

ONWA[®]
KEC-30G(MK2)

KEC-30G(MK2)
OPERATOR'S MANUAL

GPS/COMPASS

CE FC

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SAFETY INSTRUCTIONS

Safety Instructions for the Operator

WARNING
<p>Do not open the equipment.</p> <p>Only qualified personnel should work inside the equipment.</p>
<p>Do not disassemble or modify the equipment.</p> <p>Fire, electrical shock or serious injury can result.</p>
<p>Immediately turn off the power at the switchboard if the equipment is emitting smoke or fire.</p> <p>Continued use of the equipment can cause fire or electrical shock. Contact a ONWA agent for service.</p>
<p>Use the proper fuse.</p> <p>Use of a wrong fuse can damage the equipment or cause fire.</p>
<p>Be sure the power supply is compatible with the equipment.</p> <p>Incorrect power supply may cause the equipment to overheat.</p>
<p>The useable temperature range for the antenna unit is -25°C to 70°C; -15°C to 55°C for the display unit.</p> <p>Use of the equipment out of those ranges may damage the equipment.</p>

Safety Instructions for the Installer

WARNING
<p>Do not open the cover unless totally familiar with electrical circuits and service manual.</p> <p>Improper handling can result in electrical shock.</p>
<p>Turn off the power at the switchboard before beginning the installation.</p> <p>Fire or electrical shock can result if the power is left on.</p>
<p>Be sure that the power supply is compatible with the voltage rating of the equipment.</p> <p>Connection of an incorrect power supply can cause fire or equipment damage.</p>
<p>Use the proper fuse.</p> <p>Use of a wrong fuse can damage the equipment or cause fire.</p>

NOTICE		
<p>Observe the following compass safe distances to prevent interference to a magnetic compass:</p>		
	Standard Compass	Steering Compass
Display unit KEC-30G	0.4 m	0.3 m
Bearing/ GPS sensor	1.2 m	1.2 m

FOREWORD

Thanks you for purchasing the ONWA KEC-30G Electronic Compass with GPS. Your equipment is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless properly installed and maintained.

Please carefully read and follow the operation, installation and maintenance procedures set forth in this manual.

We would appreciate feedback from you.

Thank you for considering and purchasing ONWA.

FEATURES

The KEC-30G(MK2) is an improved version of ONWA KEC-30G. KEC-30G(MK2) can work with different kinds of heading sensors to suit different demands of customers.

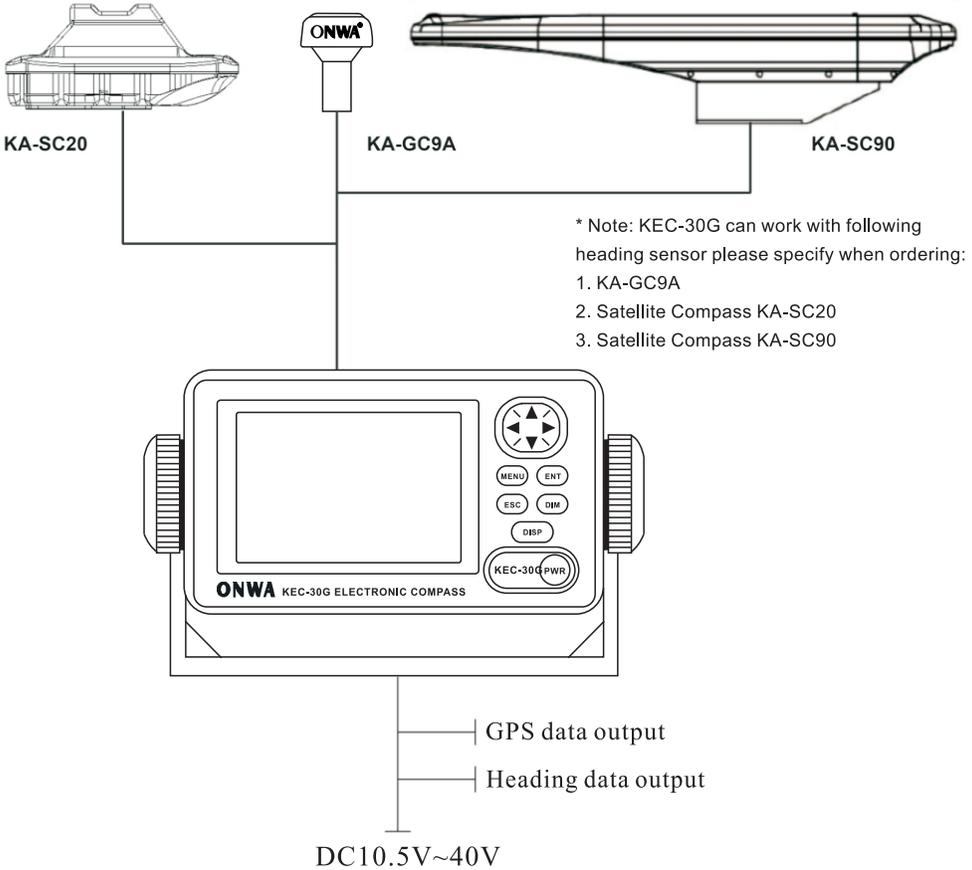
The KEC-30G is a Electronic Compass with GPS designed with ONWA's advanced LCD high definition display technology. This compass provides a wide range of applications for any type of ships at sea and vehicles on land.

