User Manual

WIB2D

concerning Software-Version 1.2.x

NAVTEX-receiver on 518kHz in English language and on 490kHz in national language Barograph



This manual contains important information for correct using of this device. Please read the manual carefully before start up.



Bäckerstraße 18 21244 Buchholz i.d. Nordheide Tel.: +49 (0) 4181 / 97483 E-Mail: <u>info@moerer.de</u> Web: <u>www.wetterinfobox.com</u>

All rights are reserved. Technical ones are subject to change.

An liability for the correctness of the contents of this publication cannot be taken over.

In spite of careful processing and programming a defect and/or complete failure of the WIB2D can not be completely excluded. Due to atmospheric disturbances or to disturbances of other electrical and electronic devices, contents of messages can be falsified. The operators of the transmitting plants can change or stop the broadcasting service (temporarily or permanent).

Therefore no liability for availability and correctness of the indicated messages are taken over. In particular no liability for possible damages resulting from use of the WIB2D and information of this manual will be taken over.

In this manual trademark, trade names, customer names, etc. are used. Even if these are not particularly characterized, the appropriate protection regulations are effective.

Note

Software updates for this product are available in the Internet: <u>http://www.weatherinfobox.com/english/Downloads.htm</u>

Contents

Scope of delivery	3
Introduction	4
Operation	4
Menu Overview	5
NAVTEX Messages	6
Barograph	7
Station List	7
Display Settings	8
Barograph Settings	9
System Information	
Software	10
Software installation	10
Operating instructions	10
Environment	10
Hints to radio reception	11
Rechargeable batteries	11
Specifications	12
	12
Appendix NAVTEX Stations	13

Scope of delivery

The following parts belong to the scope of delivery of the WIB2D:

- 1 x WIB2D,
- 1 x USB cable,
- 1 x 12V recharge adapter,
- 1 x CD with WIB2 software,
- 3 x NiMH rechargeable batteries AAA, 800mAh (are placed inside the device),
- 1 x User Manual.

Introduction

The WIB2D is a small portable NAVTEX receiver. The device receives simultaneously NAVTEX-messages on medium wave frequencies 518 kHz (international, English) and on 490 kHz (national, national language).

The NAVTEX messages are displayed on 128 x 64 pixel LCD. The WIB2D equiped with an inserted precision air pressure sensor, is able to record the air pressure during a period of up to seven days. On the device display only the air pressure of the last two days can be seen.

An antenna installation is not necessary, since the WIB2D is equipped with an internal ferrit rod antenna. The device is equipped with rechargeable batteries (3 x NiMH, Typ AAA). The battery capacity lasts for approx. three days of operation.

The device can be connected to the PC via an USB interface. The data of the WIB2D will be displayed by a comfortable Windows software. The software is working with the operating systems Windows 2000, XP and Vista, available in German, English and French version.

Operation



The WIB2D is handled by five buttons. Press the power button (\bigcirc) to switch the device on or off. In order to switch off, the power button must be pressed during approx. 2.5 seconds.

Use the four cursor buttons ($\blacktriangle \lor \blacktriangleleft \triangleright$) to navigate within the menus.

After switch on the WIB2D displays the main menu (see figure below).

On the left beside the menu entries an arrow is located which can be moved by the buttons \blacktriangle and \blacktriangledown .

1012.4hPa	+1.5hPa/3h	24.7°C	

► NAUTEX 518KHZ (ENGLISH) NAUTEX 490KHZ (NATIONAL) BAROGRAPH SETTINGS With the button \blacktriangleright the menu entry beside the arrow is selected. With the button \blacktriangleleft the previous menu step can be reached until the main base.

Practice a while with the handling of the cursor buttons, until you are familar.

On top of the display the actual air pressure, the air pressure tendency and the temperature are displayed. The displayed values are updated every minute. The battery icon (on top of the right) displays the state of charge of the batteries. If the batteries are charged, the icon blinks in second cycle. Please note: The device heats up with charging batteries. The displayed temperature is thereby corrupted.

The menu language of the WIB2D can be changed (see section *Language*, Page 8).

