SUZUKI

10.4 inch LCD color
ECHO SOUNDER

ES-1080

OPERATION MANUAL

SUZUKI FISH FINDER CO., LTD.

HEAD OFFICE: 12-1 MAMIZUKACHO, TOYOHASHI, AICHI, 441-8007 JAPAN

PHONE: (81) 532-32-7511   FAX: (81) 532-32-7500
e mail address: sales@suzukiff.co.jp   URL: http://www.suzukiff.co.jp/

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INTRODUCTION

Thank you for purchasing the ES-1080.
This operation manual provides complete information on safely operating
the COLOR LCD ECHO SOUNDER MODEL ES-1080 to its full potential.

Before operating this equipment, please read this manual thoroughly to understand
the operation to avoid any trouble and possible injury in advance.

SYMBOLS

The following conventions are used in this manual.

Before using this unit, make sure to understand the following, which are used throughout this manual.

⚠ DANGER	: indicates and imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	: indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.
⚠ CAUTION	: indicates precautionary measures to avoid potential problems.
NOTE !	: indicates contents for the user's reference.
cf	: see the page.

CAUTION NOTE

This manual contains important information about the ES-1080.
In order to fully understand the operation, and know detailed information for your safety, please read this manual carefully.

Keep this operation manual in a safe place where it is easy to find.
When you give this unit to someone else, make sure to give this manual, too.

Any use other than that mentioned in this manual is not guaranteed.
The contents in this manual are subject to change without notice or obligation.

Please contact us if you should have any questions regarding the use of this equipment.

POWER ON/OFF

Press and hold the POWER ON key to turn on the power.   After one beep the echo sounder display appears on the screen.   Hold the POWER OFF key to turn the power off.

KEY OPERATION

One beep will advise you when a right function is performed.

Three beeps will advise you when a wrong operation or a wrong key is pressed.

TFT LCD

The high quality TFT (Thin Film Transistor) LCD displays 99.99% of its

picture elements.   The remaining 0.01% may drop out or light, however

this is an inherent property of the LCD.   It is not a sign of malfunction.

ENVIRONMENTAL CONDITIONS

⚠ WARNING

Keep the unit away from flammable gas.

It will cause fire.

⚠ CAUTION

Pay attention to the following environmental conditions on mounting,

otherwise the unit may become heated causing trouble and malfunction.

- It is recommended that it will be mounted in a location which provides

  protection from spray or heavy vibration.

- Do not bring any other heated object close to the equipment.

- Do not bring any magnetic object close to the equipment.

CONVENIENT LOCATION

⚠ WARNING

Find a convenient location. The ES-1080 may be mounted

upright on any level surface and tighten securely.

Make sure the following on wiring. Otherwise damage or fire may occur.

- Take care of connecting the cables not to be disturbed the operation.

- Do not use the cables bent, twisted or stretched by force.

- Do not put heavy objects on the cables.

⚠ CAUTION

When removing/plugging in cables, make sure to turn the power off.

Never pull cables, otherwise it may damage the unit and result in fire

or electrical shock.

POWER REQUIREMENTS

⚠ WARNING

Operating voltage: 10.5 to 40 volts DC

Please use correct voltage, otherwise, it will lead to fire or electric shock, or damage to the unit.

⚠ CAUTION

Make sure to turn off the power by the power "ON/OFF" keys on the control panel. Turning on/off the power by the ships switchboard may damage the unit or cause problems with operations. When starting the vessels engine, make sure the power of this unit is turned off, otherwise it may cause problems with the unit.

HANDLING

⚠ DANGER

Do not operate this unit while steering.
It could result in collision and serious injury or damage.
Do not open the main unit case. Otherwise electrical shock, damage, and serious bodily injury to user may result. For inspection/adjustment/parts installation/repair, please ask your dealer. There is a high voltage component inside, and it will result in electric shock.
The sufficient reinforcement and water tightness should be make when installing the transducer.
It could result in collision and serious injury or damage.

⚠ WARNING

Please use the specified fuse.
If not, it could result in malfunction and / or fire.
Please use the specified power supply cable cords.
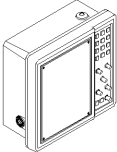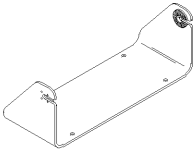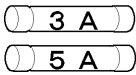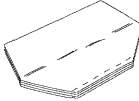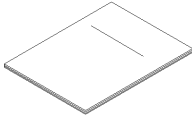Using cables other than those specified could generate heat an
When replacing batteries,
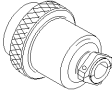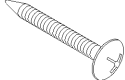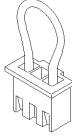- Insert new batteries. Be sure that the polarity ($+$, $-$) is correct.
- Never subject batteries to very hot or cold temperatures, or
  disassemble or dump into fire/water.
- Never use batteries with fluid leaking out.
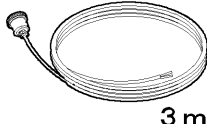
SUPPLIED COMPONENTS

COMPOSITION

CODE		＊＊ＮＡ１１０	＊＊ＮＡ１２１		
ITEM	MAIN UNIT	BRACKET	POWER FUSE	UNIT COVER	O. MANUAL
PARTS#	—	35275C	—	2035-COV	1080-OPM-E
QTY	1	1	EACH 3	1	1

POWER FUSE: 3 A, 5 A

CODE	＊＊ＮＡ０１０				＊＊ＮＡ１２１
ITEM	POWER SUPPLY CABLE	TD PLUG	TAPPING SCREW	HEX.BOLT	JUMPER PLUG
PARTS#	33282D	HS21P-3	M 6 x 20	M 8 x 20 with washer	WJ-602
QTY	1	1	4	2	1

POWER SUPPLY CABLE: 3 m

NOTE :   1) The code number is shown on the packages.   However ＊＊ indicates the lot management number.
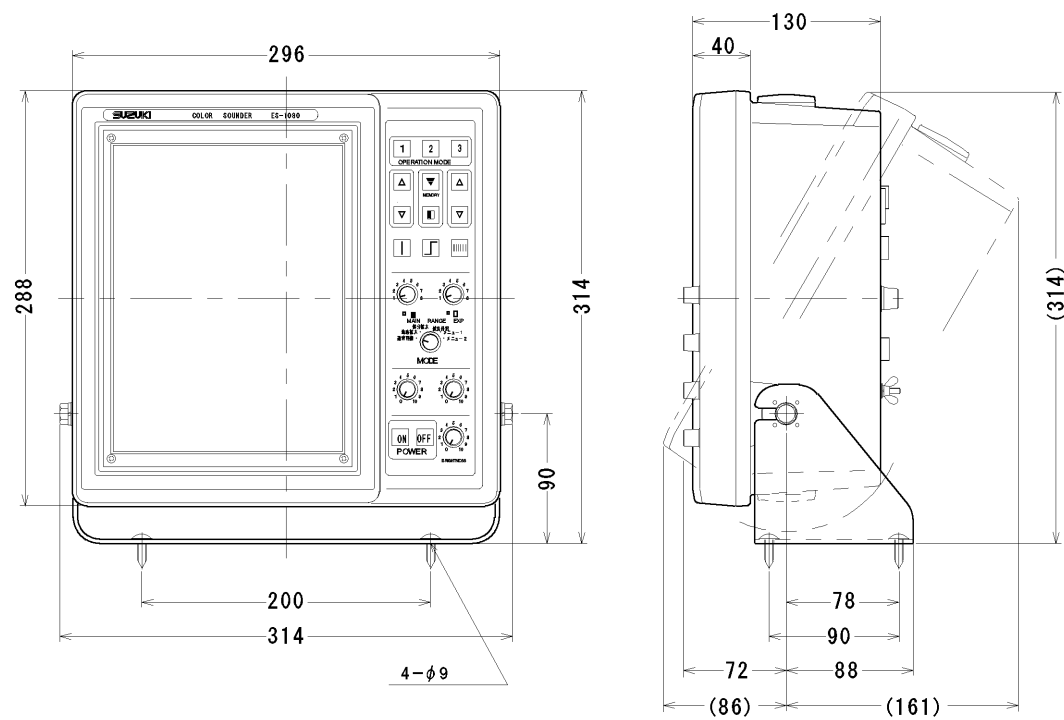
2) Transducers and TD related parts are shipped only when required.
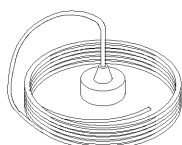
3) ＊＊ NA121 - JUMPER PLUG is included only when the unit ES-1080FFS is shipped.