The main features are

- Perfect for use as heading sensor for Radar/ARPA, AIS, ECDIS, scanning sonar
- There are no mechanical parts such as gimbals or rotating motor, thus the compass is free from routine maintenance
- It can work with various heading sensors, such as ONWA KA-GC9A and Satellite Compass
- The KEC-30G can correct magnetic deviation manually or automatically.
- Beside heading information KEC-30G can also provide GPS information, Lon/Lat, SOG and COG.

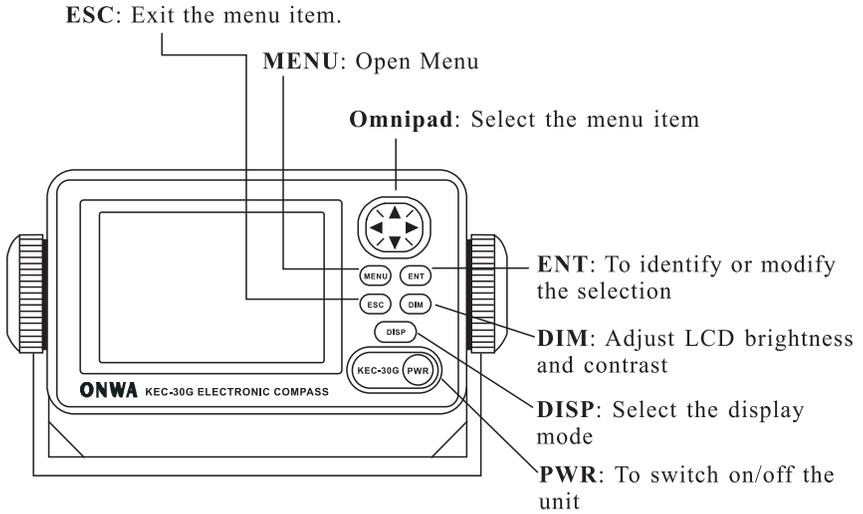
SYSTEM CONFIGURATION

The KEC-30G consists of a Display unit and a GPS/Compass Sensor unit



1. OPERATION

1.1 Controls



1.2 Turning the power on/off

- Turning the Power On, press [PWR] once to switch on the unit with a "beep" sound.

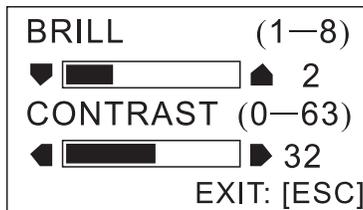


- Turning the Power Off, Press and hold [PWR] key until the unit turn off.



1.3 Panel Illumination, Display contrast

1. Press the [DIM] key.

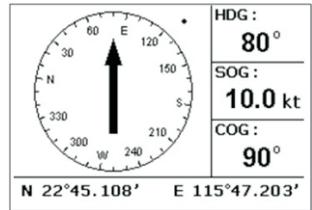
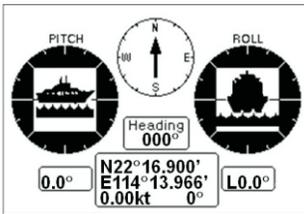
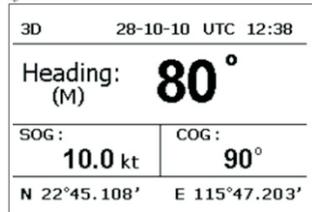
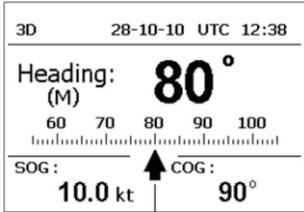


Dialog box for adjustment of panel illumination, display contrast

2. Press ▲ or ▼ to adjust LCD display brightness and panel illumination.
3. Press ► or ◀ to adjust LCD display contrast.
4. Press the [ESC] key to confirm and exit.