Menu Overview

The menu of the WIB2D is constructed as follows:

NAVTEX 518KHZ (ENGLISH) ALL MESSAGES NAVIGATIONAL WARNINGS WEATHER WARNINGS ICE REPORTS SEARCH AND RESCURE INFO WEATHER FORECASTS PILOT SERVICE MESSAGES ELEC. NAVAID MESSAGES REMAINING MESSAGES

NAVTEX 490KHZ (NATIONAL) ALL MESSAGES NAVIGATIONAL WARNINGS WEATHER WARNINGS ICE REPORTS SEARCH AND RESCURE INFO WEATHER FORECASTS PILOT SERVICE MESSAGES ELEC. NAVAID MESSAGES REMAINING MESSAGES

BAROGRAPH

SETTINGS STATION LIST 518KHZ STATION LIST 490KHZ DISPLAY SETTINGS CONTRAST BACKLIGHT SCREENSAVER LANGUAGE BAROGRAPH SETTINGS BAROGRAPH POWER RESERVE BAROMETER ALTITUDE CALIBRATION SYSTEM INFORMATION

In the following sections the functions of the menus are explained.

NAVTEX Messages

The structure of a NAVTEX message is to be explained on the basis of following example:

ZCZC PA09 NETHERLANDS COASTGUARD NAVIGATIONAL WARNING NR. 9 172128 UTC AUG PLATFORM L10-G 53-29.4N 004-11.7E UNLIT NNNN

Each NAVTEX-message begins with the letters ZCZC, followed by the message identification (PA09). The first letter of the message identification serves the master station for identification. In this example it is NETHERLANDS COASTGUARD (P).

In the second letter the kind of message is coded, here navigational warning (navigation warnings). The last two numbers of the message identification (09) are a serial numbers. The number 00 has a privileged position. It is reserved for distress messages.

NAVTEX messages have a time stamp. It is shown at the end of the third line (172128 UTC August) and means: 17. August, 21:28 UTC. The time stamp refers to the date, the message was produced and not to the time of the radiant transmission. Afterwards the message content follows. The message ends with NNNN.

To display NAVTEX messages please follow the menus entries NAVTEX 518KHZ (ENGLISH) (internationale messages) or NAVTEX 490KHZ (NATIONAL) (national messages) in the main menu.



An overview of the different message kinds is shown. The number behind the message kind indicates the number of messages of the corresponding type stored in the WIB2D. Old messages are deleted automatically after two days uptime.

The number on top of the right in the display (518 or 490) shows whether international (518 kHz) or national (490 kHz) of NAVTEX messages are indicated.

Code	Menu	Comment
A - Z	ALL MESSAGES	
A, L	NAVIGATIONAL WARNINGS	
В	WEATHER WARNINGS	(Meteorological warnings)
С	ICE REPORTS	
D	SEARCH AND RESCURE INFO	
E	WEATHER FORECASTS	
F	PILOT SERVICE MESSAGES	
G - K	ELEC. NAVAID MESSAGES	Information about DECCA, LORAN, GPS

The following table gives an overview about the message kinds:

Code	Menu	Comment
M - Z	REMAINING MESSAGES	

By selecting a message kind from the menu (figure on the page 6), a list with all messages of corresponding type appears.

1014.2h	Pa -1.2hPa/3h	24.2°C	-518
▶ SE07	READ		
SA92	NEW		Г
PA40	NEW		
PA14	NEW		
PA65	ROLLBACK		
PA33	NEW		
MA11	NEW		

The last received message is on top of the list.

The message identifications are marked with either **NEW**, **ROLLBACK** or **READ** accordingly new, repeated or read messages.

ZCZC PA14	
NETHERLANDS COASTGUARD	
NAVIGATIONAL WARNING NR. 1	4
060910 UTC MAY	
TSS WEST FRIESLAND	
SEISMIC SURVEY BY MV GEO	
BALTIC V70M7 IN AREA	
A 53-19.5 N 003-27.5 E B	
53-47.0 N 004-09.0 E	

By selecting a message from the message list, the contents of the message appears on the display. With the cursor buttons \blacktriangle and \blacktriangledown messages can be scrolled up and down.

Characters, which were not received correctly, will be shown by the WIB2D as an underline (_).

Barograph



Please select the menu entry **BAROGRAPH** in the main menu to display the barograph data.