INSTALLATION

DIMENSIONS

CONNECTIONS to REAR PANEL

**TEMPERATURE
SENSOR SIGNAL INPUT**
–To be connected to an optional
  temperature sensor OP-102 or
  OP-41-1.

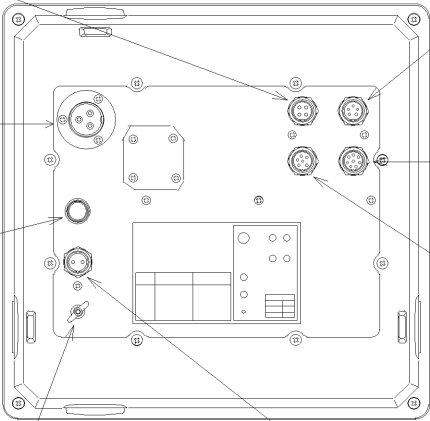**3 PIN TRANSDUCER
TERMINAL**
–To be connected to the transducer

FUSE HOLDER
–Use the correctly-rated fuse
  specified below.

POWER SUPPLY	FUSE RATING
12V...........................5A	
24V...........................3A	
32V...........................3A	

EARTH TERMINAL
–To be connected to a GND point.

NAVIGATOR INTERFACE
–NMEA-0183 data input or to be
  connected to a navigator.

**EXTERNAL SOUNDER
INTERFACE
(IN/OUT terminal)**
–To be connected to an external
 sounder.

NMEA-0183 DATA OUTPUT
–NMEA-0183 data (depth and
  water temp.) output to an
  external equipment.

POWER SUPPLY TERMINAL
–The power supply voltage range from 10.5 to
  40 volts DC.

MAIN UNIT MOUNTING

1) Using the attached tapping screws (4 pcs), secure the mounting bracket to the site selected.
2) Screw the hexagonal bolts (M8 x 20 with washer) temporarily to the notches of the mounting bracket.
3) Insert the main unit and select a comfortable viewing angle.
   Tighten the hexagonal bolts.

⚠ WARNING
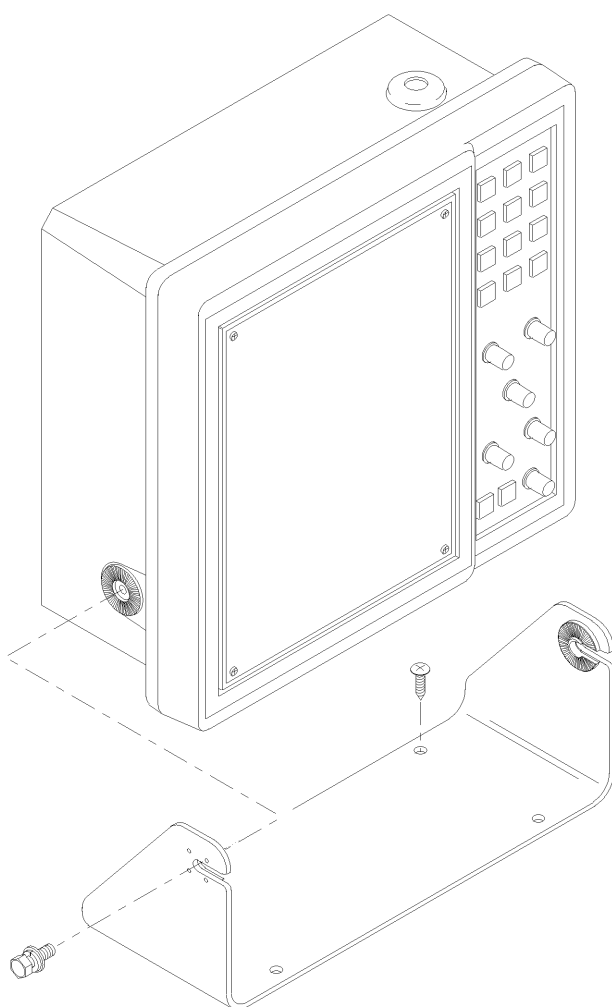
The unit should be installed
on a flat surface.
Do not use the unit while
tentatively installed,
otherwise it may cause trouble.

⚠ CAUTION

For long term trouble-free service, the proposed site for installation should
be free as much as possible from shocks and engine vibrations and away from salt
spray, heat sources and direct sunlight.

ELECTRICAL CONNECTIONS

NMEA -INTERFACE (6 pins)

PIN No.	CONNECTION
No. 1	NC
No. 2	NC
No. 3	SHIELD
No. 4	SIGNAL OUTPUT+
No. 5	SIGNAL OUTPUT−
No. 6	NC

WATER TEMP.SENSOR (4 pins)

PIN No.	CONNECTION
No. 1	WHITE
No. 2	SHIELD
No. 3	NC
No. 4	BLACK

NAVIGATOR -INTERFACE (5 pins)

PIN No.	CONNECTION
No. 1	SIGNAL INPUT+
No. 2	SIGNAL INPUT−
No. 3	SHIELD
No. 4	SIGNAL OUTPUT+
No. 5	SIGNAL OUTPUT−

3 PIN PLUG for TRANSDUCER

No.3: WHITE

No.1: BLACK   No.2: SHIELD
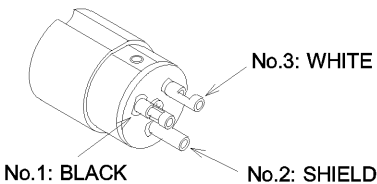
The two leads (No.1 and No.3)
may be reversed without affecting
the transducer performance.
(No.1: white   No.3: black)

In some cases, the colors of the leads
differ according to the type of transducer.
Solder the cable's leads and shield to the
three pins on the plug body.

EXTERNAL SOUNDER −INTERFACE (8 pins)

PIN No.	CONNECTION
No. 1	TRIGGER SIGNAL INPUT
No. 2	TRIGGER SIGNAL OUTPUT
No. 3	RX SIGNAL INPUT
No. 4	RX SIGNAL OUTPUT
No. 5	GND
No. 6	N C
No. 7	N C
No. 8	SHIELD

G N D   (STANDARD TYPE)

TRANSDUCER

2 PIN PLUG for POER SUPPLY CONNECTION
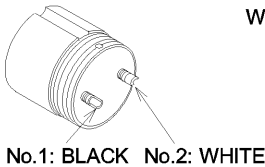
WHITE: POSITIVE TERMINAL

BATTERY

No.1: BLACK   No.2: WHITE

BLACK: NEGATIVE TERMINAL

⚠ CAUTION
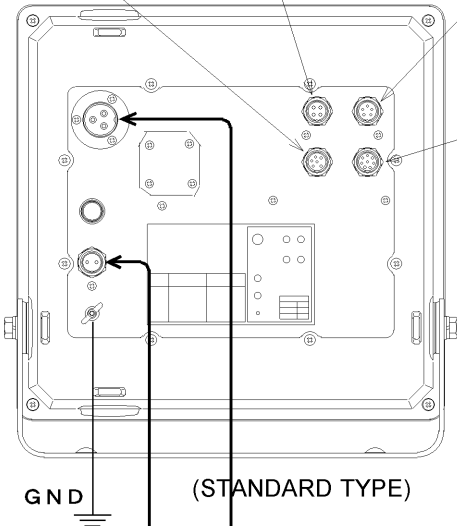
Power requirement: DC10.5 - 40V
Using any power voltage other than the indicated voltage can cause it to lead to fires or electric shocks.