1.4 Display

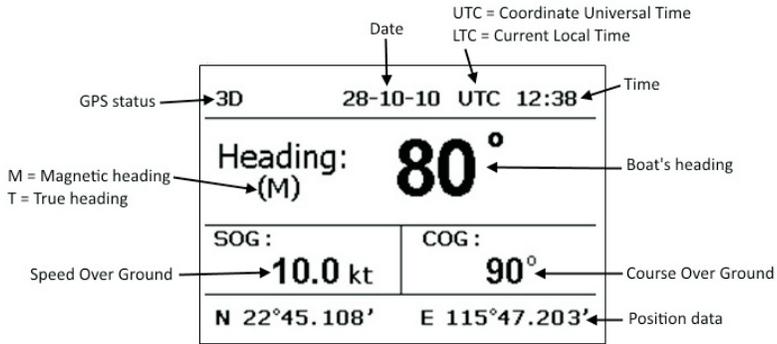
There are four display screen, press the [DISP] key to cycle.



Modes of display

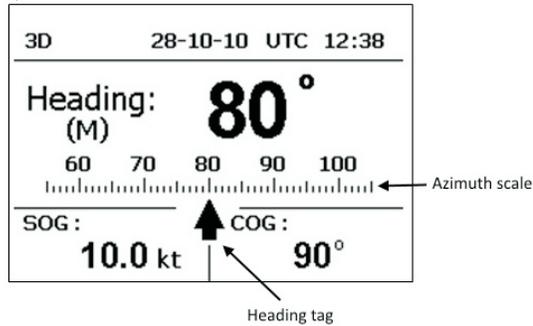
Navigation data display

The navigation data display shows magnetic heading, COG, SOG, date, time and position-fixing status.



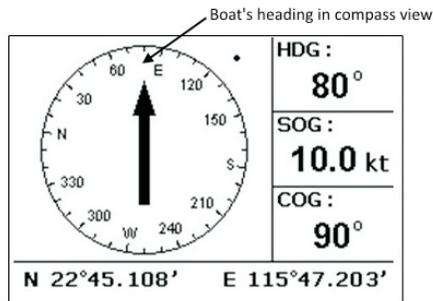
Steering display

The steering display shows heading in digital and analog form. SOG and COG are also indicated.



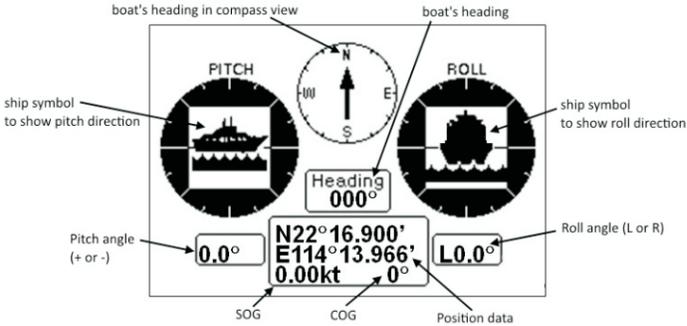
Compass display

The compass display shows heading by compass direction. The compass rotates with heading.



Roll and Pitch Display

The roll and pitch display is only available in using with heading sensor KA-GC9A or Satellite Compass. It shows roll and pitch data together with heading, COG, SOG and position.



1.5 Menu settings

Menu function provides settings of heading display in true or magnetic, fixing supplement, rectification azimuth angle, time setting, output selection options, heading sensor selection and factory default.

Press [MENU] key in any display mode :

MENU
HEADING DISPLAY : TRUE
MANUAL HEADING ADJUST
HEADING ALIGNMENT SETTING
LANGUAGE SETTING
TIME SETTING
OUTPUT SETTING
FACTORY DEFAULT SETTING

1.5.1 Heading Display

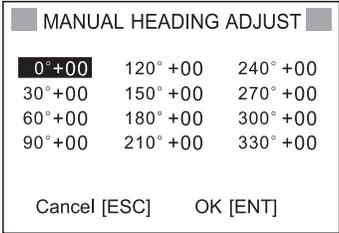
User can choose the heading on all display modes is displayed as True heading or Magnetic heading. In the menu select "HEADING DISPLAY" and press [ENT] key. The following window appears:

MENU
HEADING DISPLAY : MAGNETIC
MANUAL HEADING ADJ TRUE
HEADING ALIGNMENT SETTING
LANGUAGE SETTING
TIME SETTING
OUTPUT SETTING
FACTORY DEFAULT SETTING

1.5.2 Manual Heading Adjust

Manual Compensation is a supplement to the type of single orientation parabola to adjacent 10 degrees. But this method could only be done by qualified personnel.

1. In the menu select "MANUAL HEADING ADJUST" and press [ENT] key. The following window appears:



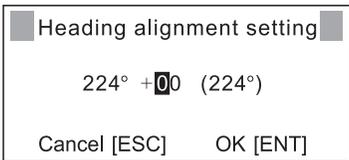
2. Use up, down key to select the direction angle need to be modified, then use left, right key to increase or decrease the number of angle in Degree. The highest may adjust $\pm 10^\circ$.
3. Press [ENT] key to save.