The air pressure of the last 48 hours will be displayed. The actual air pressure is located on the right of the diagram.

Station List

To view the station list, please select in the main menu the menu entries SETTINGS→STATION LIST 518KHZ for international and SETTINGS→STATION LIST 490KHZ for national NAVTEX messages.

1026.0H	Pa	<u>-hPa/3h</u>	20.1	<u>°C •518</u> ·	
►A✓	GV	M-/	57	Yv -	
B√	H∠	NV	ΙV	ZV	
C~	$I \checkmark$	0~	U~		
D√	JV	P√	V~		
E	K∠	QV	μ.		
F√	LV	R✓	XV		
TOGGLE STATION: 🕨					

The station list is used to hide undesirable NAVTEX stations.

To hide a station, please select the corresponding station key with the buttons \blacktriangle and \blacktriangledown . Then the station can be deactivated and activated with the button \triangleright .

Hidden stations will still be received, and appear again in the message list if they are reactivated. You find a list of the NAVTEX stations in Europe on page 13 (*Appendix NAVTEX Stations*).

Please note: Hiding of NAVTEX stations is not quite harmless. Thus, e.g., important messages are not displayed if you use the device in another sea area.

Display Settings

1019.4hPa +0.4hPa/3h 21.0°C 🖷

►CONTRAST

BACKLIGHT SCREENSAVER LANGUAGE

Contrast



To reach the *Display* menu please choose the menu entries $\texttt{SETTINGS} \rightarrow \texttt{DISPLAY}$ SETTINGS in the main menu.

You can adjust here the contrast, the backlighting, the screensaver and the language.

By selecting the menu entry **CONTRAST** the adjustment of the display contrast is possible with the buttons \blacktriangle and \blacktriangledown .

With the button \blacktriangleleft you will return to the menu *Display Settings.*

Backlight



By selecting the menu entry **BACKLIGHT** the adjustment of the afterglow time of the display backlighting is possible with the buttons ▲ and ▼. The afterglow time determines, how long the backlighting remains enabled after the last keystroke. The adjustment range is between 0 and 60 seconds.

Screensaver



By selecting the menu entry **SCREENSAVER** the adjustment of the screensaver latency or switch off the screensaver is possible with the buttons \blacktriangle and \blacktriangledown .

The adjustment range is between 2 and 10 minutes.

The screensaver latency determines, how long it lasts, until the screen saver becomes active after the last keystroke. If the screensaver is active, the display is switched off. This raises the life time of the display and reduces the current consumption of the device.

Language

1019.	ShPa	+0.7hPa/3h	20.9°C (
COI BAI SCI	MOD	IFY LANGUA ENGLISH	<u>GE: ▲▼</u>	
┃┡ ╘ Ħ∏				

By selecting the menu entry **LANGUAGE** the adjustment of the menu language of the WIB2D is possible with the buttons \blacktriangle and \blacktriangledown .

At present the WIB2D supports the languages German, English, Spanish and France.

The following list contains the path to the *language settings* in all supported languages:

 $\texttt{EINSTELLUNGEN} \rightarrow \texttt{DISPLAY-EINSTELLUNGEN} \rightarrow \texttt{SPRACHE} \\ \texttt{SETTINGS} \rightarrow \texttt{DISPLAY} \quad \texttt{SETTINGS} \rightarrow \texttt{LANGUAGE} \\$

Barograph Settings

BAROGRAPH POWER RESERVE BAROMETER ALTITUDE CALIBRATION

1019.4hPa +0.6hPa/3h 20.7°C |

To reach the menu *Barograph Settings* please choose the menu entries **SETTINGS**→**BAROGRAPH SETTINGS** in the main menu.

You can adjust here the barograph power reserve, the barometer altitude and the calibration of the pressure sensor.

Barograph Power Reserve

By selecting the menu entry

BAROGRAPH POWER RESERVE the adjustment of the barograph power reserve or switch it off is possible with the buttons \blacktriangle and \blacktriangledown .

With active power reserve the device is not completely switched off by the power button. The Barograph measures with decreased current consumption while the reception part of the WIB2D is switched off.

If the power reserve is enabled and the battery is weak, the WIB2D does not switch off completely. The device keeps on recording the air pressure, until the battery is completely discharged.

