VEINLAND GmbH

One source → multiple solutions

Technical Documentation

VL- BNWAS

Bridge Navigational Watch Alarm System

Revision History Documentation

Revision	Date	Description	Author
2.0	26.3.2012	New format	DP
2.1	15.8.2012	Update to SW 1.2.7	DP
2.2	8.10.2012	New X1 figure	DP
2.3	12.2.2013	Correction 5.2.4, Function of SW 1.2.8	DP

Table of contents

List of figures

List of tables

1. Safety Instructions

Please read carefully the safety and instruction manual before using this device! Follow all instructions that are in the User Guide (Manual) to achieve the optimal performance. These safety and operating instructions should be kept good.

General Safety Instructions

Symbols Explanation


-refers to an information


-means warning and indicates a special situation


-indicates a hazardous situation which may cause to heavy and serious injury or death

---

1.1 Personnel


The installation, commissioning and dismantling of the device should be made only by trained and authorized personnel. During installation, it is necessary to pay attention to the safety instructions which is defined by the user.

1.2 Proper Use of the Device

The equipment is designed exclusively for the intended purpose specified in the manual. Any other use and / or misuse of the device can lead to unpredictable risks including death and causes the loss of all the claims against the manufacturer.

1.3 Limitation of Liability

The manufacturer would not take over any liability for damages resulting from the:


- the usage of the device by untrained and unauthorized personnel.
- use of device not for intended purpose
- opening and/or manipulation of the device
- not following the instruction manual and safety instructions

1.4 Electric Current


!!Danger of Life from Electric Current!!

Direct contact to the parts of the device will cause to electric shock. In case of damage to the insulation, the device must be switched off immediately and the damaged area to energize.
This is to ensure that the power supply is off when all other work is going on this device.

1.5 Electric Shock

If the objects (e.g. hairpins, needles or coins) or liquids fall into the device, which can cause to life threatening electrical short-circuits and leads to fire. The user must make sure that all above mentioned objects specially made of metal and/ or liquid things not fall in to the device intentionally or unintentionally.

1.6 Safety Operations

The operation and use of the device done by instructed and authorized personnel.

1.7 Power Supply

The equipment exclusively operated with the operating voltage indicated in the manual.

1.8 Cable Connection

When installing the cable connections, the user pay attention to the safety regulation. Always pay attention to the connection to the protective earth ground! Attention to be paid in connection with other devices is to be of the same earth potential (same heavy current/voltage side).

1.9 Ventilation

The equipment must be installed in such a way that good ventilation is ensured. On the device is not allows to put any articles such as newspapers.

1.10 Water and Moisture

The device is not allowed to operate in close vicinity of electrical conductive liquids and moist areas. On the device or nearby area of device is not allow to place any liquid things.
Attention: Danger of Electric Shocks!

1.11 Temperature und Heat

The operating temperature of the device is defined in the specifications. The device must not be placed near the things which produce heat such as to blowers, heaters, furnaces or other devices.

1.12 Opening the Device

Never open the housing. Touching the internal parts lead to risk of electric shock. It is not permitted to make any changes in the device.

1.13 Cleaning

Do not use any volatile solvents such as alcohol, diluents, gasoline etc. for the cleaning of the housing. Only use dry, clean cloth.

1.14 Unusual Smell

If any unusual smoke or smell occurs, immediately switch off of the device and remove it from the main power supply! Contact your dealer or the manufacturer.

1.15 Fuses

The replacement of the fuses in the device is only permitted by trained and authorized technical personnel.

The change of the fuses only allowed when the device is switched off and removes from main power supply. Otherwise there is a risk of electric shocks. The security functions and the safety values are mentioned in the manual. In the case of using the other fuse specified in the manual expire the guarantee for this equipment.

1.16 Repairing

The user is not allowed to perform the maintenance work as specified in the manual. All maintenance and repair work only allowed by trained and authorized technical personnel.

Special Safety Instruction

For the specific safety information about the device, please refer to manual!

2. System description

The VL-BNWAS is a system that is installed on bridges of ships. The system monitors the attention of the on duty officer (OOW), which requires the regular operation of the bridge in the area and connected to reset units to avoid the triggering of the alarm.
This watch alarm system is mandatory since 1st July 2011 on vessels over 150 GT.
The BNWAS system consists of a central processing unit, a terminal strip and a number of projects related external reset units and alarm detectors.
The reset units must be installed on the workstations in the bridge area like radar, chart table, radio station and main steering positions. The central unit already has a reset button and a buzzer with a sound level of 75 dB.

The system meets the following Standards:

- IEC 60 945
- IEC 61 162-1
- IEC 62 616
- IEC 62 288
- IMO A.694(17)
- IMO A.830(19)
- IMO MSC.128(75)

The module can be installed in a panel or desk mounted with an optional housing available. The device is connected to the main and emergency power supply 24 V, which then act redundantly.

Dimensions of the Main Central Processing Unit	L x B x H approx. 196mm x 96mm x 138.5mm Panel mounting with two fixing clamps Optional mounting bracket for table
Microcontroller	P89V664FA Firmware- Update is possible via the serial interface
Operating Voltage	Nominal Voltage: UB= 24V/ max. 1,5A Working Voltage 10-32 V Reverse polarity protection and self-resetting fuse 2 redundant inputs for 24V main power and emergency power supply 24V
Cable Connections	2x approx. 2m Cable 8x2x0.5mm² , halogen-free on WAGO – Terminal block wiring
Communication	1x RS 422/ RS485 Galvanically isolated NMEA 0183 / IEC 16 162-1 Output of NMEA-alarm frame telegrams Reading of the NMEA- Telegrams ($--EVE)
Digital Outputs	Alarm Output as relay contact – NO max. 1A/ 30 V DC 3 x relay contact NO 30 V 1A as Alarm alert stage 1-3 1x 24V/ 750 mA visual alarm. 6x 24V /0,75A single control for the OOW cabins for Alarm alert level 2; Functions is selectable with the key switch
Optional Digital Outputs	3x Relay NO 230 V/ 3A as Alarm alert stage 1-3 (VDR Interface)
Digital Inputs	1x contact – External reset button for unit 1x contact – Auto switch-mode active, Autopilot 1x contact – Motion Sensor 1x 24V – Main power supply active
Optional Digital Inputs	8x contact or 24V for the checking of unacknowledged alarms on the bridge as a navigational alarm alert stage 2. Time delay is adjustable in the setup.

Table 1: Technical parameter

The basic function is a tiered alert the crew when the duty officer of the watch (OOW), for any reason whatsoever, none of the reset switch has operated in the bridge area within the configured time period. A time regime in accordance with IEC 62616 will be processed.
The OOW must press a reset button or activate any other reset device to reset the idle time on the baseline.
Additionally, the reset will be initiated on the bridge by a motion sensor or NMEA messages from devices that monitors the activity of the operator itself. If, this does not happen, then the following sequence will appear which can always be reset.

Within a variable dormant period of 3 to 12 minutes nothing happens.
Thereafter, an optical pre- alarm will be triggered by flashing light on the central unit and the reset units in the bridge area are connected.

After further 15 seconds, the **Audio Alarm stage 1** in the bridge area as an audible alarm with a level of 75 to 85 dB (A) will triggered which is connected to the beat of the optical alarm. Thus, the process of the audible alarm to the alarm source is simple.

After another 15 seconds, the **Audio Alarm stage 2** in the cabins of the ship's officers as an audible and visual alarm will triggered at a level of 75 to 85 dB (A). The alert alarm can be selected up to 6 segments and can exclude officers which should not be disturbed from this alert. At least one segment remains active.

After another 90 to a maximum of 180 seconds **Audio Alarm stage 3** as an audible and visual alarm will triggered in the alleyway and at the locations of further crew members. The alarm level of this stage is up to 112 dB (A). This delay time is adjustable during installation from the setup. This delay time can be adjusted during installation of the setup.

3. Hardware

Figure 1 : BNWAS_Central Unit

3.1 External Controls and Buttons

Figure 2: Reset Button for Outdoor Use - Type: BNWAS_ RTA

Figure 3: Alarm Reset Box for Outdoor Use - Type: BNWAS_ ALRBA

Figure 4: Alleyway Alarm Box Stage 3 - Type: BNWAS_ ALR3

Figure 5: Reset Button for internal use - Type: BNWAS_ RTI

Figure 6: Cabin Alarm Panel - Type: BNWAS_ALR2

Figure 7: Buzzer for Internal Use - Type: BNWAS_RBI

Figure 8: Infra-Red Motion Sensor – Type: BNWAS_PIR_SENSOR

4. Software

4.1 Key Functions of the Main Central Processing Unit

The central processing unit besides the RESET function offers also different functions, which are summarized in Table 2.
Two function levels are available on the buttons, which are characterized by the labelling on them.

4.2 Buttons – Basic Function

The basic function of the buttons is highlighted by the top label and buttons can be accessed without a key.

4.2.1 DIM

Dim view of the central unit and the illuminated buttons on the BNWAS on the bridge

4.2.2 TEST

When pressing this button lights and signal of the central unit and all units which are connected to BNWA are tested for app. one second.
Then the NMEA input of the central unit will be tested.
The numeric LED display shows then the results.
First digit: 0 = No NMEA input available.
1 = '$' start character received.
2 = '!' start character received.

Second digit: 1 = "EVE"- telegram received.
2 = "VTG"- telegram received.
3 = "ZDA"- telegram received.
4 = "ALR"- telegram received.
0 = Other NMEA telegram received.

4.2.3 OOW

This feature, together with SELECT button to select the signal transmission of stage 2 alarm to the cabins of the officers. At least one OOW- cabins remains active!
Alarm stage 3 overrides this selections and is send to all cabins!
6 yellow LED indicates which one of the OOW cabin is activated. By pressing the OOW- Button one of the six OOW- cabins is preselected for turn ON or OFF for BNWAS stage 2 alarm with the SET-function.
Any preselecting should be skipped by RESET button if there is no aim to change the OOW cabin selection. Otherwise the LED's do not reflect the actual state of OOW cabin selection.
Example:
At minimum 2 OOW- cabins should be available and active in this case.
(e. g. Master and Chief LED are bright)
Now the Master cabin should be disconnected from the second alarm stage.

1. Press “OOW” until only the master LED is bright.
2. Turn the key switch to set position (vertical).
3. Press “OOW” to turn the Master LED OFF.
4. Turn the key switch to the horizontal position.
5. Press “RESET”. Now only the Chief LED is bright and active.

If the second alarm stage will be reached the alarm will be only forwarded to the Chief Officer cabin. In case of the third alarm stage all OOW cabins will be alarmed.

4.3 Button-SET-_Function

The set function is activated by the key switch from horizontal to vertical position for 30 seconds. Each press increases by another 30 seconds.
During the SET function in this position the countdown has stopped and the following settings can be made.

4.3.1 SET

With button DIM / SET can now only set the rest time of the system between 3 and 12 minutes.

4.3.2 SELECT

In the basin function with the button OOW/ has made a selection, can now use the button OOW / SELECT BNWAS to switch one of the relating cabin to on and off for the alert alarm stage 2. The status of the other cabins will also appear after the first switch pressed.

4.3.3 MODE

The pressing of the button TEST / MODE during the SET function allows the switching of the operating mode.
ON = the system is always active and must be reset periodically
AUTO = the system is active if the input "Auto" is closed, otherwise it is on standby
OFF = all the functions of the system are switched off and the OFF- LED will lighted

Button	Basic- function	Set- function
DIM/SET	Dimming of all displays in the bridge area	Setting the rest time up to the visual alarms
TEST/MODE	Testing BNWAS lights in the bridge area	Switching between the mode to ON, AUTO and OFF
OOW/SELECT	Selection of the cabin to be switched to OOW	On/off the cabin OOW for the alarm stage 2

Table 2: Buttons Function

After completion of the SET function button, it is essential to bring the key into the horizontal position and take the key out.
If the key switch is in the vertical position and within 30 seconds no button is pressed then the SET function will be blocked until the key switch is turned back to the vertical position.