Note: Anyway ship's magnetic compass and electronic fluxgate compass shows each azimuth are unlikely to maintain consistent.

1.5.3 Heading Alignment Setting

Adjustment of heading might be needed during the installation. Usually a fixed error in all direction would exist. It is due to the mechanical error when fixing the Bearing/GPS sensor. The function "HEADING ALIGNMENT SETTING" is used to correct this error.

1. In the menu select "HEADING ALIGNMENT SETTING" and press [ENT] key. The following window appears:



2. Move the cursor to the corresponding field.
3. Press ▲ or ▼ to change the direction and angle in degree. The highest may adjust $\pm 99^\circ$.
4. Press [ENT] key to save or press [ESC] to quit without save.

1.5.4 Time Setting

In the menu "TIME SETTING" to enter the corresponding time difference.

1. In the menu option to select "TIME SETTING" and press [ENT] key.

The following window appears:

TIME SETTING	
+ 00:00	
Cancel [ESC]	OK [ENT]

2. Press ► or ◀ key to move the cursor to the field need to be modified.
3. Press ▲ or ▼ key to modify the time difference.
4. Press [ENT] key to save or press [ESC] to quit without save.

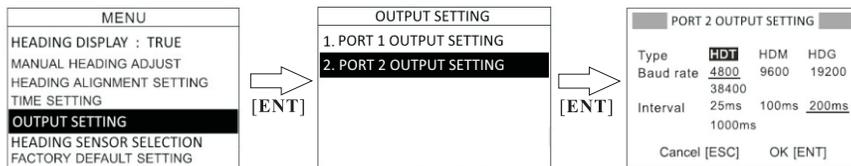
Note: If the change successful. The UTC in the top right corner will turn into LTC.

1.5.5 OUTPUT SETTING

There are two output ports from KEC30G, port 1 and port 2. The user can set two output ports different baudrate, heading intervals independently.

Press [MENU] to select "OUTPUT SETTING", then select the port you want to make change on either baudrate or heading intervals.

Example if you want to change the settings of Port 2 :



Note: For KA-GC05 you can only change the baudrate and heading intervals at Port1. For the baudrate of Port2 is fixed at 4800 and heading intervals is fixed at 200ms.

1.5.6 Output Interface

Output : 2 x NMEA0183

Electrical : 2 x RS232

Output of Port 1 and Port 2 :

a) Output sentences :

1) HDT, HDM, HDG (selectable, HDT is set as default)

2) RMC, GSA, GGA, VTG, ZDA (fixed)

b) Heading output interval selections : 25ms, 100ms, 200ms (default) and 1,000ms

c) Output baudrate selections : 4800 (default), 9600, 19200 and 38400 (selectable)

KEC-30G PORT 1 OUTPUT SELECTION

Baud rate	Output interval	Available sentences	Remarks
4800	25ms <input type="checkbox"/> (True)	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input type="checkbox"/> RMC; GSA; GGA; VTG; GMS.	
	100ms <input type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input checked="" type="checkbox"/> 2 of 3 <input type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 48 character/interval
	200ms <input type="checkbox"/>	<input checked="" type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 96 character/interval + Parts of NMEA sentence will be inserted to each interval
	1000ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 480 character/interval
9600	25ms <input type="checkbox"/>	<input checked="" type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 24 character/interval
	100ms <input type="checkbox"/>	<input checked="" type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 96 character/interval + Parts of NMEA sentence will be inserted to each interval
	200ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 192 character/interval + Parts of NMEA sentence will be inserted to each interval
	1000ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 960 character/interval
19200	25ms <input type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input checked="" type="checkbox"/> 2 of 3 <input type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 48 character/interval
	100ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 192 character/interval + Parts of NMEA sentence will be inserted to each interval
	200ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 384 character/interval
	1000ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 1920 character/interval
38400	25ms <input type="checkbox"/>	<input checked="" type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 96 character/interval + Parts of NMEA sentence will be inserted to each interval
	100ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 384 character/interval + Parts of NMEA sentence will be inserted to each interval
	200ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 768 character/interval
	1000ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 3840 character/interval

KEC-30G PORT 2 OUTPUT SELECTION

1. KA-GC9A

Baud rate	Output interval	Available sentences	Remarks
4800	200ms <input type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 96 character/interval + Parts of NMEA sentence will be inserted to each interval
	1000ms <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 480 character/interval
9600	100ms <input type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 96 character/interval + Parts of NMEA sentence will be inserted to each interval
	200ms <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 192 character/interval + Parts of NMEA sentence will be inserted to each interval
	1000ms <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 960 character/interval
19200	100ms <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 192 character/interval + Parts of NMEA sentence will be inserted to each interval
	200ms <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 384 character/interval
	1000ms <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 1920 character/interval
38400	100ms <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 384 character/interval + Parts of NMEA sentence will be inserted to each interval
	200ms <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 768 character/interval
	1000ms <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> HDT <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 3840 character/interval