Use the indicated power supplied cables.
Using any power supplied cable other than the indicated cable can cause it to lead to fires.
The ES-1080 must be turned off while connecting/disconnecting the cables.
Otherwise the cables may be damaged and result in fires or electric shocks.

Do not use the cables bent, twisted or stretched by force.
Do not put heavy objects on the cables.   Otherwise the cables may be damaged and result in fires or electric shocks.

CONTROL PANEL

The main functions of the ES-1080 sounder is all controlled by means of the dials and keys.

OPERATION MODE KEYS :
[cf] PAGE 68
Calls up the user-defined setting or changes the settings.

EXPANSION / VRM KEYS :
[cf] PAGE 69
Selects the upper expansion start point for Partial expansion mode or enters a vertical marker in the display.

MARK KEY : [cf] PAGE 71
Enters a vertical mark line on the display.

RANGE DIAL : [cf] PAGE 64
Selects the basic range.

MODE SELECTION DIAL :
[cf] PAGE 60
Selects the display mode.

FAR GAIN DIAL :
[cf] PAGE 66/67
Adjusts presentation of received echo in the long range.

POWER SUPPLY KEYS :
[cf] PAGE 4
Turns on the power or turn the power off.
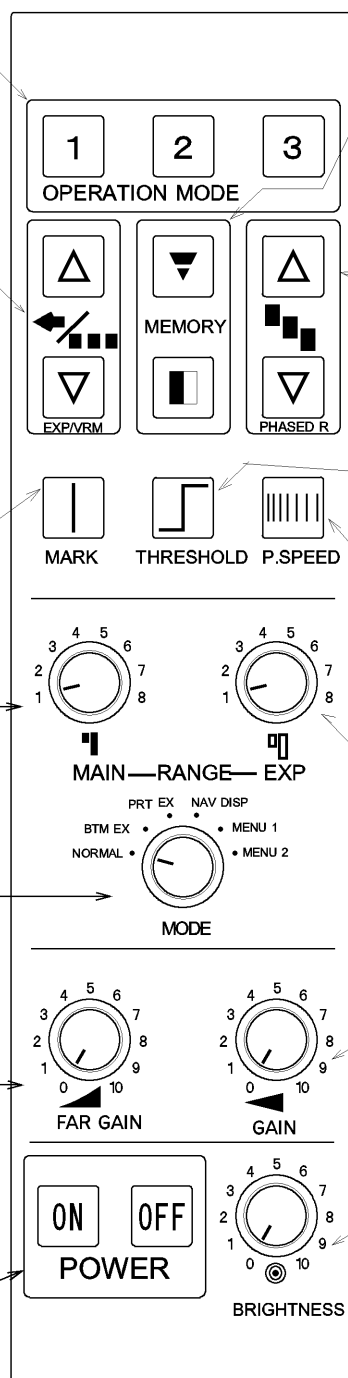
MEMORY WRITE / READ KEY :
[cf] PAGE 70
MEMORY WRITE KEY inserts data of the right half of the screen. MEMORY READ KEY displays memorized data on the left half of the screen.

PHASED RANGE KEYS :
[cf] PAGE 70
Adjusts the scale/range of depth between available values.

THRESHOLD KEY : [cf] PAGE 73
Eliminates the weak target colors from the display.

PICTURE SPEED KEY :
[cf] PAGE 72
Selects the rate of picture movement.

EXPANSION RANGE DIAL :
[cf] PAGE 64
Selects the expansion range for the bottom expansion mode.

GAIN CONTROL DIAL :
[cf] PAGE 65
Adjusts presentation of received echo.

BRIGHTNESS CONTROL DIAL : [cf] PAGE 67
Adjusts the display brightness.

MODE EXAMPLE

DISPLAY

The below shows an example for Normal display mode.
Bottom expansion display mode and Partial expansion display
mode are different from this display.

OPERATION MODE KEY
cf page 68

EXPANSION START POINT
cf page 69

PICTURE SPEED RATE
cf page 72

INTERFERENCE
REDUCTION
cf page 26

AUTO RANGE/
AUTO SHIFT INDICATION
appears when activated.
cf page 74

TX POWER
cf page 25

PHASED RANGE
cf page 70

```
32.5  M-0-1  PWR-HIGH  IR-OFF  PF-1/1  AUTO-RANGE  0.0
```

TIME MARKER
30 seconds elapsed time

DISPLAY START POINT
indicates the depth of
the transducer face.

VRM
cf page 69

WATER TEMP.GRAPH op
cf page 33

WATER TEMP.SCALE op
cf page 33

COLOR SCALE
cf
page 24/34

23.4

EXPANSION START MARK
cf page 69

SEA BOTTOM

FISH SCHOOL

DEPTH SCALE
cf page 32/64

WATER TEMP. op
cf
page 33/37/40

16.3 ° c

39.2 m

34° 43.130' N   12.3kt
137° 05.790' E   219° T

SHIP'S SPEED op/COURSE op
cf page 35

SHIP'S POSITION
LATITUDE/LONGITUDE op
cf page 34

DEPTH   cf   page 31/37/39

NOTE : op shows optional equipment required.

INITIAL SETTINGS

This chapter explains the initial function settings and

return to factory settings of the ES-1080 Echo sounder.

INITIAL SETTINGS

FACTORY SETTINGS

◎ This equipment is shipped from the factory with the functions under the following settings.   The user is able to re-set these function if/as desired with the user setting mode.