4.3.4 LED Indicators:

The two-digit, red digital display indicates the remaining time until the next alert alarm stage is initiated. If this time is greater than a minute, the minutes are displayed, otherwise the remaining seconds.
The current alert alarm stage is indicated by four red LED's that are located right above.
Below are 6 yellow LED's to indicate the selected OOW.
The display of the central processing unit, except the alarm levels- LED's and the OFF- LED are dimmable. The lighting of the BNWAS external devices in the bridge area is dimmed centrally.
The alarm stage- LED's and the LED of reset button start flashing when it will reach the visual alarm.
* - Setting in the setup

4.4 Reset- Function

The reset buttons are installed at the main working stations on the bridge and must be at least 100 ms closed to reset the trigger.
If the reset button pressed for longer than 2 seconds, the system jumps directly to the alarm stage 2.
This long time pressing of the reset button will indicates an emergency and activates the emergency signal. This emergency signal alarm shall be reset again when a reset button is pressed longer than 2 seconds.

4.4.1 Reset with Motion Sensor

To facilitate the work on the bridge, the reset of BNWAS also be done via motion detectors. Use of this possibility should be clarified with the respective classification society of the ship in advance.
They should be installed so that the main working areas are covered on the bridge area. Movements in the detection range of the IR sensor cause an opening of the switch contact and a red LED signal on the detector. It can be connected up to 4 motion sensors in series and connected to the corresponding input.
Permanent movement can result in permanent open contact. For safety, an adjustable timeout is provided, which is preset to 20 seconds.
The input contact must be closed within this short time in order to receive the reset function of the motion. If, this is not the case, the reset function is suspended until the contact is closed again. It will then run the normal countdown of the BNWAS with the alarm.

4.4.2 Reset with NMEA- Telegram

If the NMEA telegrams of the following type received
$xxEVE,hhmmss.ss,BNWAS,Operator activity*<LRC>[CR][LF]
the reset function will activated
xx is the channel identifier that is not processed.
hhmmss.ss is the event time which is not processed and can be an empty field.
The Strings **„EVE", „BNWAS" and „Operator activity" will be exactly checked**.
<LRC> is the checksum that is tested when * ' is present, otherwise it can be omitted.
For collection of different NMEA sources, the multiplexer 4NMEAto1 or VL 8NMEAto1 can be used.

4.5 Indication of Unacknowledged alarms

If these series of NMEA alarm messages received,
Their status will be monitored like this:
$xxALR,hhmmss.ss,nnn,C,A,t….t*<LRC>[CR][LF]
xx: ID, Sender identification
hhmmss.ss is the event time which is not processed and can be an empty field
nnn Alarm Number
C Alarm status, which is not processed
A= Alarm dormant period exceeded, V= Alarm dormant period not exceeded
A Acknowledgment status of the alarm
A= Acknowledged, V= Unacknowledged
t…t Alarm text that is not processed
<LRC> is the checksum that is tested when ' * ' is present, otherwise it can be omitted

The status of each received alarm acknowledged message is tested.
Is this 'V' (unconfirmed), the ID number and the alarm is stored and a countdown starts from 30 seconds.
Changes in status of the acknowledgment messages with this ID number and error before the expiration of the time, A '(confirmed), the counter will be stopped and reset.
Otherwise, the alert level stage 2 will activated.

Optionally, a module DIM8 with 8 inputs contact / 24V are used, which processes the unacknowledged alarms in the form of digital inputs.
If one of the 8 inputs longer than 30 seconds to open / energized, the alarm stage 2 is active.
Similarly, a series of NC contacts on one of the inputs is possible.

4.6 Output Interfaces of BNWAS

According to the IEC 62 616 6.2, the status of the BNWAS shall distribute the signals through the digital contacts and the serial interfaces.
The visual alarm warning is run as a PWM signal from 0V to the terminal strip.
The three alarm stages of the system are available via relay contacts 30V 1A 3 NO on the terminal strip.
On these contacts, the external signal transmitter of the system is connected.
Options:
It can further be brought out three relay contacts 230V/3A with the same function.
Here, for example VDR can be connected.
The alarm stage 2 selectively can be distributed to up to six officer's cabins, where at least one cabin remains active.

4.6.1 NMEA Output

NMEA- Alarm telegrams according to the following standards:
IEC 61162-1 Section 8.3.11
IEC 62616 Section 6.2
$BNALR,hhmmss.ss,nnn,C,A,c….c*<LRC]>CR][LF]

hhmmss.ss is the time event of BNWAS from the internal RTC
nnn is the identification of the reset source or the alarm source, see table 3.
C is the alarm status, which is not processed
A= Rest time has finished
V= Rest time has not finished
A is the acknowledgment status of the alarm
A= Acknowledged, V= Unacknowledged.

c…c Alarm Text
C1= AUT or MAN or OFF
C2= Rest time in minutes (3…12)
C3= Alarm status (1,2 or 3)

<LRC> is the checksum that is tested when * ' is present, otherwise it can be omitted
For example: $BNALR,095133.02,011,V,V,C1=MAN;C2=06;C3=0*54
The RTC –time can be set in the Setup procedure. See also item 5.2.10 Setup with software- Fig. 27.
If a GPS is connected to the BNWAS NMEA –input the ZDA- telegram will set Date and Time automatically if the time difference is more than 2 seconds.

Abbreviations nnn	Descriptions
000	Automatic mode – standby
001	Reset with reset button
002	Cyclic NMEA- telegram , 1x each second
011	Reset with motion sensor
041	Change of the rest time by the operator
043	Change of the mode of the BNWAS by the operator
042	Change in the alarm transmission for the OOW cabins
100	Unacknowledged alarms
101	Emergency call triggered via BNWAS
200	BNWAS main power supply failed
201	Main power supply of BNWAS again available
202	Error: Key switch active
203	Key switch inactive

Table 3: Abbreviation of Reset and Alarm Sources

5. Installation and set to work

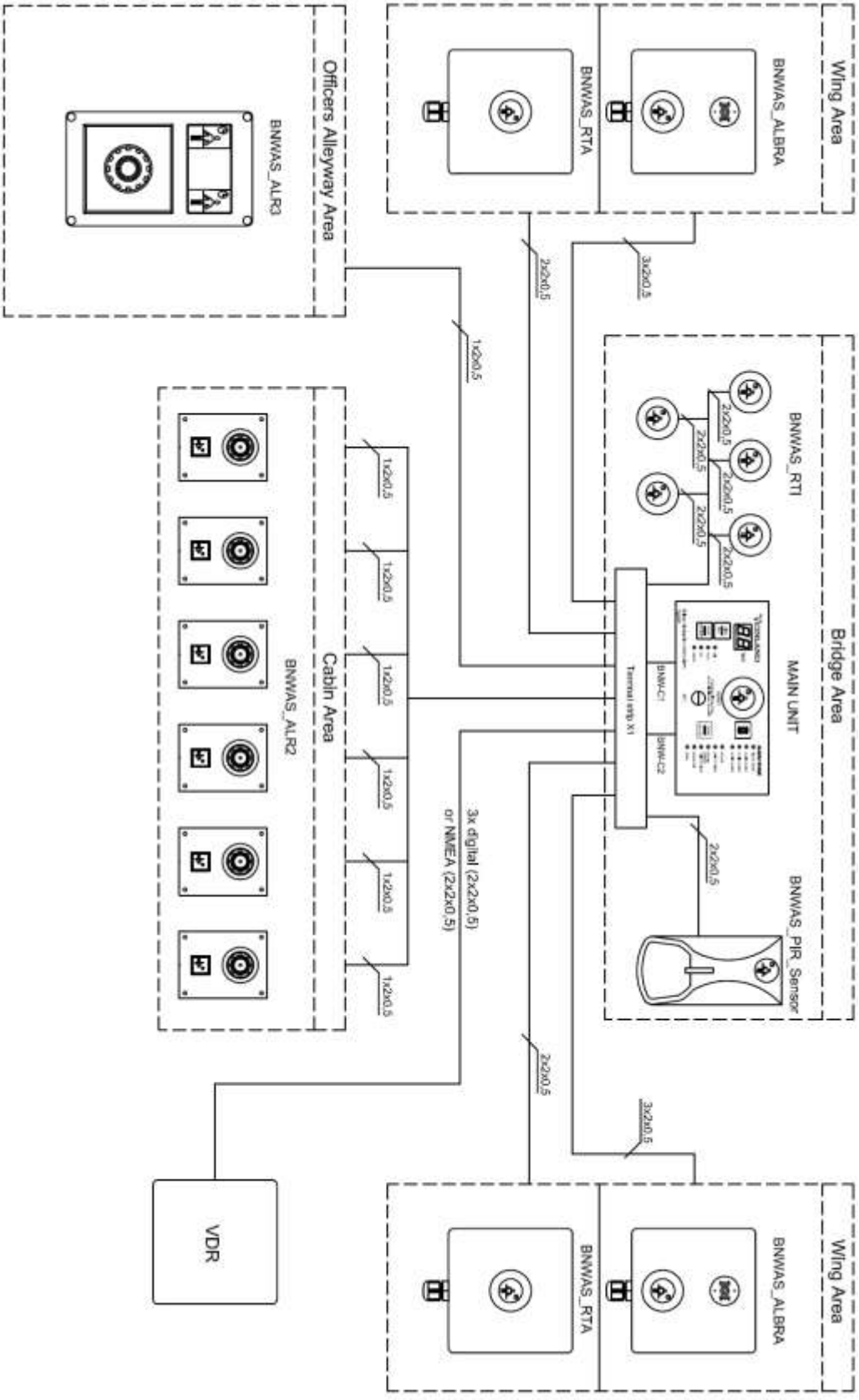


Figure 9: General arrangement of BNWAS

5.1 Selection of Installation Locations

According to the ship design the signal and reset units are to be placed.
The external units BNWAS_ALRBA and BNWAS_RTA having the protection class IP56. Others have IP20.
The IEC 62 616 Section 5 with the reference standards and regulations must be observed. Annex A of the standard specifies have the basic installation instructions.

A.2
Placement of reset - assemblies must be made so that no reset function or mute the audio alarm may occur in areas from which the work of the bridge watch personnel is not guaranteed.
It must be ensured from the installation point of the reset module at any time and in the unobstructed view from the bridge.
Installation locations, e.g. at the card table that can be removed at night to dim the bridge by a curtain, are not permitted**!**

A.3
The Reset module should be installed near the ship's command and control positions, such as radars, and rudder stand and on the Wings.

5.1.1 Indoor Area:

BNWAS Central Processing Unit
BNWAS_ RTI
BNWAS_PIR-Remote Sensor

The use of BNWAS_PIR-Remote Sensor is optional, and to be agreed with the classification society and flag state.
The BNWAS_PIR-Remote Sensor is not a substitute for other reset units!

5.1.2 Outdoor Area of the Bridge (Wings):

BNWAS_ RTA
BNWAS_ALRBA

A.4 Visual Alarms
All the flashing alarms should be seen from all the positions by which the officer is staying awake while on duty.

A.5 Audible Alarms
All the audible alarms should be heard at all positions by which the officer is staying awake while on duty.

5.2 Set up of Electrical Connections

The BNWAS must be connected to 24 V from the main power supply (MSB) and separately connected to 24 V from the emergency power supply (ESB).
An additional third 24 V power supply is optional possible.
If the emergency power supply is not ensured for at least 6 hours. It should be sure to have the emergency power supply via a suitable UPS.
In this case VL-UPS SUA1000I (GL No.: 54 481-07HH) and the power supply STEP-PS/1AC/24DC/1.75 (GL No.: 59365-08HH) can be used.
BNWAS central unit is supplied with 2 connecting cables, each of 2 m in length.
According to the order, the clamping unit and pre-assembled on mounting rail TS 35 is delivered.
The cables connections have been wired according to Figure 20 with the clamping unit so that after assembly to the mounting rail the connections are made only to the external reset unit and signal units. As the cables are halogen-free, single-shielded cables with at least 0.5 mm ² wire cross-section to be use. The shield must be hanged to the PE terminal of X1 one side. As the NMEA-data lines are twisted pair cables and one sided, the shielded cables should be used.

5.2.1 BNWAS_RTI

The reset button is provided as a component inside the bridge.

5.2.2 BNWAS_RTA

This module is provided as a reset component for the use in the inner or outer area of the bridge.
Both modules have a push button with integrated LED (24 V / 20 mA) inside. This LED is used as a visual alarm and the push button act as one reset unit.
If there is an alarm its blinking with an interval of app. 1 sec between the actual dimmed light level and full bright else the LED act as a dimmable lighting on the buttons.
The LED's on all the buttons are connected in parallel to terminals by X1.Also all push buttons have to be connected in parallel to the terminals by X1.