2. KA-SC20 or KA-SC90

Baud rate	Output interval	Available sentences	Remarks
	200ms <input type="checkbox"/>	<input checked="" type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input type="checkbox"/> 3 of 3 (HDT; HDM; HDG)	+ Max 96 character/interval

4800		<input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Parts of NMEA sentence will be inserted to each interval
	1000ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 480 character/interval
9600	100ms <input type="checkbox"/>	<input checked="" type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 96 character/interval + Parts of NMEA sentence will be inserted to each interval
	200ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 192 character/interval + Parts of NMEA sentence will be inserted to each interval
	1000ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 960 character/interval
19200	100ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 192 character/interval + Parts of NMEA sentence will be inserted to each interval
	200ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 384 character/interval
	1000ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 1920 character/interval
38400	100ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 384 character/interval + Parts of NMEA sentence will be inserted to each interval
	200ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 768 character/interval
	1000ms <input checked="" type="checkbox"/>	<input type="checkbox"/> 1 of 3 <input type="checkbox"/> 2 of 3 <input checked="" type="checkbox"/> 3 of 3 (HDT; HDM; HDG) <input checked="" type="checkbox"/> RMC; GSA; GGA; VTG; ZDA.	+ Max 3840 character/interval

Remarks : "True " means heading sentences guarantee the output interval , if not they just continue output and not by interval.

NMEA sample sentence with chars count

\$GPRMC,035135.991,A,2247.2476,N,11520.3566,E,025.8,293.8,270407,002.3,W*77<CR> 76 chars

\$GPGSA,A,3,29,26,02,10,24,06,07,xx,xx,xx,xx,03.4,01.7,02.9*03<CR> -> 66 chars

\$GPGGA,035135.991,2247.2476,N,11520.3566,E,1,07,01.7,-0011.3,M,01.6,M,,*71<CR> -> 76 chars

\$GPVTG,293.8,T,296.1,M,025.8,N,0047.8,K*76<CR> -> 44 chars

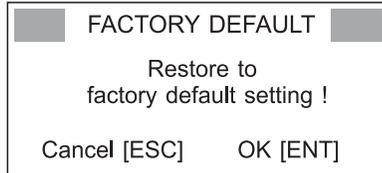
\$-ZDA,hhmmss.sss,xx,xx,xxxx,xx,xx*hh<CR> -> 39 chars

=> 76 + 66 + 76 + 44 + 39 = 301 chars

1.5.7 Factory Default Settings

For any reason need to reset all settings to factory default setting you can do as following instruction.

1. In the menu options to select "**FACTORY DEFAULT SETTING**" and press **[ENT]** key. The following window appears:



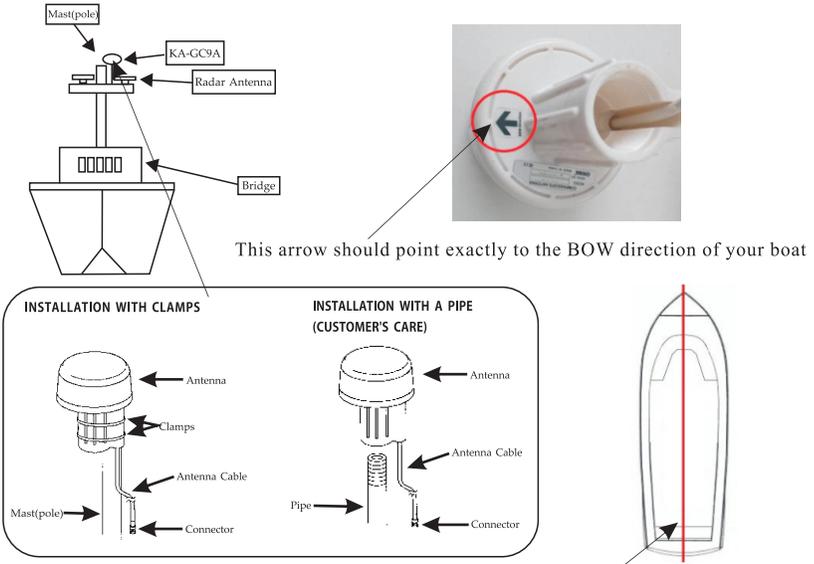
2. Press the **[ENT]** key to load factory default setting or press **[ESC]** to quit without any change.

Note: When you select to load factory default setting all saved settings would be cleared. This action can not reversible.

2. INSTALLATION & MOUNTING CONSIDERATIONS

2.1 Installation of GPS/Compass sensor KA-GC9A

When you turn over the KA-GC9A you can see an arrow sign on the antenna base. Please make sure this arrow should point exactly to the BOW direction.