1/2

FUNCTION	FACTORY SETTING (in the box)	USER SETTING MODE
FUNCTION SET		**MENU 2**
GAIN UP	OFF ・ +10 ・ [+20] ・ +30 ・ +40	
TVG	STC ・ 1 ・ 2 ・ [3] ・ 4	**cf** page 21 -
D RANGE	-3dB ・ -4dB ・ -5dB ・ [±6dB] ・ +5dB ・ +4dB ・ +3dB	
(DYNAMIC RANGE)		
CLUTTER	[OFF] ・ 1 ・ 2 ・ 3 ・ 4 ・ 5 ・ 6 ・ 7 ・ 8 ・ 9 ・ 10	
TX POWER	HIGH ・ [LOW]	
REDUCTION		**cf** page 26 -
INTERF RED	[OFF] ・ LOW ・ MIDDLE ・ HIGH	
JAMING RED	[OFF] ・ 1 ・ 2 ・ 3 ・ 4 ・ 5 ・ 6 ・ 7 ・ 8 ・ 9	
NOISE RED	[OFF] ・ ON	
WHITE LINE	[OFF] ・ LOW ・ MIDDLE ・ HIGH	
SCREEN DIVISION		**cf** page 29 -
BTM EXPN	[CONST1] ・ CONST2 ・ CONST3 ・ AUTO	
SCREEN DIV	[VERT] HORIZ	
DISP ITEM SEL.		**cf** page 31 -
DEPTH DISP	OFF ・ SMALL ・ [MEDIUM] ・ LARGE	
SCALE	OFF [RIGHT] ・ CENTER	
EXP/VRM	[EXP] ・ VRM	
TEMP DISP	[OFF] ・ SMALL ・ LARGE	
TEMP GRAPH	[OFF] ・ ON	
COL. SCALE	OFF ・ [ON]	
LAT.LONG.	[OFF] ・ ON	
SPEED DISP	[OFF] ・ ON	
COURSE	[OFF] ・ ON	
MARK	[MARK] ・ TIMER	
DISP.POS	[LOWER] ・ UPPER	
DEPTH GRID	[AUTO] ・ 1 ・ 2 ・ 5 ・ 10 ・ 20 ・ 50 ・ 100	
PICTURE FEED	[AUTO] ・ FIXED	
A-SCOPE	[OFF] ・ ON	
SCALE FONT	[SMALL] ・ LARGE	
UNIT ・ ADJUST		**cf** page 39 -
DEPTH UNIT	[m] ・ br ・ fm ・ ft	
TEMP UNIT	[°C] ・ °F	
SPEED UNIT	[k t] ・ k m / h	
TEMP ADJ	[+ 0.0] (- 9.9 ～ + 9.9)	
DRAFT	[00.0] (00.0 ～ 99.9)	
DEPTH AVR.	[1] ・ 2 ・ 3 ・ 4 ・ 5 ・ 6 ・ 7 ・ 8 ・ 9 ・ 10	

FUNCTION	FACTORY SETTING (in the box)	USER SETTING MODE
ALARM		**MENU 2**
SHALLOW	[OFF] · 0000 (0000 ∼ 3999)	
DEEP	[OFF] · 0000 (0000 ∼ 3999)	
FISH	[OFF] · 6 (1 ∼ 7)	**cf** page 50 -
TEMP MAX.	[OFF] · 35.0 (00.0 ∼ 35.0) ⎫	
TEMP MIN.	[OFF] · 00.0 (00.0 ∼ 34.9) ⎬ in case of °C	
TEMP RANGE	[OFF] · 00.0 (00.0 ∼ 09.8) ⎭	
OTHERS		
COLOR SET	[A-1] · A-2 · B-1 · B-2 · C-1 · C-2 ·	**cf** page 43-
	D-1 · D-2 · E-1 · E-2	
OUTER DPTH	[OFF] · ON	
TRIGGER	[INTRNL] · EXTRNL	
ECHO SIG	[INTRNL] · EXTRNL	
OUTPUT	[OFF] · 183N · 183T · 600S	
T.INTVAL.ADD	[000] (000 ∼ 999)	
TRANS RATE	LOW · [MEDIUM] · HIGH	
PULSE	NARROW · [NORMAL] · WIDE · DETAIL · 0.3	
	(0.3 ∼ 3.6)	
OPE. MODE	[0] · 1	
SHIFT AR	[1] · 5 · 10 · 50 · 100	
TEMP SENSOR	[OP-102] · OP - 41 - 1 · NMEA - 0183	
A SHIFT LIMIT	[999] (010 ∼ 999)	
TX / RX MENU		
TRANSDUCER	[2 0 0 k　5 0 Φ × 1]	
FREQUENCY	[2 0 0 k H z]	**cf** page 55
TR FREQUENCY	[2 0 0 . 0 0 0]	
RX FREQUENCY	[2 0 0 . 0 0 0]	
BAND WIDTH	[WIDE]	
MAIN RANGE	The range can be set freely.	**MENU 1**
(NORMAL RANGE)	1 ([0 ∼ 25])	**CONTROL PANEL**
SUB RANGE		
(EXPANSION RANGE)	1 ([1])	**cf** page 19
OPERATION MODE	NO SETTING	
MODE SELECTION DIAL	1 (NORMAL DISPLAY)	
PHASED RANGE	0	
AUTO RANGE	OFF	**CONTROL PANEL**
AUTO SHIFT	OFF	
THRESHOLD	7 COLORS	
PICTURE SPEED	PF-1 / 1	
USER SETTING	NO SETTING	**cf** page 16

RETURN TO FACTORY SETTINGS

◎ Ensure the power supply switch is turned off.
Then while holding the ⎮ Mark key, press the power supply ON key and keep
pressing the ⎮ Mark key until the beep stops and the message "ALL IMPLEMENTED
DATA RETURNED TO FACTORY SETTINGS" appears.
Note that it will not be returned to the factory settings when the ⎮ Mark key is released
before the beep stops.
After this operation all functions will then return to the factory setting.

USER SETTINGS

◎ In addition to the factory settings the ES-1080 settings may also be set to
functions selected by the user.   This function is called USER SETTING.
Range scales, gain control levels, color, power levels, etc. may be tailored
by the user to fit his preference.   The user may easily set the desired
function settings by operating as explained below.
· With this function the user may return to the desired function settings
if the unit should become inoperable due to mistaken use of the controls.
Please be sure to memorize user settings at the time the unit is first operated.
Write down your user settings in case they are accidentally changed, or you wish
to use different combinations for different fisheries. i.e. midwater vs. bottom.

1. MEMORIZE USER SETTINGS
· Set all functions and display units to the desired settings.   Once all functions
have been changed, press the POWER OFF key to turn the power off.
· Next while pressing the ▼ Memory read key, hold the POWER ON key
to turn on the power and keep pressing the ▼ Memory read key until the beep
stops and the message "USER INITIAL SETTING WAS MEMORIZED" appears.
Note that it will not be memorized when the ▼ Memory read key is released
before the beep stops.
· After this operation all functions will be memorized under user setting.

2. RETURN TO USER SETTING
· In case of malfunction, turn the power off once.
Next while pressing the ▮▮ key, press the POWER ON key to turn on the power
so that the message "USER INITIAL SETTING WAS CALLED" and then the Sounder
Display will appear.
· After this operation all functions will return to the user setting.

3. REVISE USER SETTING
· Reset all functions as required and then memorize the setting using the
MEMORIZE USER SETTING procedure as above in 1.

<div align="right">

Chapter 3

</div>

FUNCTION SETTINGS

This chapter provides you the explanation for function settings.
Please set each function before using the ES-1080 to suit individual needs.

<div align="right">

<TO BE CONTINUED>

</div>

RANGE SETTINGS

1. MAIN RANGE

◎ To customize the main ranges.

Example・Factory setting ranges:

m・fm・br:					f t :			
NUMBER	RANGE				NUMBER	RANGE		
1 :	0 0 0 — 0 0 2 5				1 :	0 0 0 0 — 0 0 5 0		
2 :	0 0 0 — 0 0 5 0				2 :	0 0 0 0 — 0 1 0 0		
3 :	0 0 0 — 0 1 0 0				3 :	0 0 0 0 — 0 1 5 0		
4 :	0 0 0 — 0 1 5 0				4 :	0 0 0 0 — 0 2 0 0		
5 :	0 0 0 — 0 2 0 0				5 :	0 0 0 0 — 0 3 0 0		
6 :	0 0 0 — 0 3 0 0				6 :	0 0 0 0 — 0 5 0 0		
7 :	0 0 0 — 0 5 0 0				7 :	0 0 0 0 — 1 0 0 0		

VARIABLE RANGES:
up to 3000 (m,fm or br)
up to 6000 feet

◎ Turn the Mode selection dial to "MENU 1" to display the menu below.

・ Use the [△] or [▽] EXP/VRM key to highlight the item to be set.
EXP/VRM

・ Use the [△] or [▽] Phased range key to set the desired range values.
PHASED R.