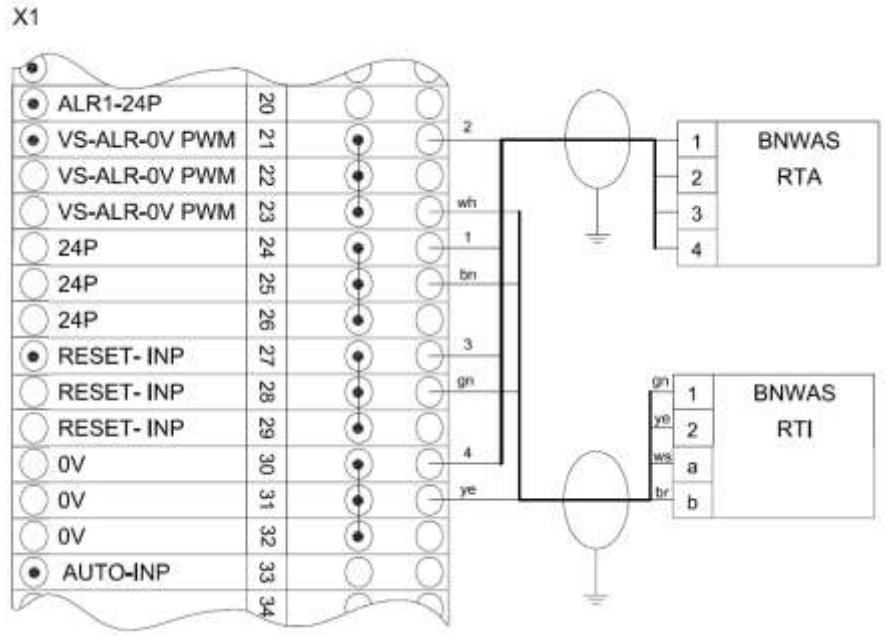


Figure 10: BNWAS_RTA/RTI Wiring Example

5.2.3 BNWAS_ALRBA

This module is provided as a reset component with an audible alarm 75 dBA for the use in the interior or exterior of the bridge.

LED and reset button can be connected same like BNWAS_RTA.

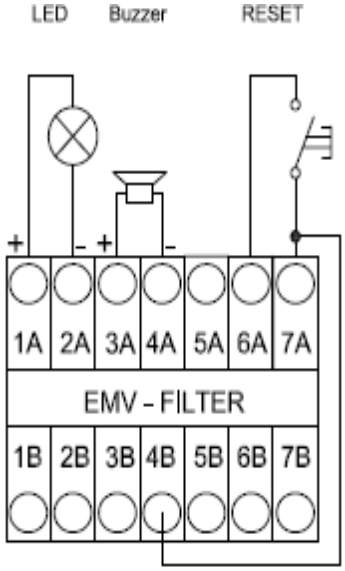


Figure 11: BNWAS_ALRBA Internal Connections

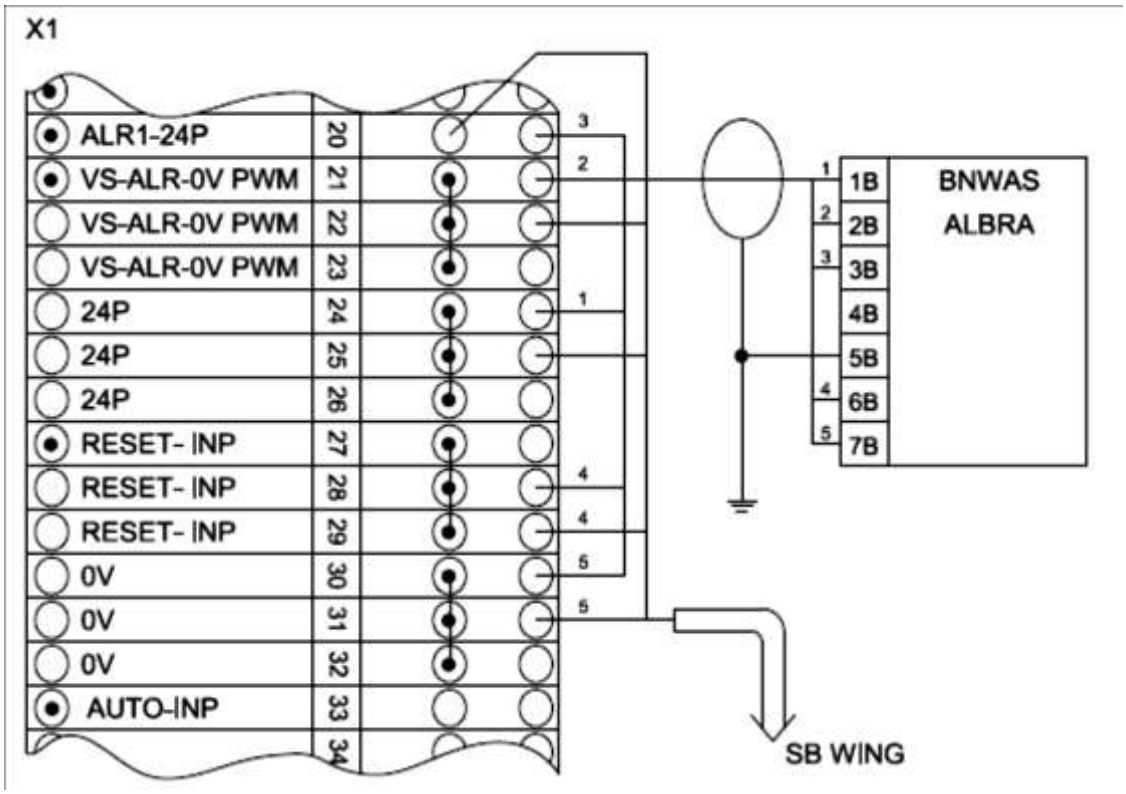


Figure 12: BNWAS_ ALRBA Wiring Example

5.2.4 BNWAS_RBI

In the inner area of the bridge the audible alarm BNWAS_RBI can be additionally connected to these terminals in parallel to adjust the volume of the alarm.
Here ‚+' and ‚-´ are connected to X1:ALR1-24P and X1:0V respectively.
The BNWAS_RBI combined with BNWAS_ALR2 to use and requires no filter assembly.

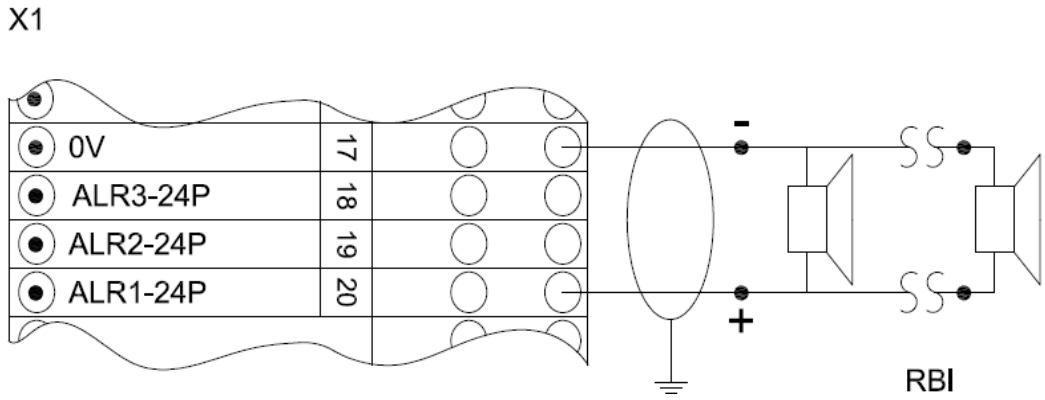


Figure 13: BNWAS_RBI Connections

5.2.5 BNWAS_PIR_SENSOR

Infrared motion sensor BNWAS_PIR_SENSOR can be used as an optional reset unit if the responsible classification society allows. This is to clarify with the customer in advance. The installation should be done in that way so the movements of the watch officer in the working area will be recognized only.
The module operates with 12 V DC, which is provided by a voltage regulator 24/12 V from X1.
The output switch opens with the motion and is connected to input X1: PIR_Sensor IN and X1: 0V.
It can be connected up to 4 sensors in series circuit as output connections.
The series circuits connect to X1: PIR_Sensor IN and X1: 0V
These connections are to be switched parallel to 12 and 0V DC.

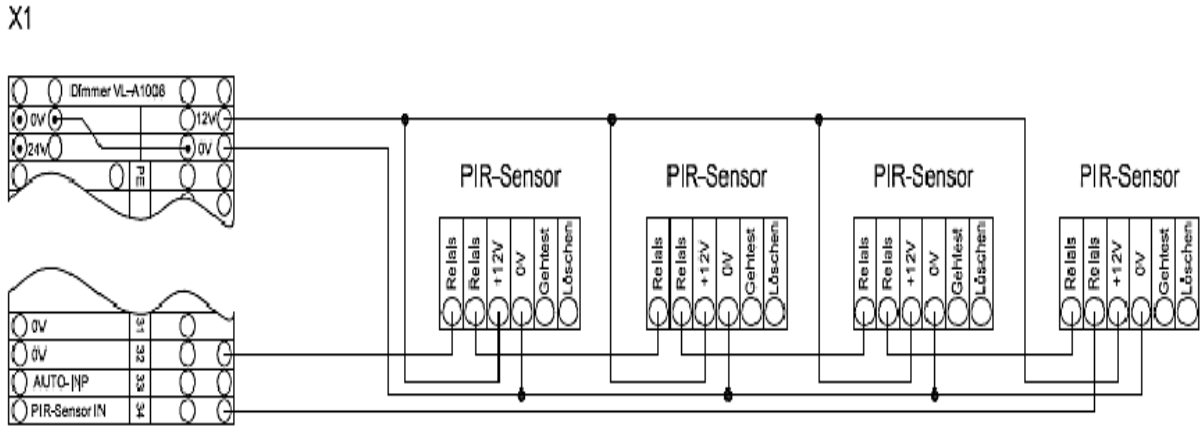


Figure 14: 4 PIR Sensors Connections

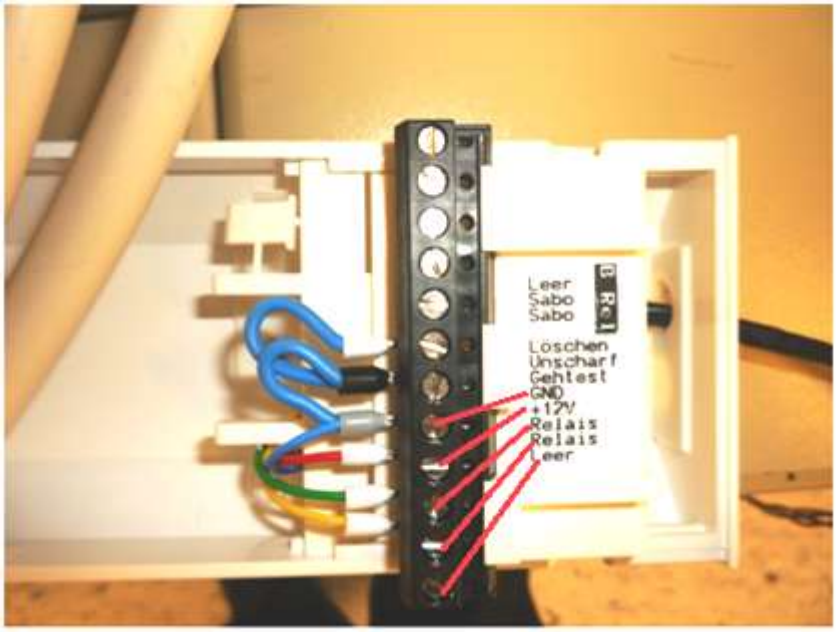


Figure 15: PIR internal terminal strip

5.2.6 Alarm Units outside the Area of Bridge

If the alert alarm stage 1 was not reset in the bridge area, BNWAS will then activate to the alert alarm stage 2 in the cabin of the OOW.
For this, the BNWAS_ALR2 is used. It is designed to be mounted on the wall in the cabin, but can also be mounted on a suitable enclosure.