With deactivated barograph power reserve or with completely discharged batteries the Barograph curve gets lost.

Barometer Altitude



By selecting the menu entry **BAROMETER ALTITUDE** the adjustment of the baromter altitude (height of the device above sea level) in 5 meter steps is possible with the buttons \blacktriangle and \blacktriangledown . With correctly justified barometer height the WIB2D

displays the air pressure referred to sea level.

The adjustment range of the barometer altitude is between 0 and 1000 meter.

Calibration

The typical long term stability of the air pressure sensor of the WIB2D is -1 hPa/year. Every year the displayed air pressure sinks by approx. 1 hPa. You can correct this by calibrating the device. You need a reference air pressure referred on sea level. The baromter altitude must be adjusted correctly before calibration.



In order to calibrate the air pressure sensor please select the menu entry CALIBRATION.

Now adjust the air pressure display (on top of the left) with the buttons \blacktriangle and \checkmark until it is conform to the reference air pressure.

System Information

1014.26Pa -1.26Pa/36 24.3°C

FIRMWARE VERSION: 1.1.3 SERIAL NUMBER: WIB2D6080148 To display the system information select the menu entries **SETTINGS**→**SYSTEM INFORMATION** in the main menu.

The system information shows the firmware version and the serial number of the device.

Software

You can also use your PC to read the data of the WIB2D. The software appropriate is included in the scope of supply of the WIB2D. The software is working with the operating systems Windows 2000, XP and Vista.

Software installation

The software of the WIB2D is stored on the enclosed CD. In the folder *Deutsch* on the CD you will find the installation program for the German version. The folder *English* contains the installation program for the English version and the folder *Francais contains the* appropriate installation program for the French version.

In order to install the software please start the required installation program (Setup.exe) with a double click. Afterwards you have to follow the instructions shown on the screen.

After installation the WIB2D is ready for operation. Please attach the WIB2D via USB cable to the PC and start the WIB2D program.

Software updates for the WIB2D will be spread via internet. Nevertheless, please look form time to time under http://www.weatherinfobox.com, to make sure, you have the latest version.

Further instructions for using the software are available in the help of the application.

Operating instructions

Environment

Please use the equipment only in the interior in dry environment. Do not expose the equipment in use to temperatures higher than 50°C and lower than 0°C.

Hints to radio reception



The internal ferrite rod antenna of the WIB2D has a directionality. For good reception the equipment must be operating flat lying.

With small distance to the transmitter the directionality of the antenna will become hardly noticeable. The range of the bad receipt (see illustration) is hardly to be determined.

With increasing distance from the transmitter the directionality of the antenna will become more visible. In this case the WIB2D must be aligned to the transmitter for a good receipt.

Electromagnetic interferences can impair the receipt. This can occur due to e.g. computer, electronic navigation equipment, fluorescent lamps, inverters, battery chargers, generators, electric motors, high voltage transmission lines etc.

Therefore the equipment should be positioned as far away as possible from this equipment. The receipt can be impaired also by atmospheric disturbances (e.g. Thunderstorms).

The transmission method for NAVTEX-messages (Sitor) permits a reduced recognition and correction of transfer errors. Characters, which were not received correctly, will be shown by the WIB2D as an underlined (_). Nevertheless it is possible that also normally represented characters are incorrect. Steal and/or aluminium yachts are like Faraday's cages. An insufficient receipt is probable.

Rechargeable batteries

The WIB2D contains three NiMH rechargeable batteries, type AAA with a capacity of 800 mAh. Please use the attached 12V charging adaptor to charge the batteries of the WIB2D. The batteries can also be charged at the PC's USB interface.

Fully recharged batteries last in use for approx. three days. The battery management of the WIB2D always provides for optimally recharged batteries, so you don't have to pay attention about the recharging of the batteries. If you do not want to use the WIB2D for a longer period (longer than one year), it is meaningful to take out the batteries in full recharged condition out of the device and to replace them when needed. Pay particular attention to the correct polarity.

If you want to exchange the batteries, use only fast rechargeble NiMH batteries, type AAA with a capacity of min. 800 mAh.

Used up batteries must duly be disposed and do not belong into domestic waste.