Considerations before installation:

- Please install the KA-GC9A as close as the central axis of your boat in order to get more accurate GMS (rolling and pitching data) output.
- Please install the KA-GC9A outside, ensure that the GPS is not covered.
- Keep the length of the cable in mind when selecting a mounting location.
- It should be installed with a minimum of 1 meter to prevent the influence of iron and steel or other magnetic materials.
- Do not use magnetic screws for fixing KA-GC9A.
- Select the vertical way position for installation.

2.2 Installation of Satellite Compass KA-SC20 or KA-SC90

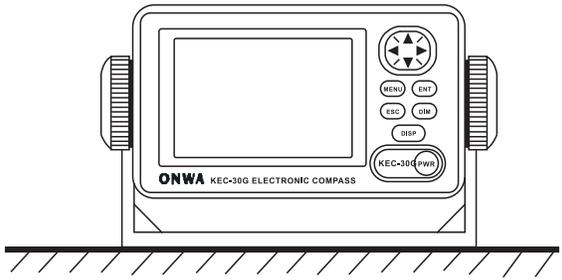
Please refer to the operator manual of KA-SC20 and KA-SC90

2.3 Installation of Display Unit

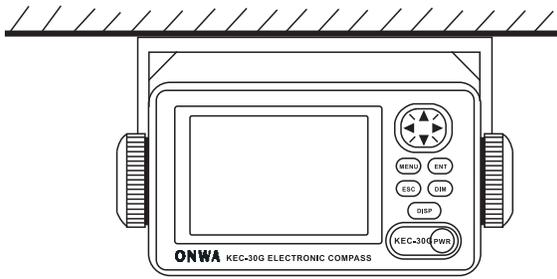
- Choose a location where vibration and shock are minimal.
- Install the unit well away from location subject to rain and water splash.
- Locate the unit away from air conditioner vents.
- Keep the unit out of direct sunlight because of heat that can build up inside their cabinets.
- Choose a well-ventilated location.
- Choose a location where it can be easily operated.
- Leave sufficient space around the units to permit access for maintenance. See the outline drawing for recommended maintenance space.

2.3.1 Desktop, Overhead mounting

1. Fasten the hanger to the mounting location with four tapping screws (supplied). See the outline drawing for mounting dimensions.
2. Screw the knobs into the display unit.
3. Set display unit to the hanger and tighten the knobs.
4. Run the ground wire between the ground terminal on the display unit and the ship's superstructure.



Desktop



Overhead

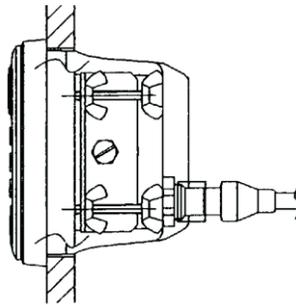
2.3.2 Flush mount

Flush mount

1. Fasten the display unit to the mounting location with tapping screws.
Connect host unit for power supply.
2. Prepare or buy installation accessories. The list below:

Name	Type	Qty
Flush Mount Fixture	Manufacturing	2
Wing Bolt	M4X30	4
Wing Nut	M4	4
Hex Bolt	M6X12	2
Spring Washer	M6	2

3. Fasten the cosmetic panel to the display unit with hex bolts and spring washers.
4. Screw the butterfly nut on the butterfly bolt.
5. Fix the display unit with the butterfly bolt and then tighten the butterfly nut.

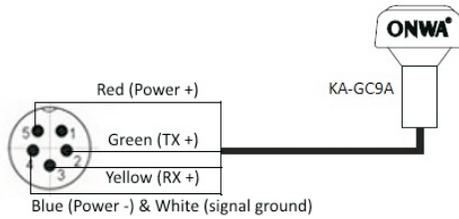


Flush mount “S”