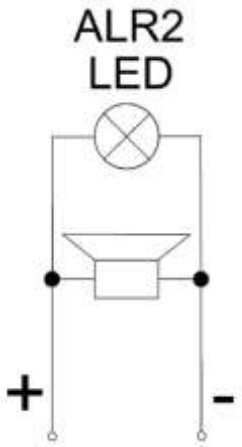


Figure 16: BNWAS_ALR2 Internal Connection

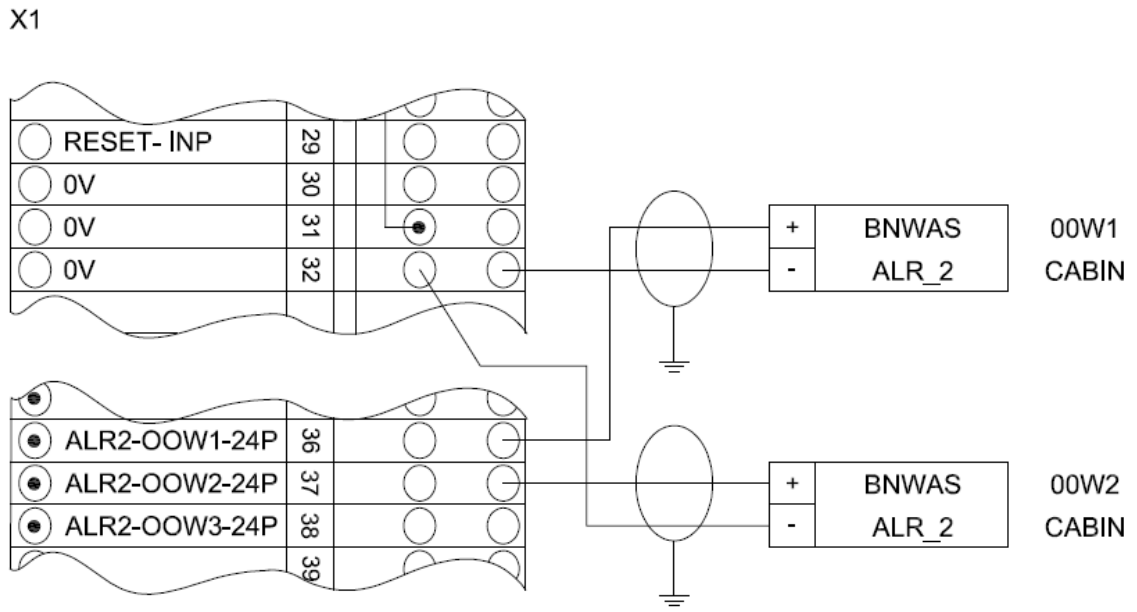


Figure 17: BNWAS_ ALR2 Wiring Example

The alarm can be selected in 6 groups in the alert alarm stage 2 in order to alert not all the watch officers. The, - , BNWAS_ALR2 lines (blue cables) are all connected to X1 : 0V.
The ,+ , BNWAS_ALR2 lines (red cables) are connected to X1 : ALR2-OOWn-24P with n= group number 1-6.
If the alert alarm stage 1 and 2 has not been reset in the bridge area, the BNWAS will initiate the alert alarm stage 3.
For this, the unit BNWAS_ALR3 is used. It is intended to install in the alleyways area of the deck crew.
The acoustic signal can reaches a level of 112dBA and should be heard by all crew members who are on the deck.

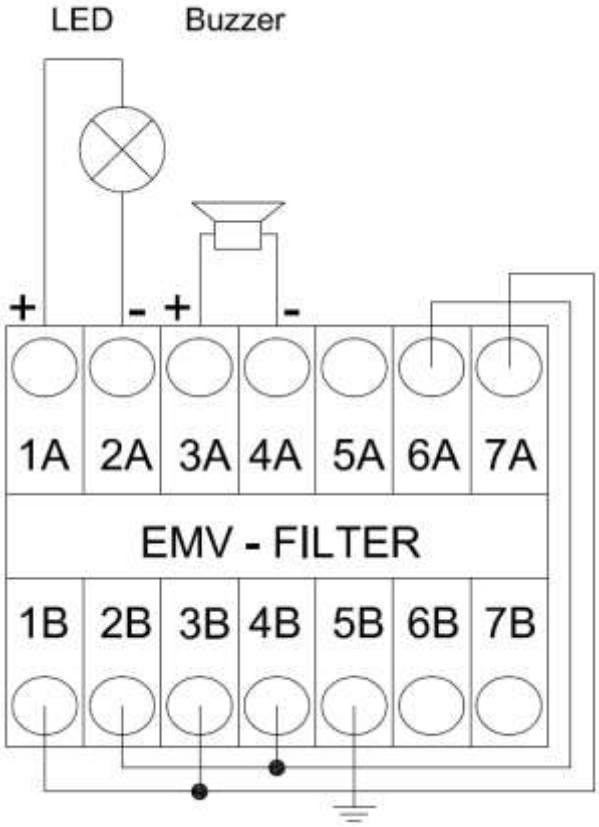


Figure 18: BNWAS_ALR3 Internal Connections

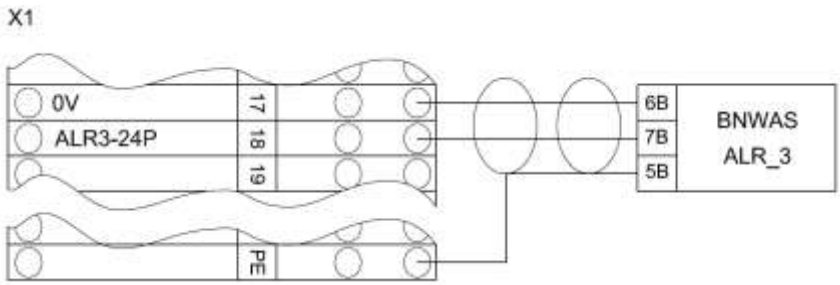


Figure 19: BNWAS_ALR3 Wiring Example

The terminal 1B ' is connected to X1:ALR 3-24P. The terminal 2 ' is connected to X1:0V. The pre-wired connections must be kept!

5.2.7 Automatic Mode

If the "Auto" mode is selected the BNWAS is in standby until it will be activated by two different ways.

1. The BNWAS is running if the X1 terminal " AUTO-INP" is connected to X1 : 0V.
   This contact can for example be closed by the pilot or rudder amplifier when it is activated. A parallel connection of such contacts is possible means if one of these contacts is closed the BNWAS is switched from standby to active.

2. The activation may be forced by the ships speed picked up from VTG -NMEA sentences.
   The NMEA – talker e.g. the GPS should be connected to the BNWAS NMEA input on
   Terminal X1: RS 422 RX+, RX-.
   The baud rate is 4800 8 N 1 and the speed limit for activation is 4 knots for default.
   These parameters can be changed in the setup procedure.
   Once the speed limit for activation is exceeded the BNWAS becomes active until the speed falls below the limit for deactivation with a value of 3 knots for default. This functionality acts logical in parallel to the AUTO-INP contact.

5.2.8 VDR- Interface:

NMEA telegrams with the alarm status and additional information about the status of BNWAS are transmitted via t the terminals X1:RS422_Tx+, Tx-.
The telegrams are transmitted time controlled every second!
Each reset of the dormant time period by one push button or motion sensor generates such a telegram.
Also each change of parameters or the alarm state of the BNWAS is transmitted via NMEA BNALR – telegram.

3 additional NO- relay contacts may be installed at the BNWAS as a optional equipment. These contacts are corresponding to the BNWAS alert alarm stage.
The common line for the 3 contacts is connected to X1: an X1: Common BN_VDR and 3 switch to X1: VDR_BN_ALR1 to VDR_BN_ALR3.
The contacts can be supplied with 230V /3A AC.

5.2.9 BNWAS-System Alarm:

A NO-contact 30V / 1A is available between X1:COMMON_ BN_ERR and X1:NO_BN_ERR which shows the error status of BNWAS. It can be connected to the bridge alarm system. If there any interference in the internal electronics of the BNWAS should occur, the Error LED switch on and the NO-contacts opens.

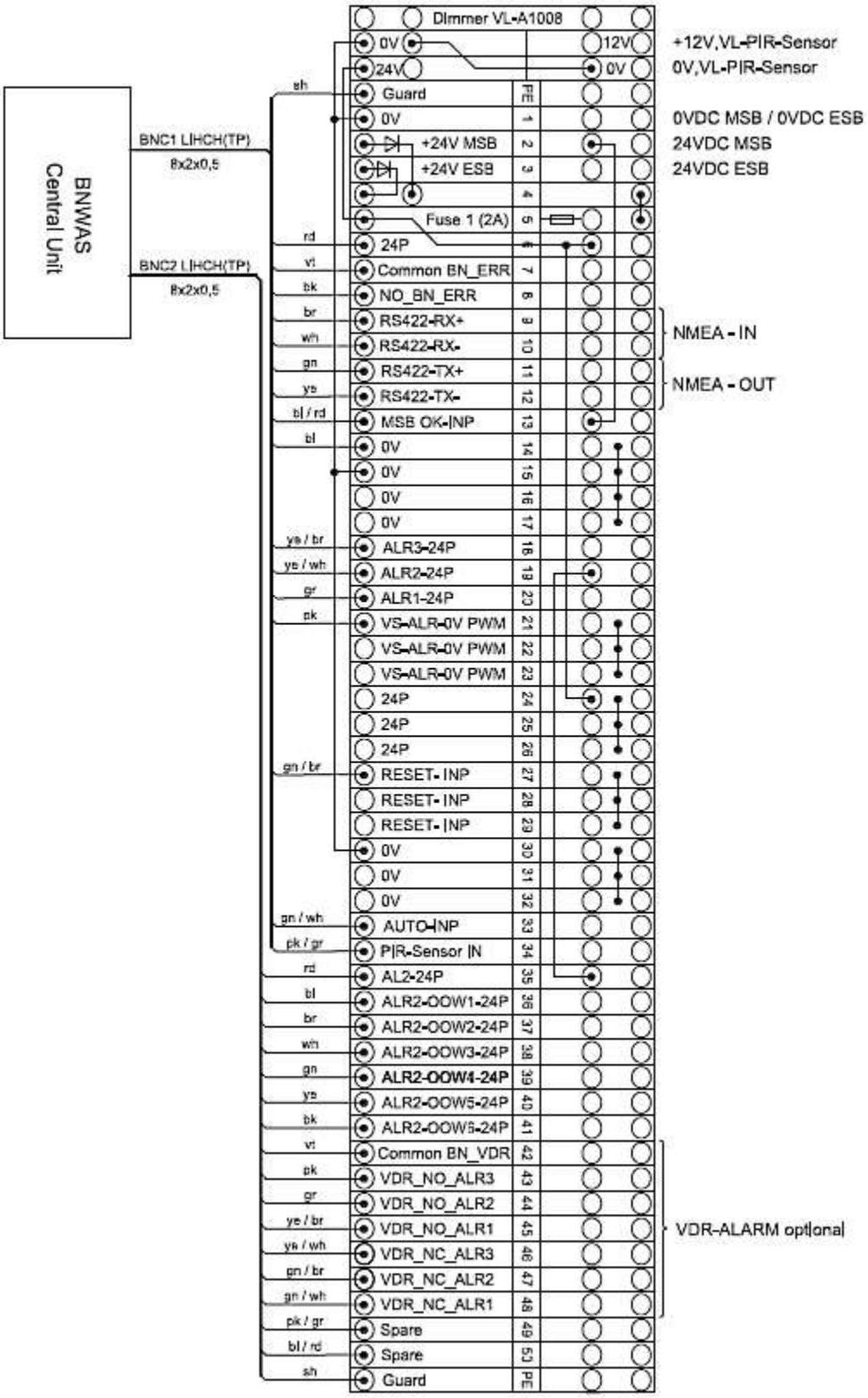


Figure 20: X1 BNWAS Terminals

5.2.10 Software setup

The BNWAS provides with software setup to adjust the system.
The setup is done via the serial interface (RS 422). It can also be used with RS 232 of the PC.