Specifications

Receipt frequency	518 kHz and 490 kHz
LC Display	128x64 Pixel, monochrom
PC interface	USB Full Speed, socket mini-B 5-pin
Rechargeable battery	3 x NiMH batteries, Typ AAA, 800mAh
Resolution temperature	0,1°C
Measurement error of the temperature sensor	±1°C
Resolution of the air pressure sensor	0,1hPa
Absolute measurement error of the air pressure sensor	±1,5hPa
Typical long term stability of the air pressure sensor	-1hPa / year
Air pressure measuring interval	60s
Maximum recording span air pressure	7 days PC, 48 hours display
Power input in battery operation	Approx. 9 mA
Battery operation period	Approx. 3 days
Power input USB	Max. 450 mA when rechargeing, otherwise 15mA
Battery recharge time	2-3 hours
Operating temmperature	050°C
Supported operating systems	Windows 2000, XP, Vista
Memory (Flash)	each 256KB for NAVTEX 490/518kHz, 64kB for air pressure
Antenna	Inserted ferrite rod antenna
Dimensions (LxWxH)	Approx. 103mm x 62mm x 26,5mm
Weight	Approx. 150g without cable

For inside use only.

Warranty

If the WIBD exhibits a defect due to production or material defects within 24 months starting from the purchase date, it is either repaired by us or exchanged free of charge against appropriate equipment. To wearing parts (e.g. housing, batteries, etc.) the warranty applies for six months starting from purchase date.

The warranty does not apply, if the defect is caused on inappropriate treatment or neglection of the manuals. A receipt of the warranty voucher with purchase date is required.

Appendix NAVTEX Stations

A list of the NAVTEX stations for Navarea 1 (North Atlantic, North Sea and Baltic Sea), Navarea 2 (Atlantic East) and Navarea 3 (Mediterranean Sea) can be seen below. A liability for the correctness and completeness of the following entries cannot be taken over.

NAVAREA 1 – North Atlantic, North Sea and Baltic Sea

518 kHz (international)

Code	Station	Latitude	Longitude	Time (UTC)
В	Bodø (NOR)	67° 16' N	14° 29' E	00:10, 04:10, 08:10, 12:10, 16:10, 20:10
E	Niton (GBR)	50° 35' N	01° 18' W	00:40, 04:40, 08:40, 12:40, 16:40, 20:40
G	Cullercoates (GBR)	55° 02' N	01° 26' W	01:00, 05:00, 09:00, 13:00, 17:00, 21:00
Н	Bjuröklubb (SWE)	64° 28' N	21° 36' E	01:10, 05:10, 09:10, 13:10, 17:10, 21:10
I	Grimeton (SWE)	57° 06' N	12° 23' E	01:20, 05:20, 09:20, 13:20, 17:20, 21:20
J	Gislövshammar (SWE)	59° 29' N	14° 19' E	01:30, 05:30, 09:30, 13:30, 17:30, 21:30
K	Niton (GBR)	50° 35' N	01° 18' W	01:40, 05:40, 09:40, 13:40, 17:40, 21:40
L	Rogaland (NOR)	58° 39' N	05° 36' E	01:50, 05:50, 09:50, 13:50, 17:50, 21:50
М	Ostend (BEL)	51° 11' N	02° 48' E	02:00, 06:00, 10:00, 14:00, 18:00, 22:00
N	Ørlandet (NOR)	63° 40' N	09° 33' E	02:10, 06:10, 10:10, 14:10, 18:10, 22:10
0	Portpatrick (GBR)	54° 51' N	05° 07' W	02:20, 06:20, 10:20, 14:20, 18:20, 22:20
Р	Netherlands Coastguard (HOL)	52° 57' N	04° 47' E	02:30, 06:30, 10:30, 14:30, 18:30, 22:30
Q	Malin Head (IRL)	55° 22' N	07° 21' W	02:40, 06:40, 10:40, 14:40, 18:40, 22:40
R	Reykjavik (ISL)	64° 05' N	21° 51' W	02:50, 06:50, 10:50, 14:50, 18:50, 22:50
S	Pinneberg (GER)	53° 38' N	09° 48' E	03:00, 07:00, 11:00, 15:00, 19:00, 23:00
Т	Ostend (BEL)	51° 11' N	02° 48' E	03:10, 07:10, 11:10, 15:10, 19:10, 23:10
U	Tallin (EST)	59° 30' N	24° 30' E	03:20, 07:20, 11:20, 15:20, 19:20, 23:20
W	Valentia (IRL)	51° 56' N	10° 21' W	03:40, 07:40, 11:40, 15:40, 19:40, 23:40
X	Reykjavik (ISL)	64° 05' N	21° 51' W	03:50, 07:50, 11:50, 15:50, 19:50, 23:50

