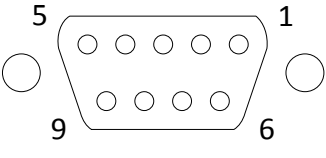
The unit has been put into operation.

Date of installation: _____

Place of installation: _____

Person in charge of installation: _____

Appendix No 1

Power connector «Power 10-36 VDC»																	
<p style="text-align: center;">Device: DB-15M</p>  <p style="text-align: center;">Cable: DB-15F</p> 	<p style="text-align: center;">Supply voltage 10-36 VDC</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 33%; text-align: center;">1 – 4, 9 - 12</td> <td style="width: 33%; text-align: center;">Plus (+)</td> <td style="width: 33%;"></td> </tr> <tr> <td style="text-align: center;">5 – 8, 13 - 15</td> <td style="text-align: center;">Minus (-)</td> <td></td> </tr> <tr> <td style="text-align: center;">Enclosure</td> <td style="text-align: center;">GND</td> <td></td> </tr> </table> <p style="text-align: center; margin-top: 20px;">Для подключения питания необходимо задействовать все контакты.</p>		1 – 4, 9 - 12	Plus (+)		5 – 8, 13 - 15	Minus (-)		Enclosure	GND							
1 – 4, 9 - 12	Plus (+)																
5 – 8, 13 - 15	Minus (-)																
Enclosure	GND																
Interface connection «Port 1» - «Port 2»																	
<p style="text-align: center;">Device: DB-9M</p>  <p style="text-align: center;">Cable: DB-9F</p> 	<p style="text-align: center;">Data interface unit RS-422</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%; text-align: center;">1</td> <td style="width: 30%; text-align: center;">TX-</td> <td style="width: 50%; text-align: center;">Red</td> </tr> <tr> <td style="text-align: center;">4, 9</td> <td style="text-align: center;">GND</td> <td style="text-align: center;">Grey</td> </tr> <tr> <td style="text-align: center;">6</td> <td style="text-align: center;">TX+</td> <td style="text-align: center;">Yellow</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">RX-</td> <td style="text-align: center;">Blue</td> </tr> <tr> <td style="text-align: center;">7</td> <td style="text-align: center;">RX+</td> <td style="text-align: center;">Brown</td> </tr> </table>		1	TX-	Red	4, 9	GND	Grey	6	TX+	Yellow	3	RX-	Blue	7	RX+	Brown
1	TX-	Red															
4, 9	GND	Grey															
6	TX+	Yellow															
3	RX-	Blue															
7	RX+	Brown															