RANGE SET MENU

MAIN RANGE

NUMBER	RANGE	
1	0 0 0 —	0 0 2 5
2	0 0 0 —	0 0 5 0
3	0 0 0 —	0 1 0 0
4	0 0 0 —	0 1 5 0
5	0 0 0 —	0 2 0 0
6	0 0 0 —	0 3 0 0
7	0 0 0 —	0 5 0 0

PHASED RANGE

DEPTH of
SCREEN BOTTOM

・ Use the [△] or [▽] EXP/VRM key
EXP/VRM

to hightlight the item you want to change.

・ Use the [△] or [▽] Phased range key
PHASED R.

to set the desired values.

[△] : makes the range larger.
PHASED R.

[▽] : makes the range smaller.

◎ Continuous pressing of the [△]
PHASED R.
or [▽] Phased range key will
PHASED R.
change the range value faster.

◎ Use the [■] Memory read key to
alternate Sub Range with Main
Range.

- 19 -
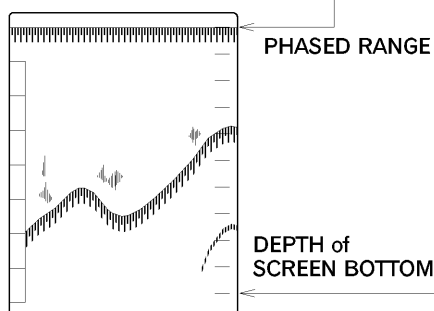
2. EXPANSION RANGE

◎ To customize the expansion ranges.

Example • Factory setting ranges:

m • f m • b r :						ft :				
NUMBER	RANGE					NUMBER	RANGE			
1 :	0	0	0	1		1 :	0	0	1	0
2 :	0	0	0	2		2 :	0	0	2	0
3 :	0	0	0	5		3 :	0	0	3	0
4 :	0	0	1	0		4 :	0	0	4	0
5 :	0	0	2	0		5 :	0	0	5	0
6 :	0	0	3	0		6 :	0	1	0	0
7 :	0	0	4	0		7 :	0	2	5	0
8 :	0	0	5	0		8 :	0	5	0	0

VARIABLE RANGES:
up to 250 (m,fm or br)
up to 500 feet

◎ Turn the mode selection dial to "MENU 1" to display the RANGE SET MENU so that the MAIN RANGE and the EXPANSION RANGE will appear on the screen.

• Use the ▐▌ Memory read key to alternate Expansion Range with Main Range .

```
RANGE SET MENU

EXPANSION RANGE
NUMBER              RANGE
┌───┐            ┌─────────┐
│ 1 │            │ 0  0  0  1 │
└───┘            └─────────┘
  2                0  0  0  2
  3                0  0  0  5
  4                0  0  1  0
  5                0  0  2  0
  6                0  0  3  0
  7                0  0  4  0
  8                0  0  5  0
```

• Use the △ or ▽ EXP/VRM key
(EXP/VRM)

to highlight the item you want to change.

• Use the △ or ▽ Phased range key
(PHASED R.)

to set the desired values.

△ : makes the range larger.
(PHASED R.)

▽ : makes the range smaller.

◎ Continuous pressing of the △
(PHASED R.)

or ▽ Phased range key will change
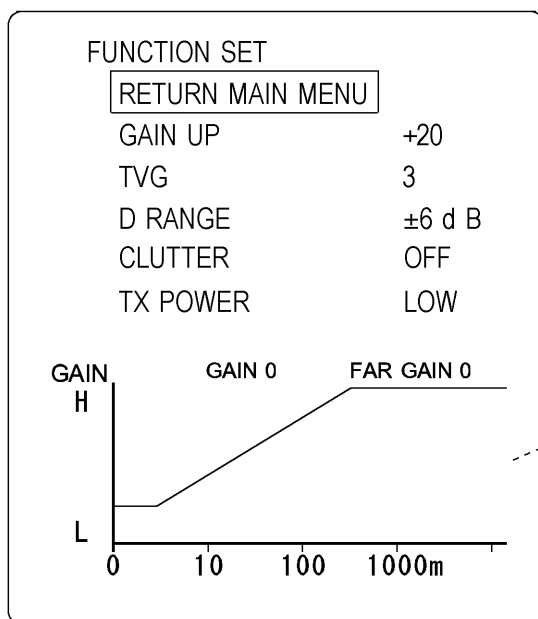(PHASED R.)

the range value faster.

SETTING MENU

◎ Turn the mode selection dial to "MENU 2" to display the MAIN MENU below.

· Use the △ or ▽ EXP/VRM key to highlight the item to be set and the
EXP/VRM

△ or ▽ Phased range key to select the desired function setting.
PHASED R.

```
MAIN MENU
 FUNCTION SET
 REDUCTION
 SCREEN DIVISION
 DISP ITEM SEL.
 UNIT · ADJUST
 OTHERS
 ALARM
 TR/RX MENU
```
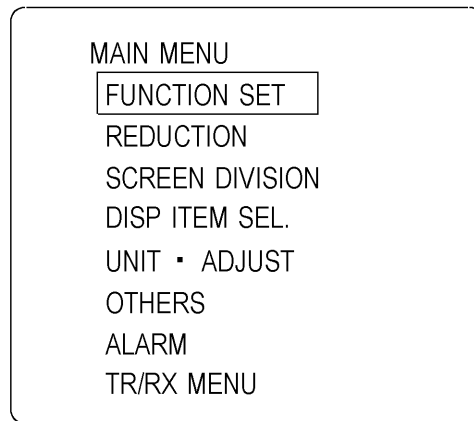
· After setting each function,
memorize them by using
"USER SETTING".
cf page 16

· TR/RX MENU appears only
when the ES-1080 applies to
FF system.

FUNCTION SETTINGS

```
FUNCTION SET
 RETURN MAIN MENU
 GAIN UP          +20
 TVG             3
 D RANGE         ±6 d B
 CLUTTER         OFF
 TX POWER        LOW
```

GAIN   GAIN 0   FAR GAIN 0
H

L
  0   10   100   1000m

· Use the △ or ▽ EXP/VRM key to
EXP/VRM
highlight the item to be set.

· Use the △ or ▽ Phased range key
PHASED R.
to return to MAIN MENU.

GAIN DIAGRAM
The following parameters that adjust the
displayed picture are shown in the diagram left.

- TVG curve, Gain up, Gain dial and Far
  gain dial -

1. GAIN UP

◎ This function makes it possible to display a clearer picture of the full range and control sensitivity at various depths. [cf] page 65

・ Use the △ or ▽ Phased range key to select the gain adjust level.

PHASED R.

(OFF → ＋10 → ＋20 → ＋30 → ＋40 → OFF).