490 kHz (national)

Code	Station	Latitude	Longitude	Time (UTC)
С	Portpatrick (GBR)	54° 51' N	05° 07' W	08:20, 20:20
E	Corsen (FRA)	48° 28' N	05° 03' W	
L	Pinneberg (GER)	53° 38' N	09° 48' E	01:50, 05:50, 09:50, 13:50, 17:50, 21:50
Т	Niton (GBR)	50° 35' N	01° 18' W	03:10, 07:10, 11:10, 15:10, 19:10, 23:10
R	Reykjavík (ISL)	64° 05' N	21° 51' W	03:18, 07:18, 11:18, 15:18, 19:18, 23:18
U	Cullercoats (GBR)	55° 02' N	01° 26' W	07:20, 19:20

NAVAREA 2 - Atlantic East

518 kHz (international)

Code	Station	Latitude	Longitude	Time (UTC)
A	Corsen (FRA)	48° 28' N	05° 03' E	00:00, 04:00, 08:00, 12:00, 16:00, 20:00
D	Couna (ESP)	42° 54' N	09° 16' W	00:30, 04:30, 08:30, 12:30, 16:30, 20:30
F	Horta (AZR)	38° 32' N	28° 38' W	00:50, 04:50, 08:50, 12:50, 16:50, 20:50
G	Tarifa (ESP)	36° 01' N	05° 34' W	01:00, 05:00, 09:00, 13:00, 17:00, 21:00
I	Las Palmas (ESP)	28° 10' N	15° 25' W	01:20, 05:20, 09:20, 13:20, 17:20, 21:20
М	Casablanca (MRC)	33° 36' N	08° 38' W	02:00, 06:00, 10:00, 14:00, 18:00, 22:00
R	Monsanto (POR)	38° 44' N	09° 11' W	02:50, 06:50, 10:50, 14:50, 18:50, 22:50

490 kHz (national)

Code	Station	Latitude	Longitude	Time (UTC)
E	Corsen (FRA)	48° 28' N	05° 03' E	00:40, 04:40, 08:40, 12:40, 16:40, 20:40
G	Monsanto (POR)	38° 44' N	09° 11' W	01:00, 05:00, 09:00, 13:00, 17:00, 21:00
J	Horta (AZR)	38° 32' N	28° 38' W	01:30, 05:30, 09:30, 13:30, 17:30, 21:30

NAVAREA 3 – Mediterranean Sea

518 kHz (international)

Code	Station	Latitude	Longitude	Time (UTC)
А	Novorossiysk (RUS)	40° 42' N	37° 44' E	03:00, 07:00, 11:00, 15:00, 19:00, 23:00
В	Mariupol (UKR)	47° 04' N	37° 33' E	01:00, 05:00, 09:00, 13:00, 17:00, 21:00
С	Odessa (UKR)	46° 29' N	30° 44' E	02:30, 06:30, 10:30, 14:30, 18:30, 22:30
D	Istanbul (TUR)	41° 04' N	28° 57' E	00:30, 04:30, 08:30, 12:30, 16:30, 20:30
E	Samsun (TUR)	71° 17' N	36° 20' E	00:40, 04:40, 08:40, 12:40, 16:40, 20:40
F	Antalya (TUR)	36° 53' N	30° 42' E	00:50, 04:50, 08:50, 12:50, 16:50, 20:50
Н	Heraklion (GRC)	35° 20' N	25° 07' E	01:10, 05:10, 09:10, 13:10, 17:10, 21:10
I	Izmir (TUR)	38° 22' N	26° 25' E	01:20, 05:20, 09:20, 13:20, 17:20, 21:20
J	Varna (BUL)	43° 04' N	27° 46' E	01:30, 05:30, 09:30, 13:30, 17:30, 21:30
К	Corfu (GRC)	39° 37' N	19° 55' E	01:40, 05:40, 09:40, 13:40, 17:40, 21:40
L	Limnos (GRC)	39° 52' N	25° 04' E	01:50, 05:50, 09:50, 13:50, 17:50, 21:50
М	Cyprus (CYP)	35° 02' N	33° 17' E	02:00, 06:00, 10:00, 14:00, 18:00, 22:00
N	Alexandria (EGY)	31° 11' N	29° 52' E	02:10, 06:10, 10:10, 14:10, 18:10, 22:10
0	Malta (MLT)	35° 49' N	14° 32' E	02:20, 06:20, 10:20, 14:20, 18:20, 22:20
Р	Haifa (ISR)	32° 49' N	35° 00' E	00:20, 04:20, 08:20, 12:20, 16:20, 20:20
Q	Split (HRV)	43° 30' N	16° 29' E	02:40, 06:40, 10:40, 14:40, 18:40, 22:40