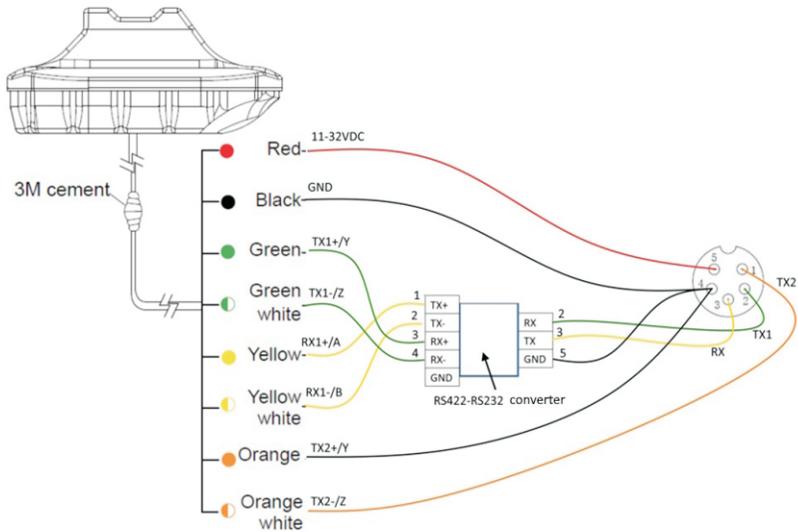
2.4 Wiring

2.4.1 GPS/Compass sensor KA-GC9A connection

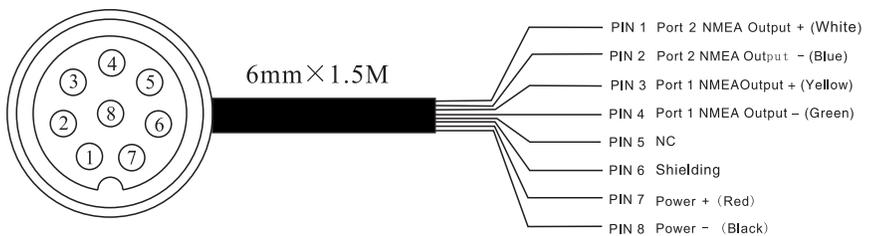
Connection of KA-GC9A to the 5 pins connector of KEC-30G as below:



2.4.2 Satellite Compass KA-SC20 or KA-SC90



2.4.3 Power/Data cable connection



Power/data cable connection diagram

3. MAINTENANCE, TROUBLESHOOTING

WARNING



ELECTRICAL SHOCK HAZARD
Do not open the equipment.

Only qualified personnel should work inside the equipment.

3.1 Preventive maintenance

Regular maintenance is important for good performance . A maintenance program should be established and should include the following points.

- Check connectors and ground terminal on the fluxgate sensor unit and display unit for tightness.
- Check ground terminal for rust. Clean or replace as necessary.
- Check for water leakage in the interconnection cable between fluxgate unit and display unit. Clean or replace as necessary.
- Remove dust and dirt from the display unit and fluxgate sensor unit with a dry, soft cloth. For the LCD, wipe it carefully to prevent scratching, using tissue paper and an LCD cleaner. To remove stubborn dirt, use an LCD cleaner, wiping slowly with tissue paper so as to dissolve the dirt. Change paper frequently so the dirt will not scratch the LCD. Do not use chemical cleaners for cleaning they can remove paint and markings.

Note: do not use contain chemical cleaners clean, it might help to eliminate paint and equipment will be marked.

3.2 Troubleshooting

This section provides basic troubleshooting procedures which the user may follow to restore normal operation.

Troubleshooting

Symptom	Cause	Remedy
Cannot turn on the power	Power cable on the display unit	Firmly connect the power cable
	Power supply failure	Check the power supply.
	Blown fuse	Have a qualified technician check the fuse.
Heading indication changes randomly when ship is at anchor or does not change when ship moves.	Sensor trouble	Change the heading sensor
Heading output from KEC-30G does not appear on external equipment.	Connection between KEC-30G and external equipment has loosened.	Firmly fasten the connector.
	Display trouble	Call Onwa dealer

If large heading error occurs or heading indication is frequently interrupted, contact your dealer for advice.

THE SPECIFICATIONS OF ELECTRONIC GPS/COMPASS KEC-30G

1. Heading sensors

Please download the specifications of the following heading sensors you ordered from <http://www.onwamarine.com> website

- KA-GC9A
- Satellite Compass KA-SC20 or KA-SC90

2. Power supply

2.1 Electrical : 10.5 – 40VDC

2.2 Protection : over-current, over-voltage, power transient and accidental reverse polarity protection

3. Output/Input (IEC61162-1)

3.1 Input : 2 x NMEA0183

- a) Input sentences : GGA, GLL, GMS, GNS, GSA, GSV, RMC, VTG, HDT, PASHR
- b) Baudrate : auto scan up to 38400
- c) Support GPS/Compass sensor : KA-GC9A and Satellite Compass (KA-SC20 or KA-SC90)

3.2 Output : 2 x NMEA0183

Port 1 and Port 2 (RS232) :

- a) Output sentences : HDT, HDM and HDG (selectable) and RMC, GSA, GGA, VTG, ZDA (fixed)
- b) Heading output interval selections : 25ms, 100ms, 200ms (default) and 1,000ms
- c) Output baudrate selections : 4800 (default), 9600, 19200 and 38400 (selectable)

4. Environment conditions

4.1 Ambient temperature

Display unit : -15°C to +55°C

GPS/Compass sensor unit : -25°C to +70°C (for KA-GC9A)