GAIN DIAL VOLUME RANGE

MENU SETTING : OFF

3RD SCALE POSITION

MENU SETTING : +10

6TH SCALE POSITION

MENU SETTING : +20

9TH SCALE POSITION

MENU SETTING : +30

MENU SETTING : +40

MIN GAIN

WEAK ← GAIN → STRONG

MAX GAIN

TOTAL GAIN VOLUME RANGE
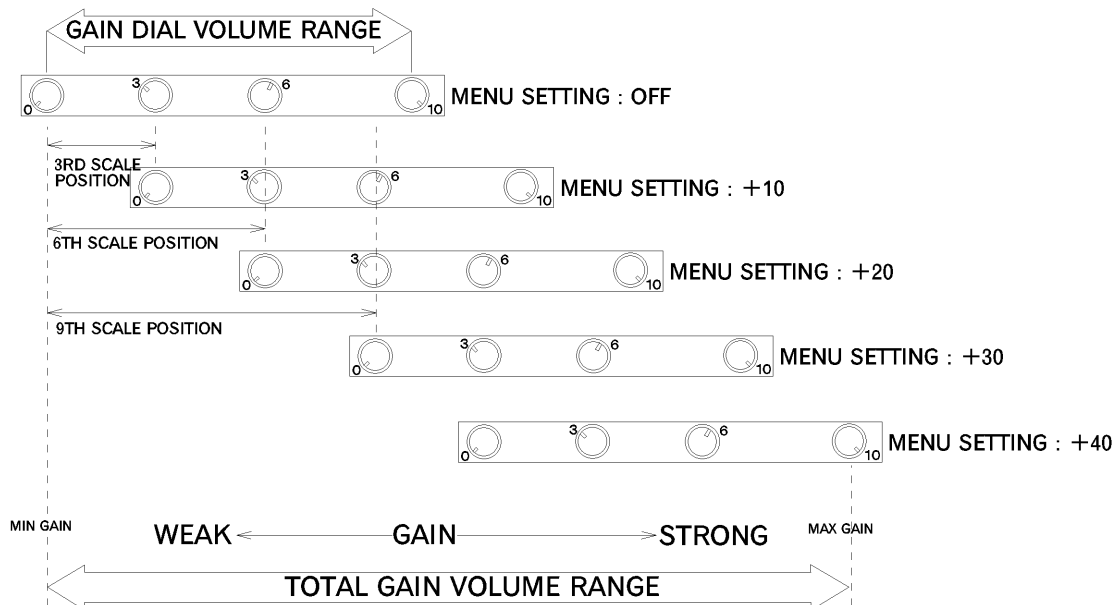
・ When the menu gain adjust setting is changed from OFF to +10dB, the gain dial volume increases 3 points on the scale.

・ When the menu gain adjust setting is OFF and the front panel dial is on 3, it has the same result as when the menu gain adjust setting is +10dB and the gain dial is on 0.

GAIN   GAIN 0   FAR GAIN 0

H

+40
+30
+20
+10
OFF

L

0   10   100   1000m
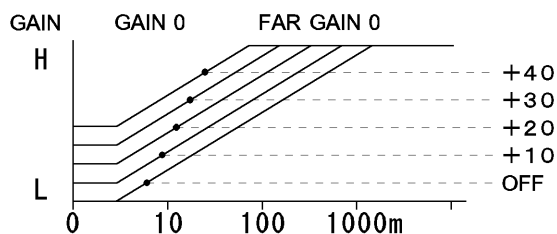
・ When the menu gain adjust setting is changed, the diagram changes as shown left. The left shows an example under the below conditions of the standard specifications.

TVG curve   : 3
Gain dial   : 0
Far gain dial : 0

Turning the Gain dial clockwise increases the above shown value between 0 and 30.
Turning the Far gain dial clockwise increases the above shown value between 0 and 50.

2. TVG

◎ The TVG function may be adjusted according to the strength of the target echo.

· As the echoes returning from the bottom and from fish targets get weaker as the depth increases it is advantageous to have a Time Variable Gain that automatically compensates for the loss in signal strength.

· Use the △ or ▽ Phased range keys to select the TVG adjust level,

PHASED R.

(1 → 2 → 3 → 4 → STC → 1).

STC   : STC function

1   : TVG CURVE ①

2   : TVG CURVE ②

3   : TVG CURVE ③

4   : TVG CURVE ④

higher

GAIN

lower

shallower   DEPTH   deeper

50m   SAME SIZE FISH SCHOOL

100m

NO TVG (TVG:OFF)

SHOWN IN RED

SHOWN IN YELLOW

DEEP ECHOES WILL BE DISPLAYED MORE ACCURATELY

ECHOES FROM DEEP FISH SCHOOLS WILL BE WEAKER THAN FROM THE SCHOOLS AT A SAME SIZE SHALLOWER DEPTH.

TVG: 2 OR 3

SHOWN IN RED

SHOWN IN RED

SELECT TVG ADJUST LEVEL 2 OR 3 TO SHOW DEEP ECHOES AT A MORE ACCURATE SIZE AND DENSITY (DYNAMIC RANGE LEVEL ± 6dB).

NOTE !

◎ Note the TVG function setting influences the far gain adjust and the gain adjust functions.

3. D RANGE（DYNAMIC RANGE）

◎ By shifting the dynamic range, the operator is able to discriminate more precisely the size, depth and density of the fish school.

Experimenting with this function will give you the best setting for various fishing operations.

· Each press of the △ or ▽ Phased range key changes the dynamic range level
PHASED R.
(±6dB, → ＋ 5dB,→ ＋ 4dB, → ＋ 3dB,   → － 3dB,→ － 4dB,→ － 5dB,→ ±6dB).

−3dB −4dB −5dB ±6dB +5dB +4dB +3dB

BLUE BLUE BLUE RED color scale guide line BLUE BLUE BLUE guide line RED
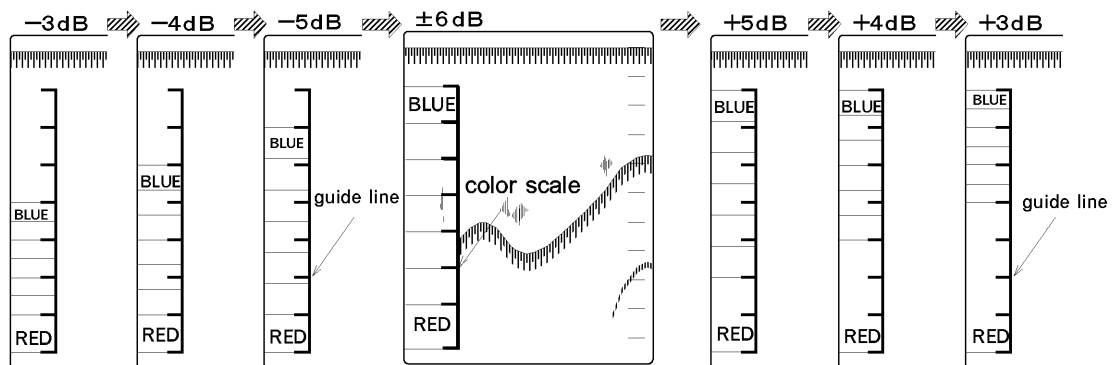
This diagram shows the comparative signal threshold levels to the standard ±6dB for the dynamic ranges.

When the dynamic range is changed from ±3dB to ±5dB, this range will be displayed in 7 colors.