1. X1 (RS422) with the COM – Connect the port of PC according to the Table 4
2. Start the terminal program „OC Console“ on the PC and set the appropriate COM -interface to 4800, 8,N1,and CR+LF for the sender. See screen image 21.
3. Connect BNWAS to Power 24 V/ min.1A according Figure 20

X 1	RS 232 9polig DSub	RS 422 Interface
RX+	5	TX+
RX-	3	TX-
TX-	2	RX-
TX+	5	RX+

Table 4: (RS 232) – X1(RS 422) Connections

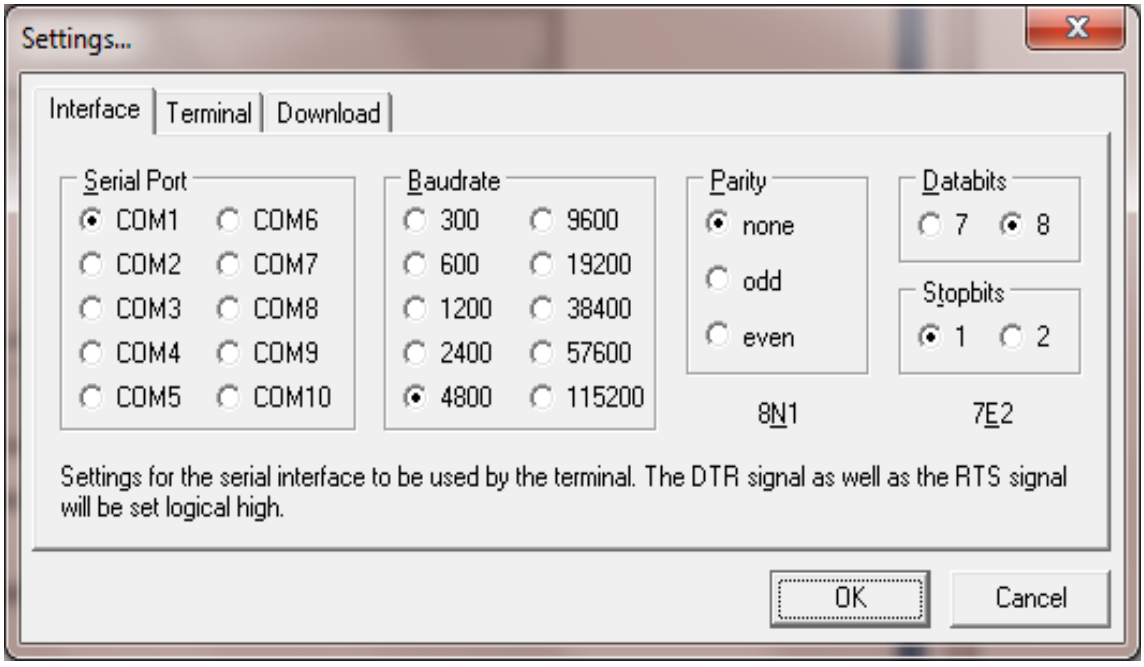


Figure 21: Initial Setup

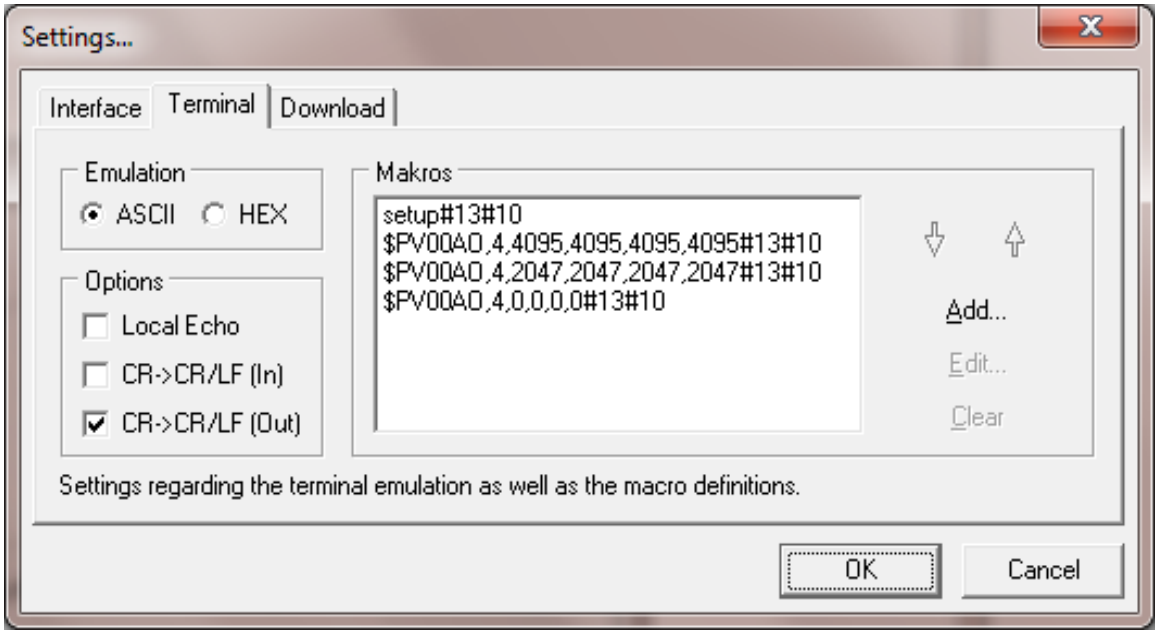


Figure 22: Setting of the Interface in Terminal program “OC Console”

After connecting the operating voltage should a screen image 20 will appear.
This is not the case, TX lines of the baud rate and polarity should be checked.
The Enter key is generated by a feed line.
This is not the case, the polarity of the RX lines, and the settings of the terminal program should be examined according to screen image 20.
If the baud rate is unknown, then use the PROG - jumpers in the central unit to configure it to 4800 8N1. But this only applies until the next restart is done and can only be changed from the setup permanently.

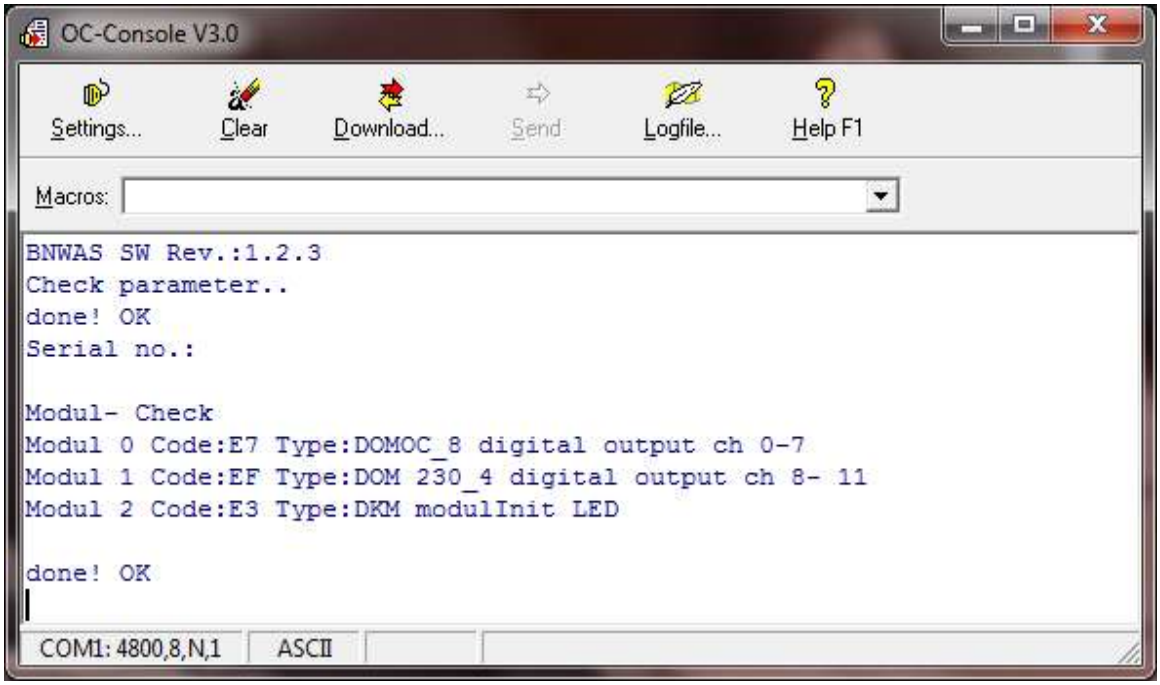


Figure 23: Start Screen Image

The system can be adapted to the real installation by using the HELP option in the Terminal Programme of the system. All text entries can be complete by pressing <ENTER>.
<BACK Space> can be used to make corrections.
After entering the key word "setup" a key hit within 10 seconds will be expected.
Thereafter, the individual menu items (0 ... ESC) are selected by a simple button.
All parameters are only effective after you exit the setup by saving individual.

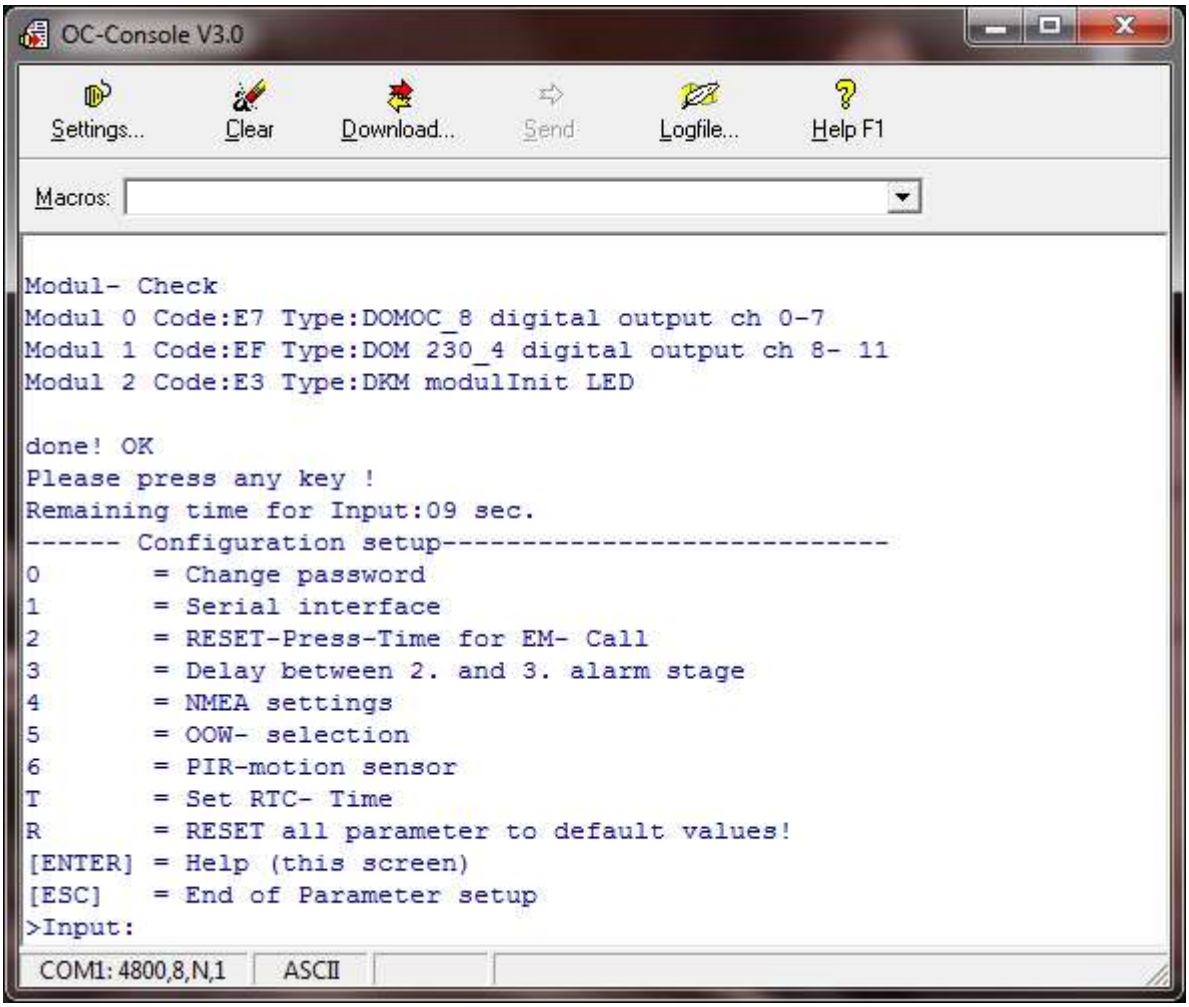


Figure 24**:** Help for setup

The parameters can be password protected against any unauthorized modification.
There is up to 9 characters password possible.
An existing password can be deleted by pressing <ENTER> without entering any character.
Saved Password must be entered before each setup.