Code	Station	Latitude	Longitude	Time (UTC)
R	Rome (ITA)	41° 37 'N	12° 29' E	02:50, 06:50, 10:50, 14:50, 18:50, 22:50
Т	Cagliari (ITA)	39° 13' N	09° 14' E	03:10, 07:10, 11:10, 15:10, 19:10, 23:10
U	Trieste (ITA)	45° 40' N	13' 45' E	03:20, 07:20, 11:20, 15:20, 19:20, 23:20
V	Augusta (ITA)	37° 14' N	15° 14' E	03:30, 07:30, 11:30, 15:30, 19:30, 23:30
W	La Garde (FRA)	43° 06' N	05° 59' E	03:40, 07:40, 11:40, 15:40, 19:40, 23:40
W	Astrakhan (RUS)	46° 18' N	47° 58' E	03:40, 07:40, 11:40, 15:40, 19:40, 23:40
x	Cabo de la Nao (ESP)	38° 43' N	00° 09' E	03:50, 07:50, 11:50, 15:50, 19:50, 23:50

490 kHz (national)

Code	Station	Latitude	Longitude	Time (UTC)
A	Samsun (TUR)	41° 19' N	36° 20' E	00:00, 04:00, 08:00, 12:00, 16:00, 20:00
В	Istanbul (TUR)	41° 04' N	28° 57' E	00:10, 04:10, 08:10, 12:10, 16:10, 20:10
С	Izmir (TUR)	38° 22' N	26° 36' E	00:20, 04:20, 08:20, 12:20, 16:20, 20:20
D	Antalya (TUR)	36° 53' N	30° 42' E	00:30, 04:30, 08:30, 12:30, 16:30, 20:30
L	Constanta (ROU)	44° 06' N	28° 37' E	01:50, 05:50, 09:50, 13:50, 17:50, 21:50
S	La Garde (FRA)	43° 06' N	05° 59' E	03:00, 07:00, 11:00, 15:00, 19:00, 23:00



Devices with a crossed out dustbin label have to disposed in the European Union via a separate garbage collection at a suitable collective places for the recycling of electric and electronic devices.

MÖRER SCHIFFSELEKTRONIK does not take responsibility for injuries or damages, which develop during or in consequence of the installation of this product. Each article of equipment can fail by various different reasons. Never use this equipment as the only information source, if by the loss of the equipment a danger exists for lives, health or material possession. Remember: This equipment is only assistance for the weatherand message information, and is no replacement for good sailor shank. The use of the equipment is on your own risk. Use it carefully and test its operability occasionally on the basis of other data from time to time. **No part of this publication may be reproduced, copied, stored in a retrieval system or transmitted in any form, electronic or otherwise without prior written permission from Mörer Schiffselektronik.** Mörer Schiffselektronik hereby grants the right to load an individual copy of this manual on non removable disk or another electronic or printed copy contains the complete text of this copyright explanation and a further unauthorized commercial spreading of this manual strictly one forbids. All rights reserved. The information contained herein can be changed at any time without previous proclamation. Mörer Schiffselektronik reserves itself the right to change or improve the products without notification.