[example]

when -3dB selected

blue

red

when ±6dB selected

blue
cyan
green
dark green
yellow
orange

red

when +3dB selected

blue

red
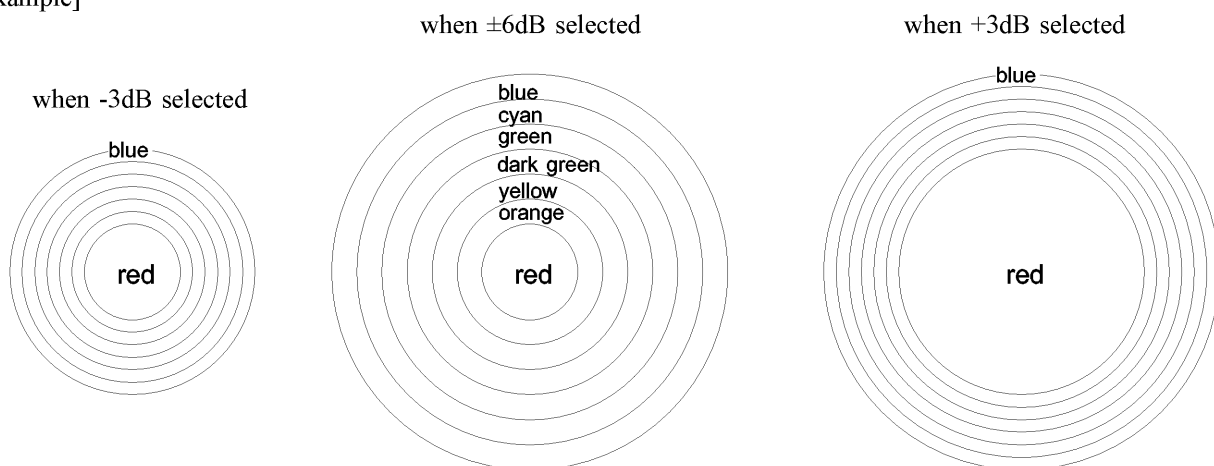
4. CLUTTER

◎ By using this function the unwanted weak echo can be get rid of.

· Each press of the △ or ▽ Phased range key changes

the level to suppress clutter (OFF → 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8

→ 9 → 10 → OFF).

OFF | The higher the clutter level, the dots disappear. | The too high setting erases fish school.
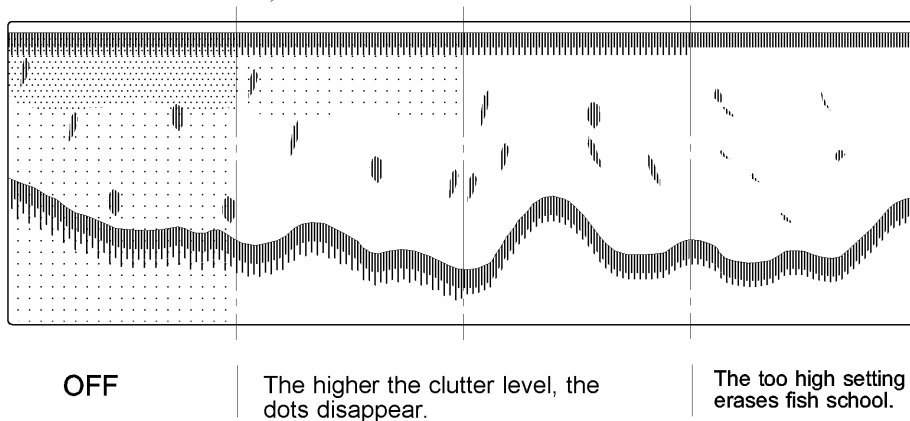
5. TX POWER

◎ The output power of the ultrasonic soundwave may be selected.

· Each press of △ or ▽ Phased range key changes the output

power " HIGH...LOW...HIGH...".

· The present level of TX POWER appears on the top of the screen

as shown below.

HIGH: PWR-HIGH

LOW: PWR-LOW
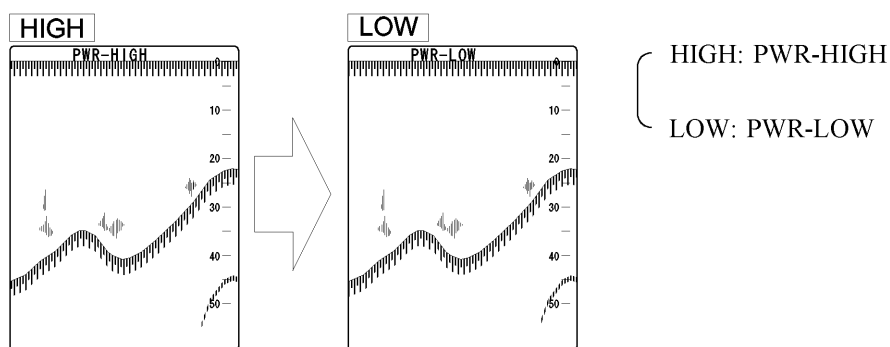
note: Without the setting of TX/RX menu this TX POWER can not be changed, in case of the use of the ES-1080FFS.

REDUCTION

```
REDUCTION
┌─────────────────────┐
│ RETURN MAIN MENU    │
└─────────────────────┘
INTERF RED        OFF
JAMING RED        OFF
NOISE RED         OFF
WHITE LINE        OFF
```

· Use the △ or ▽ EXP/VRM key

to highlight the item you want to change.

· Use the △ or ▽ Phased range key

to set the desired values.

1. INTERFERENCE REDUCTION

◎ To reduce interference from nearby fishing vessels.

· Each press of the △ or ▽ Phased range key changes the level of reduction,

(OFF → LOW → MIDDLE → HIGH → OFF).

· OFF indicates this function is inactive.

· As the level of the setting closes to HIGH, higher level of reduction

is set and the level of reducing interference appears at the top of the screen.

OFF → LOW → MIDDLE → HIGH

interference

⚠ CAUTION
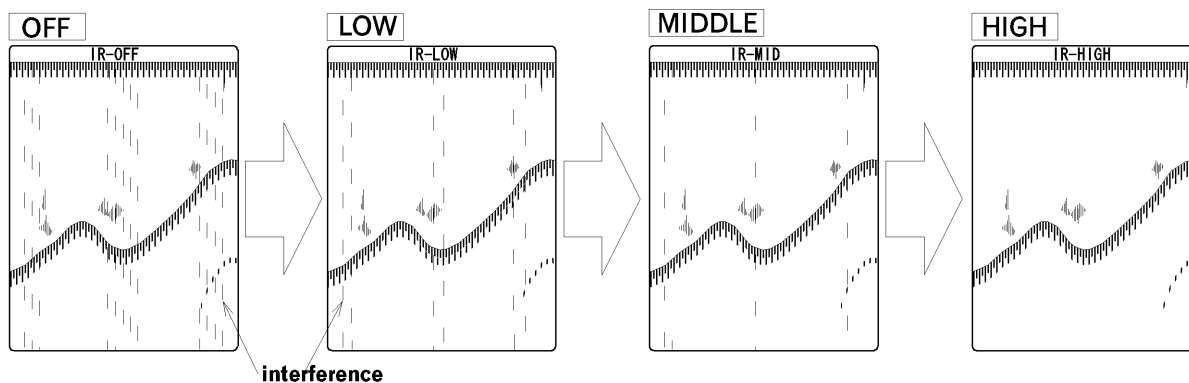
◎ Some types of noise interference may not be reduced.
◎ Do not select excessive level than the level to be needed
since the weak echoes are erased.

2. JAMMING REDUCTION

◎ The combined use of Interference reduction and Jamming reduction

is effective in reducing noise due to jamming from other ships.

・ Each press of the △ or ▽ Phased range key changes the level,
PHASED R.
(OFF → 1 → 2 → 3   .....→ 9 → OFF) .