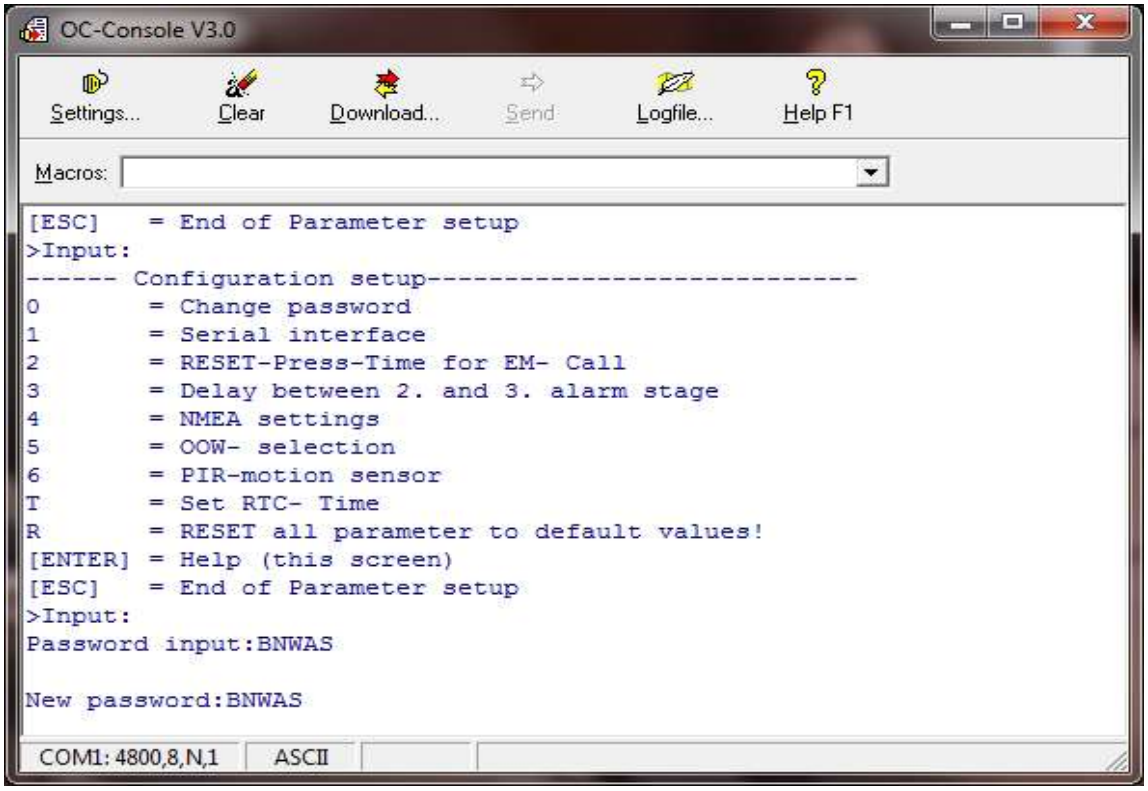


Figure 25: Setting Password

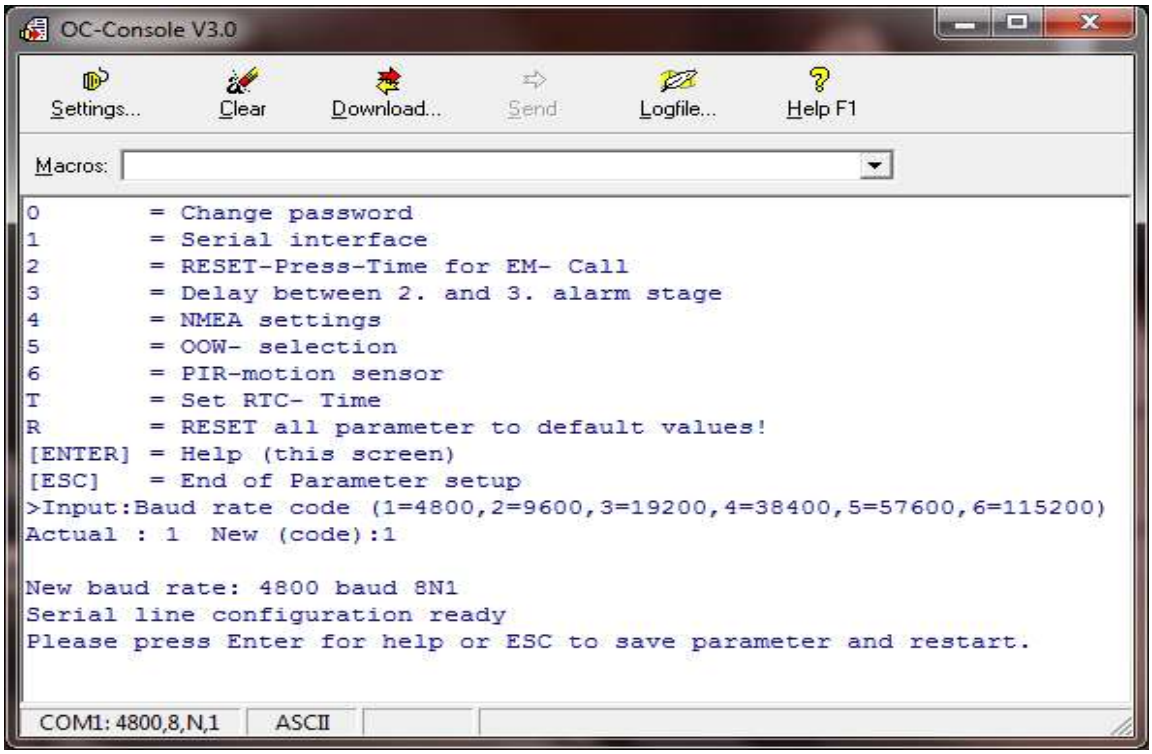


Figure 26: Setting the baud rate

The baud rate is entered as a code as mentioned above.

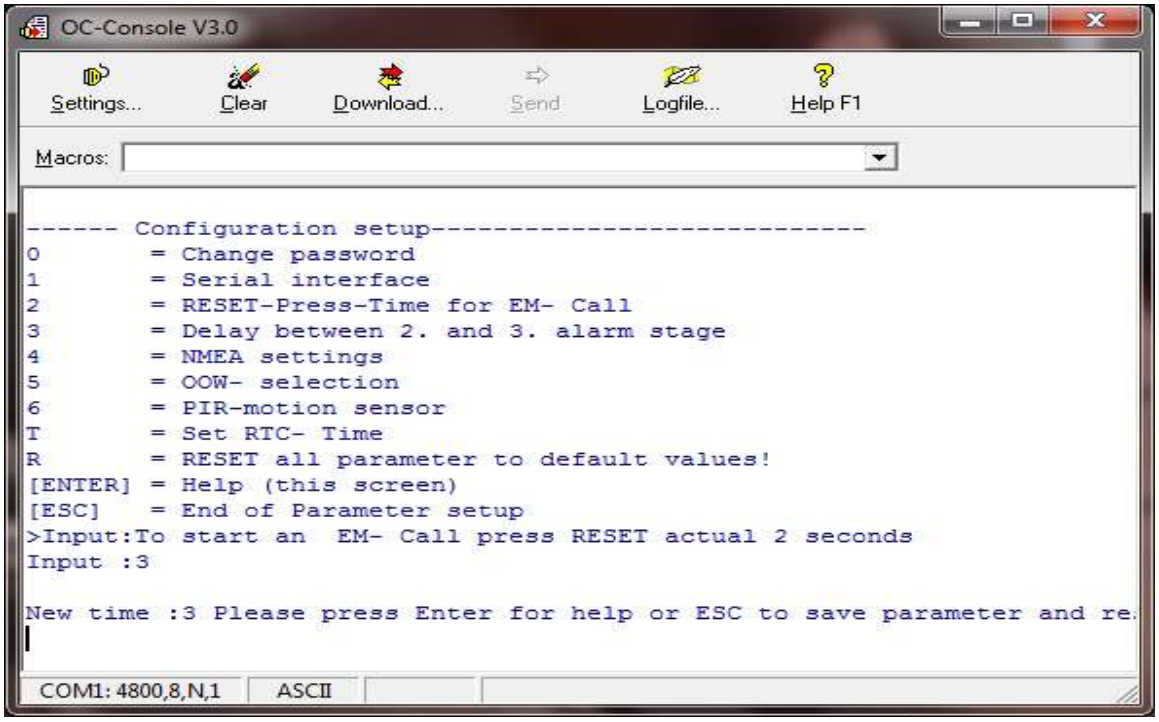


Figure 27:Item 3- EM- Call Time Configuration

If a reset button is pressed for longer time than it set, the alarm stage 2 directly in the cabins of the selected officers will triggered. This can be reverse by pressing the reset button on the same time. The factory setting is 2 seconds, and is printed on the front panel of the central unit. **Should a different time to be set, this has to be marked on the front panel!**

Furthermore the interval time of the 1.stage bridge audio alarm can adjusted on this item.

The range is selectable between 1 Hz and 5Hz. The volume of this alarm stage may be selected by the number of installed RBI units. See also Figure 7: Buzzer for Internal Use - Type: BNWAS_RBI

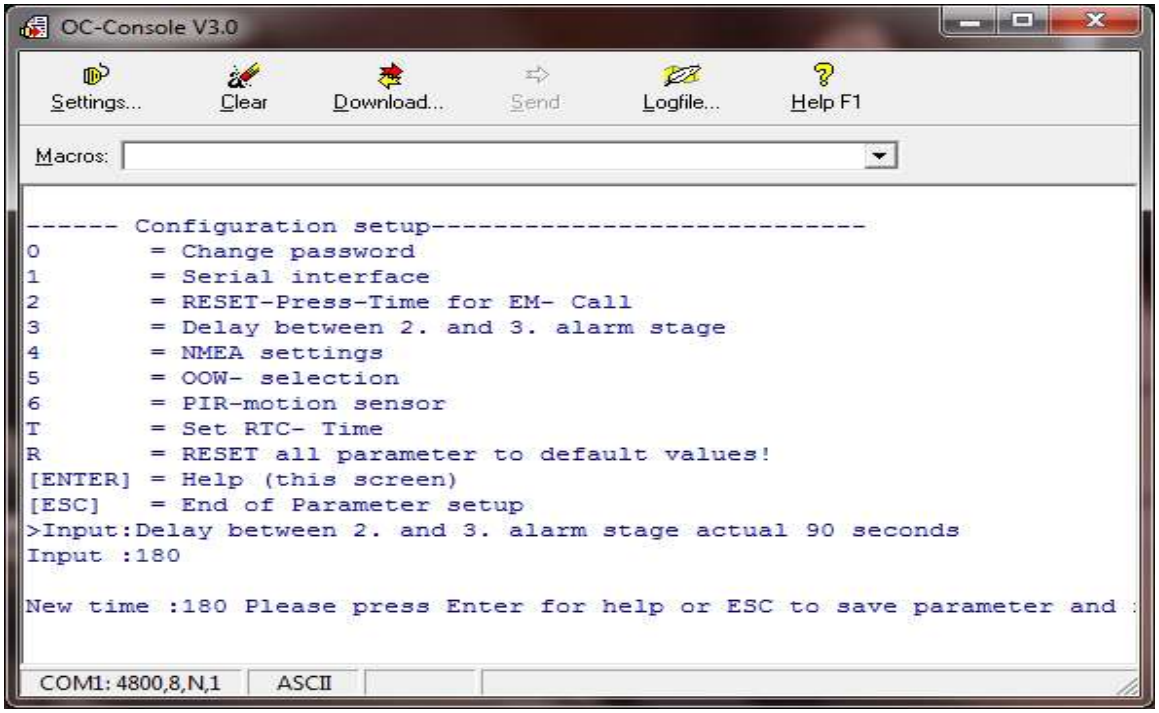


Figure 28: Setting the Delay Time between Alarm Stage 2 and 3

The delay time between the 2 and 3 stage is set to be 90 seconds by default.
It can be extended up to 180 seconds for large vessels.