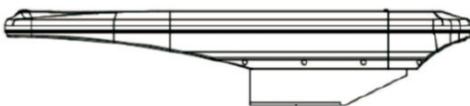
4.2 Humidity 93% ±3% on 40°C

4.3 Waterproofing

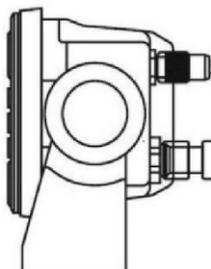
Display unit : IPX5

GPS/Compass sensor unit : IPX7 (for KA-GC9A)

INTERCONNECTION DIAGRAM



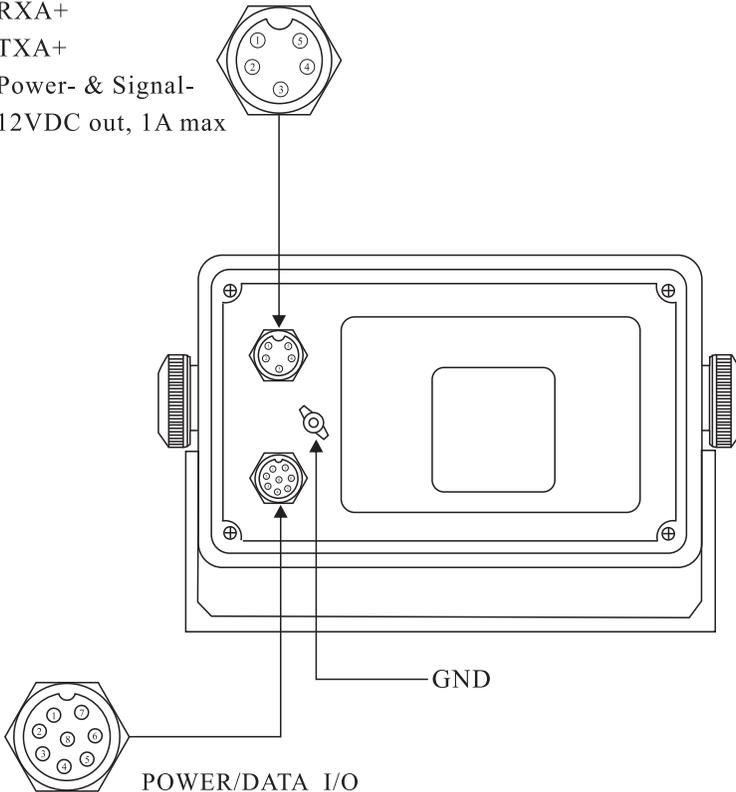
Note :
You can connect either :
1. KA-GC9A or
2. KA-SC20 or KA-SC90



Radar
Plotter
Echo sounder
etc.....

DC10.5~40V

- ① RXB+
- ② RXA+
- ③ TXA+
- ④ Power- & Signal-
- ⑤ 12VDC out, 1A max



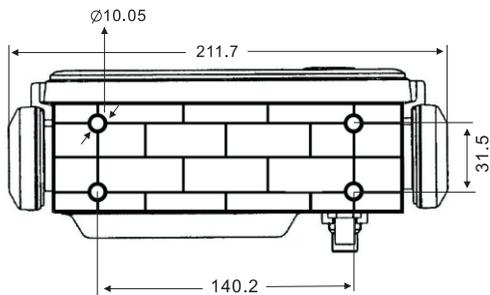
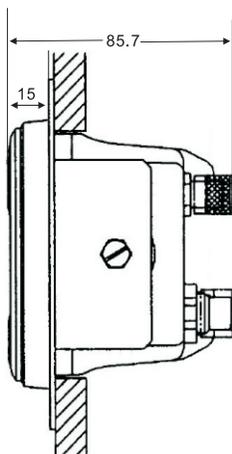
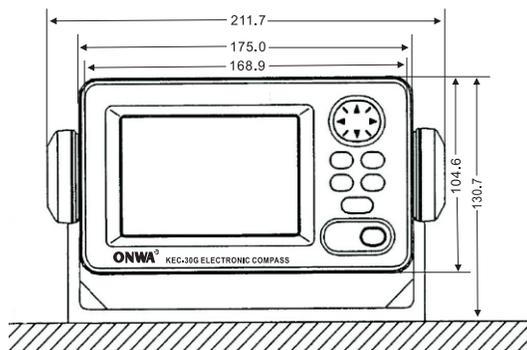
POWER/DATA I/O

- ① Port 2 NMEA Output + (White)
- ② Port 2 NMEA Output - (Blue)
- ③ Port 1 NMEA Output + (Yellow)
- ④ Port 1 NMEA Output - (Green)
- ⑤ NC
- ⑥ Shielding
- ⑦ Power + (Red)
- ⑧ Power - (Black)

Note:

Port2(pin1&2) direct data output from heading sensor(realtime data), it is recommended for use of Autopilot connection

DISPLAY UNIT SIZE



GPS/Compass SENSOR UNIT SIZE