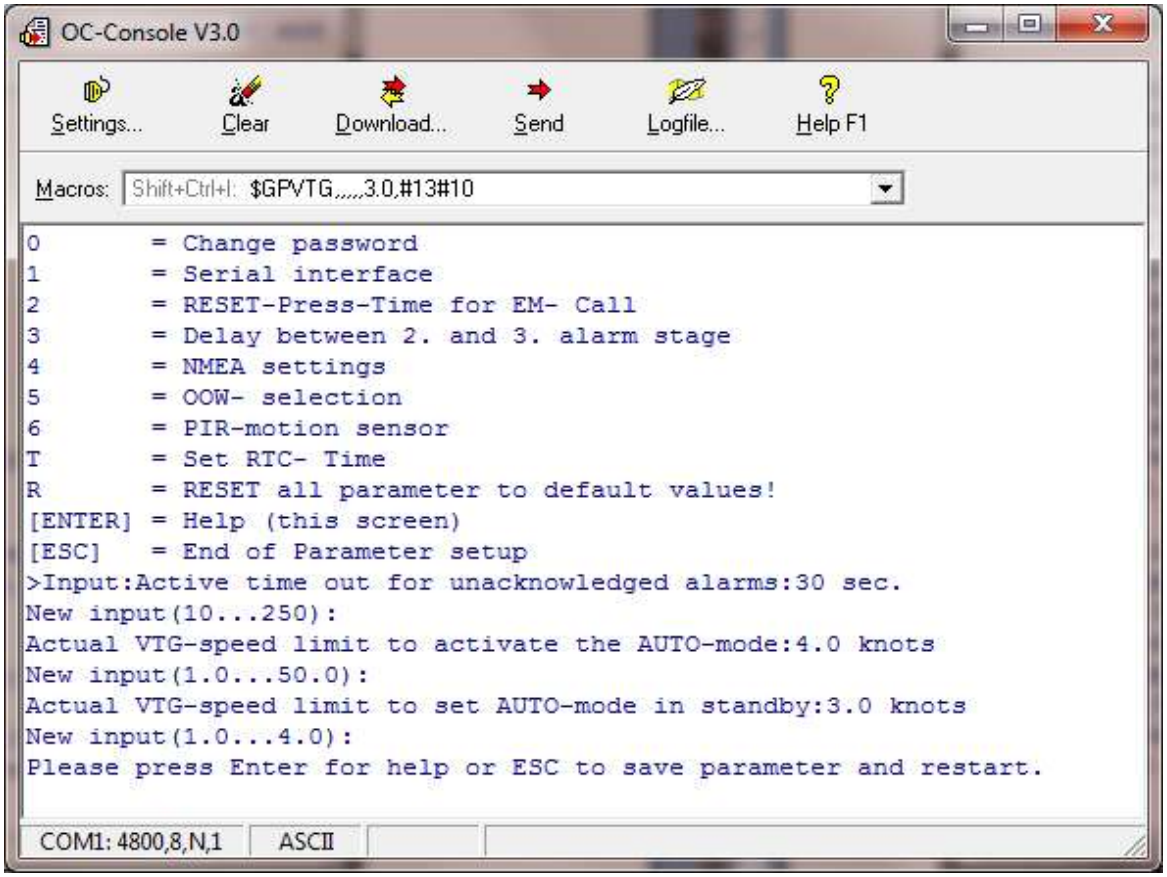


Figure 29: Setup of received NMEA telegrams

The system allows unacknowledged alarms as BNWAS alarm signal to the stage 2.
By default, the data stream of received NMEA telegrams into the serial interface is monitored according to the IEC 61162-1.
If one unacknowledged alarm telegram is received the talker ID and the alert no. will temporary stored.
The BNWAS expect an acknowledged alarm telegram with the same Talker ID and alert no. within the programmed timeout (30 seconds as default).
Otherwise the system will jump to the alarm stage 2.
During this time, a reset button is pressed; it will reset the timeout counter.
This timeout is adjustable in the menu option 4-“NMEA settings”.
Optionally it can be installed additionally with eight digital inputs for the alarm monitoring.
It is then monitored the all closed state of all 8 inputs. If this state is no longer than the set timeout then alarm stage 2 is triggered.
During this time, a reset button is pressed; it will reset the timeout counter.
If the BNWAS is set to “AUTO mode” the countdown stops until the AUTO-INP is not closed to 0V.
That is called standby. Otherwise the BNWAS is active.
The VTG -NMEA telegram mostly delivered from a GPS can also act as a switch between standby and active.
The turn on limit and the turn off limit can be adjusted in this menu item 4.The unit is knots with maximal one decimal place.
The limit to activate the BNWAS must be equal or greater than the limit for standby.

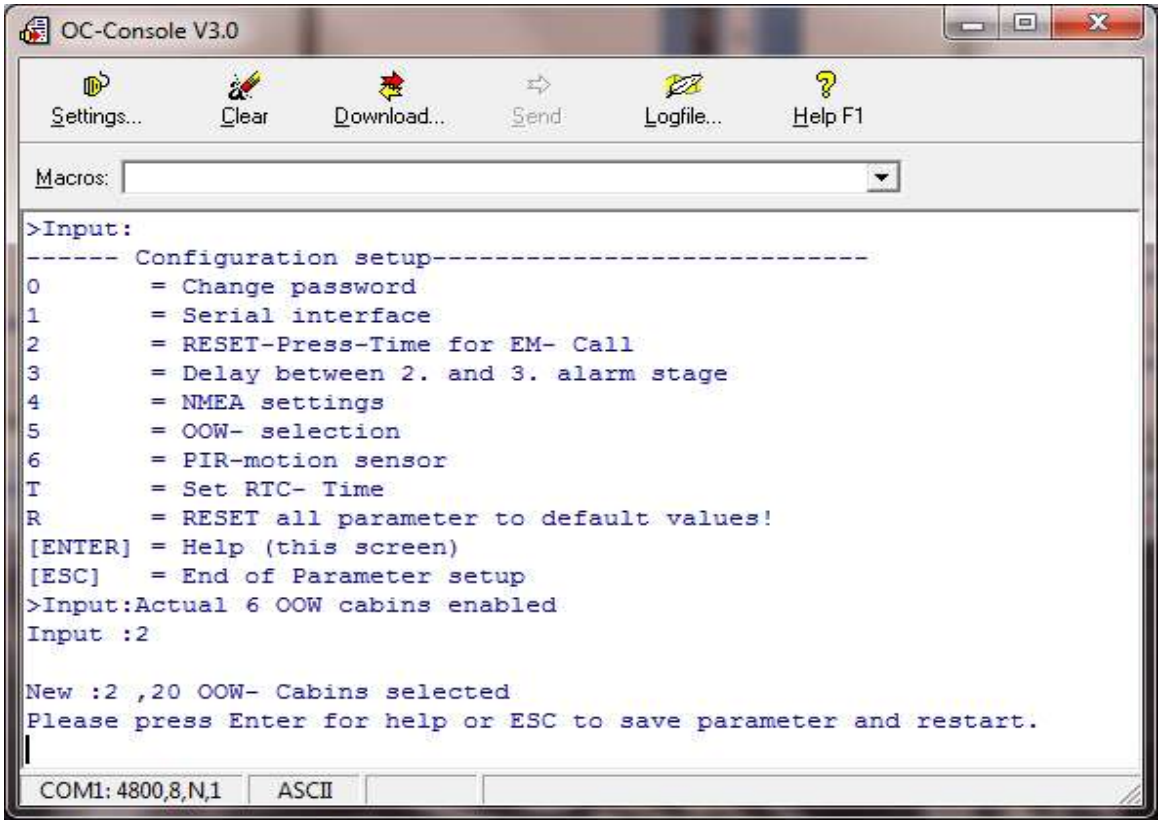


Figure 30: Setting the Number of OOW- Cabins

With the keys OOW / SELECT can select the cabins of officers for the alarm stage 2.
There is a possibility to select up to 6 cabins. In the alert level 3, this selection is cleared and all the lines are active. The wiring must be continuous, without gaps, done by one (master).
However, if less than 6 lines are connected; one must enter the number at the time of installation in the menu point 5.
It will only light up the number of OOW - LEDs and only these are selectable.

To make OOW's work easier, it is possible to connect motion sensors additional to the reset button. Please ask flag state and class before start of BNWAS installation.
For this, a special input is provided which has different switching behaviour from the normal buttons. When the motion is detected, the sensor contact opens for a certain time. The continuous movements leave the contact open for a long time, which is equivalent to the reset button.
To prevent this, the timeout can be adjusted in menu point 6.
After the timeout, the reset function of the motion is lifted.
The actuation of a reset button or a quick closing of the contact sets the timeout back to the start value.

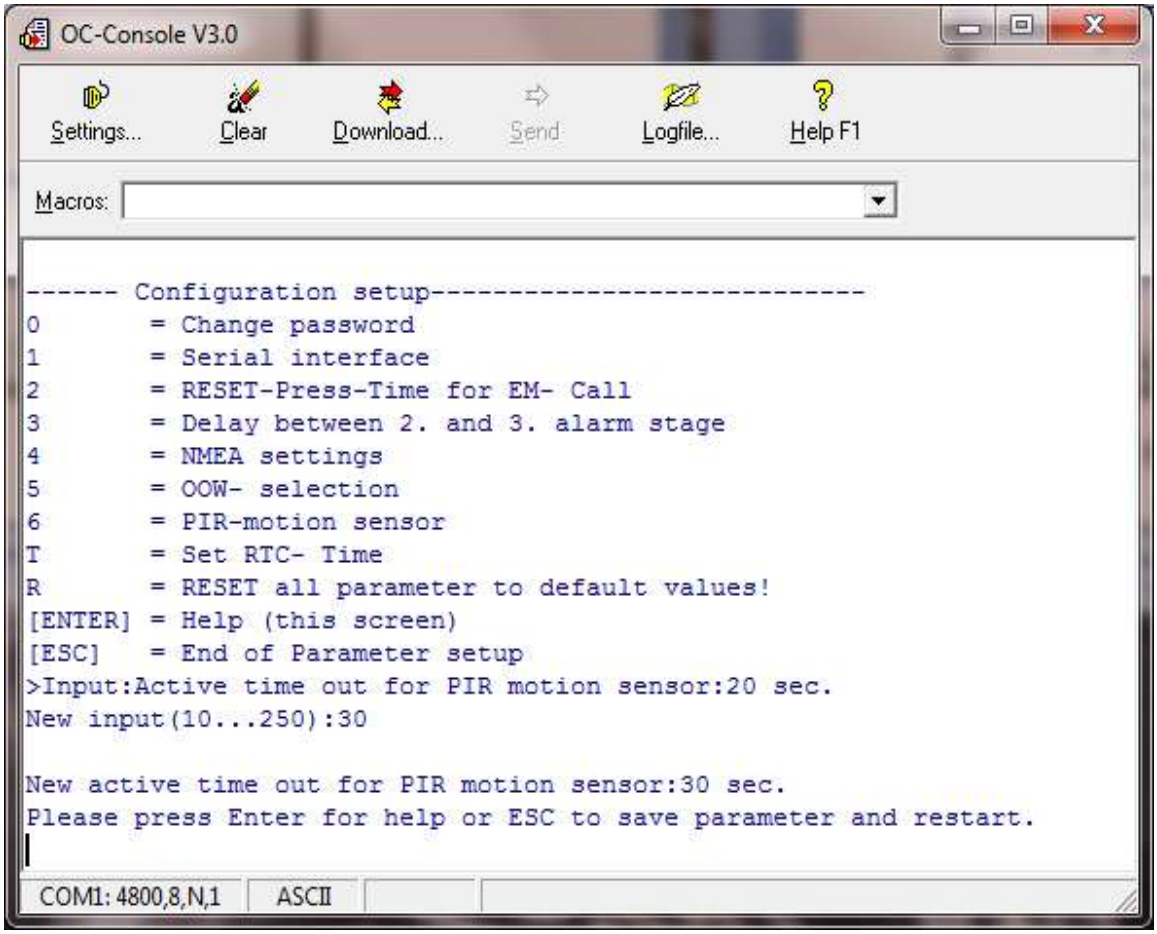


Figure 31: Maximum Switching Time of the PIR sensor

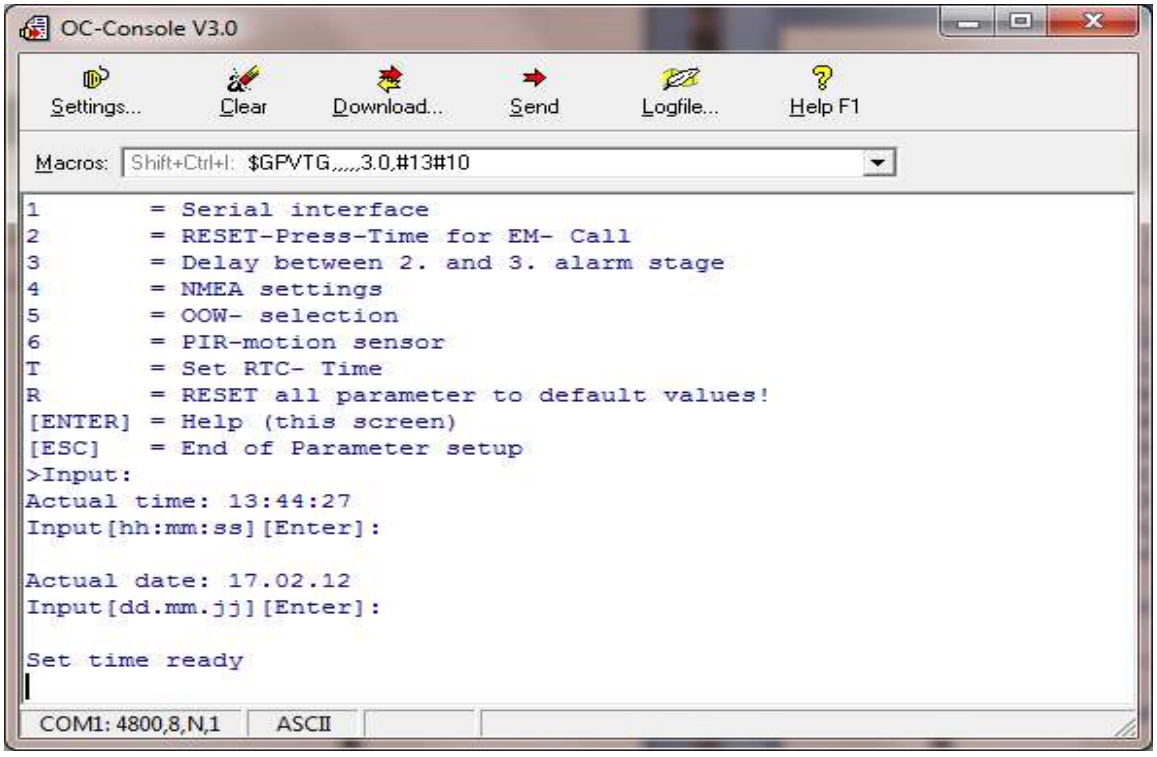


Figure 32: Setting of Time and Date

The central unit contains a battery-backed clock (RTC), comparable with the properties of a PC-timer. The Clock will be made upon delivery of UTC and needs only to set after exchanging the battery. If the time difference is greater than 4 seconds and a valid ZDA telegram is received date and time of the RTC will be automatically updated.

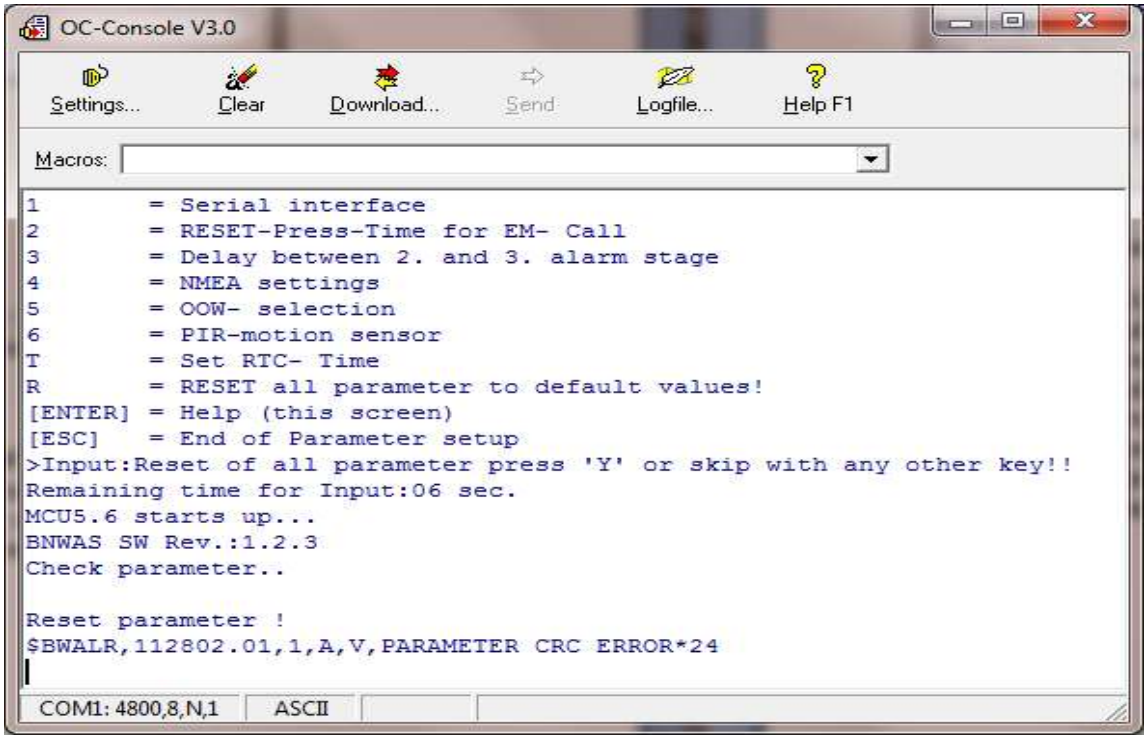


Figure 33: Resetting of all Parameters to Factory Setting

With 'R', all parameters can be reset to factory settings!
It is for safety to prevent deleting the current settings by using button 'Y'.
After automatic reboot, it will ask serial number is queried, which is mounted on the back side of the CPU. It must now be adjusted to all the parameters according to the installation conditions. This is especially necessary for "5 - OOW-selection"!

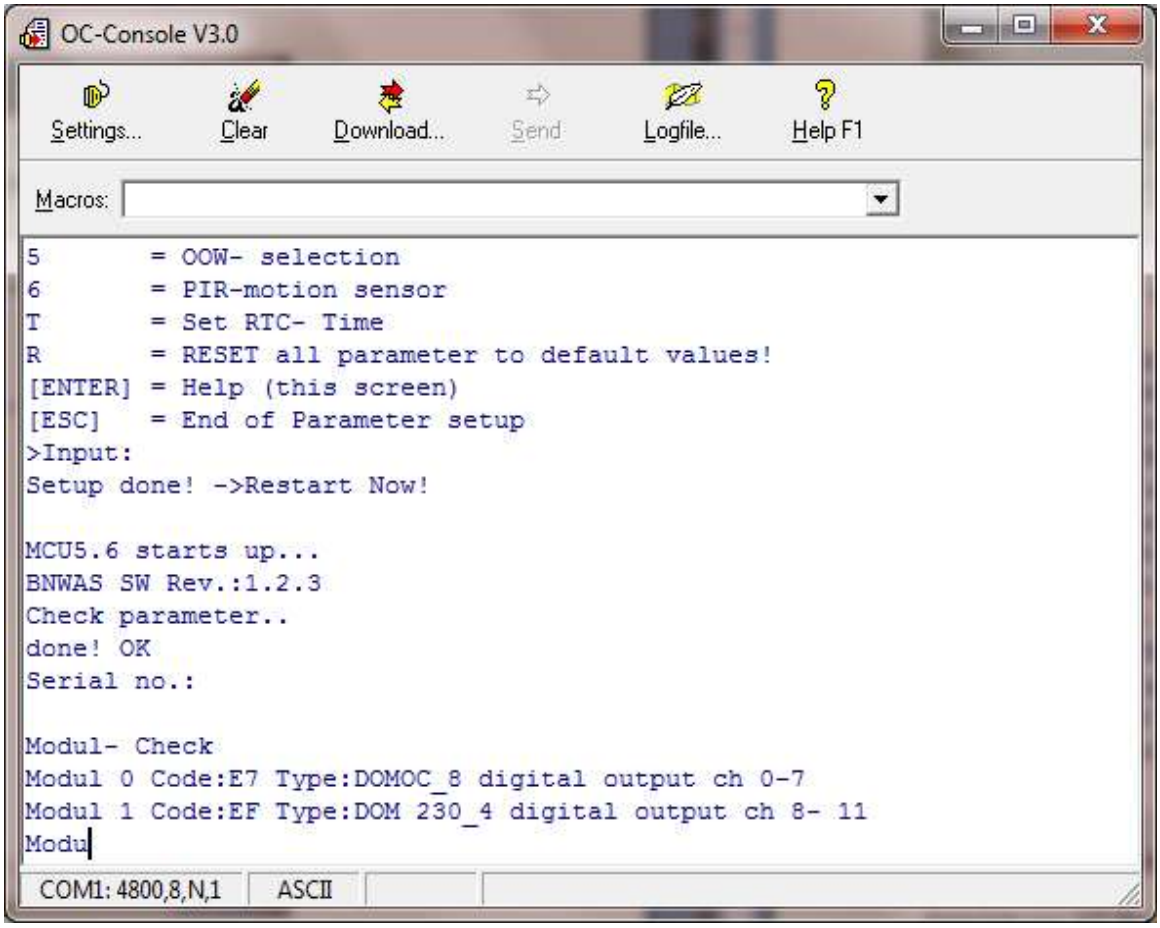


Figure 34: Exiting Setup

The ESC key will exit the setup and reboots the system.

6. Service and trouble shooting

At start up and during operation the software performs tests which are necessary for error-free operation. An internal system error is indicated by an alarm output shown by NO, which is passed on to terminal block X1. The error LED on the central processing unit shows these errors as well.
With the button " TEST" is it possible to check the function of all BNWAS- units at once.
If NMEA-inputs are expected the input can also be checked with this TEST button. See section system description. Additionally, if possible, error messages shown as NMEA-Telegrams

$BNALR,hhmmss.ss,nnn,S,A,c….c*<LRC]>CR][LF]

hhmmss.ss is the time event from the internal RTC of BNWAS
nnn is the identification of the reset source or the alarm source
S is the alarm status, which is not processed
A= Rest time has finished
V= Rest time has not finished
Q is the acknowledgment status of the alarm
A=acknowledged, V= unacknowledged

c…c Alarm Text
<LRC> is the checksum that is tested when , *‘ is present, otherwise it can be omitted.
In Table 5 lists the error codes of internal disorders of BNWAS.

Rebooting the system attempts to correct these errors.

nnn	**Cause inside the main unit**	**Troubleshooting**
1	CRC- Parameters set incorrectly! Occurs when the setup is aborted by reset	System automatically resets all parameters to factory setting
2	RTC- Error	Repairing by manufacturers
3	Bus/ EOL – Error	Set EOL jumpers only on the last module (DCM). Solid and correct setting of the modules tested in the central unit.

Figure 35: Error Codes of BNWAS

The failure of the main power supply is also detected as an error.
That will be indicated after 10 seconds by the error LED and the alarm contact.

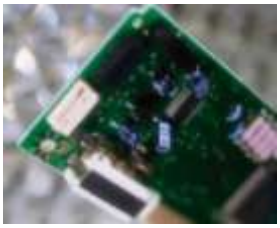
Other errors
The abbreviations (nnn) are shown in Table 2.
Error 202: Key switch is active.
If the key switch is in the Set- position the BNWAS is halted for 30 seconds.
After that time range the Set function will be skipped and the BNWAS works again.
The SET-key must turned to normal (horizontal) position before the next SET- function should be active.

If the error cannot be solved by the above measures then only the repairing is possible by the manufacturer. In continuous operation, the central processing unit is maintenance free for at least 15 years.
Buttons and switches are subjected to increased wear in the outdoors.
They can be ordered from the manufacturer.
The Lamps in BNWAS_ALR3 are 24V/3W types and may be exchanged by suitable spare parts.

Notice:

Do not hesitate to contact us for further information!

VEINLAND GmbH
Pappelallee 19
14554 Seddiner See OT Neuseddin
Germany
Phone: +49 33205 2697 0
Fax: +49 33205 2697 29
e-mail: info@veinland.net
web: www.veinland.net



.