・ Off indicates this function is inactive and the higher level it is set,

the more irregular data appears like below.   The level 9 is the max.
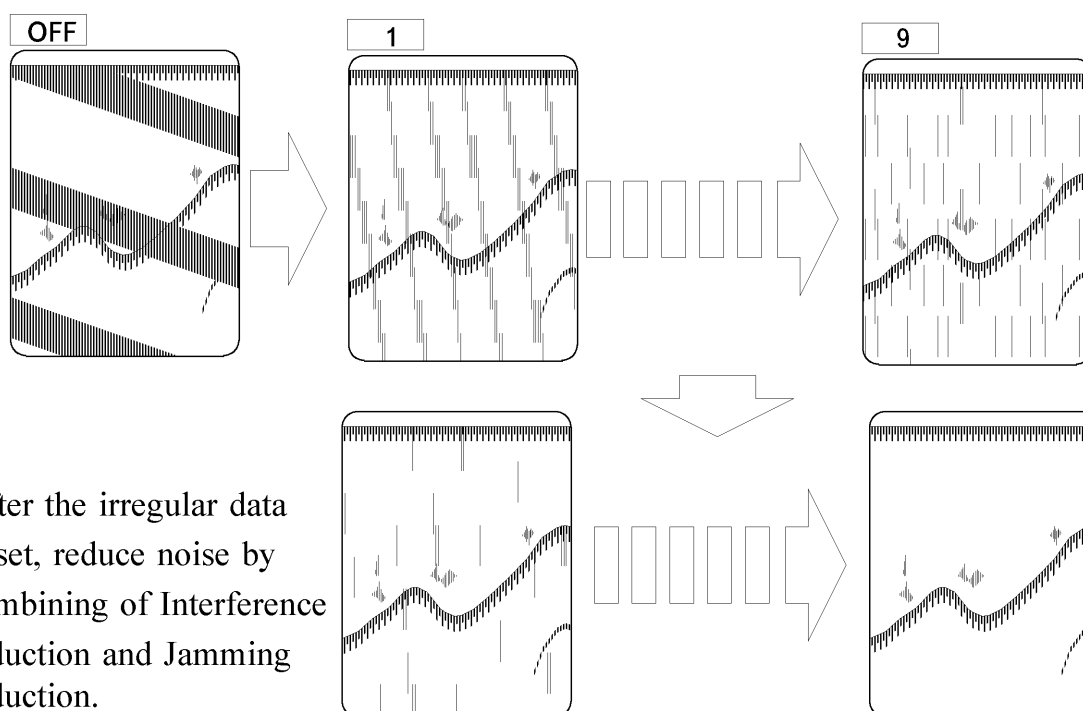
・ After the irregular data
is set, reduce noise by
combining of Interference
reduction and Jamming
reduction.

⚠CAUTION

◎ Do not use INTERFERENCE RED combined with excessive level of
JAMING RED, since the weak echoes are erased.

◎ Do not select an excessive level of INTERFERENCE RED., since the weak
echoes are erased.

WHAT IS "JAMMING"?

◎ By receiving sound waves from a neighboring ship's equipment of which
frequencies are the same or similar, they influence each other and appear
on the screen. Their change occasionally are seen doubled, up and down
or the counter direction as Jamming.

3. NOISE REDUCTION

◎　To reduce the noise cluttering the entire screen.

・Each press of the ▵ or ▽ Phased range key changes ON/OFF alternately.
PHASED R.

・OFF: The noise suppressing action is disabled.
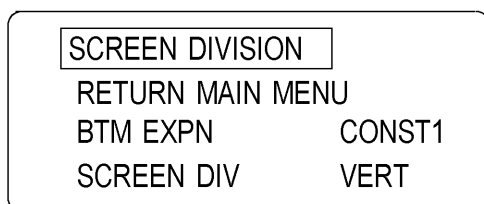

⚠CAUTION
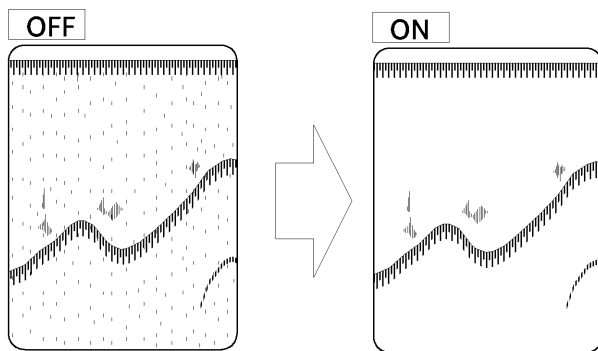
◎　Some noise reflections may not be reduced.

4. WHITE LINE

◎　The function of the White Line is to help in discriminating the bottom and fish lying on or very close to the bottom.

・Each press of the ▵ or ▽ Phased range key changes the White Line
PHASED R.
control level, (OFF → LOW → MIDDLE → HIGH → OFF).

・OFF: The White Line control is disabled.
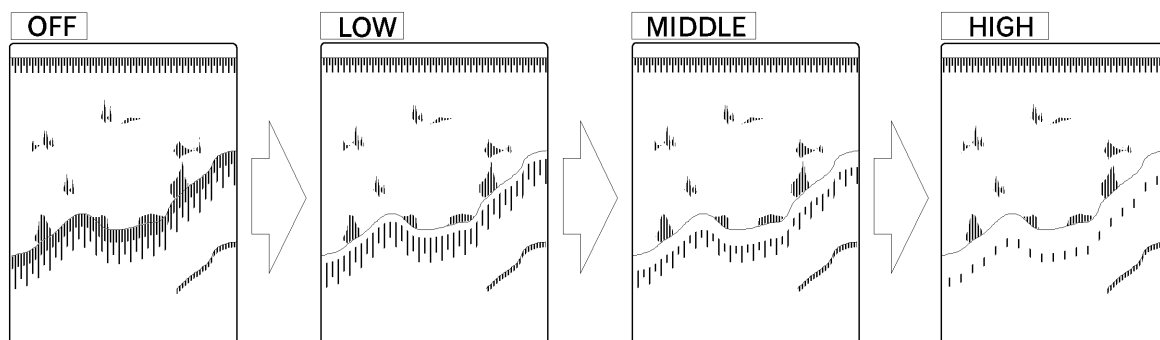
SCREEN DIVISION

```
┌─────────────────────────────────┐
│  ┌─────────────────┐            │
│  │ SCREEN DIVISION │            │
│  └─────────────────┘            │
│   RETURN MAIN MENU              │
│   BTM EXPN          CONST1      │
│   SCREEN DIV        VERT        │
│                                 │
└─────────────────────────────────┘
```

· Use the △ or ▽ EXP/VRM key
  EXP/VRM

  to highlight the item you want to change.

· Use the △ or ▽ Phased range key
  PHASED R.

  to set the desired values or to return

  to MAIN MENU display when RETURN

  MAIN MENU highlighted.

1. BOTTOM EXPANSION

◎   When you activate the Bottom Expansion Mode, as in the drawing in the
    next page, the areas of the bottom contour can be selected by the following
    shifts and displayed across the screen for close observation of the echoes of
    interest on or near of the bottom.

· Each press of the △ or ▽ Phased range key changes the setting.
                      PHASED R.

    (CONST 1 → CONST 2 → CONST 3 → AUTO → CONST 1)

CONST 1   :   The upper part of the bottom is displayed with
              the expansion range.

CONST 2   :   Display position is shifted deeper than CONST 1.

CONST 3   :   Display position is shifted deeper than CONST 2.

AUTO   :   To detect the bottom automatically with the bottom
              expansion range.

<TO BE CONTINUED>

SCREEN DIVISION : HORIZONTAL

CONST 1　　CONST2　　CONST3　　AUTO

EXPANSION
RANGE LINE

BOTTOM
EXPANSION
DISPLAY

BOTTOM

BOTTOM

BOTTOM

SCREEN DIVISION : VERTICAL

CONST 1　　CONST2　　CONST3　　AUTO

BOTTOM

BOTTOM

BOTTOM

EXPANSION　NORMAL
DISPLAY　　DISPLAY

EXPANSION　NORMAL
DISPLAY　　DISPLAY

EXPANSION　NORMAL
DISPLAY　　DISPLAY

EXPANSION　NORMAL
DISPLAY　　DISPLAY
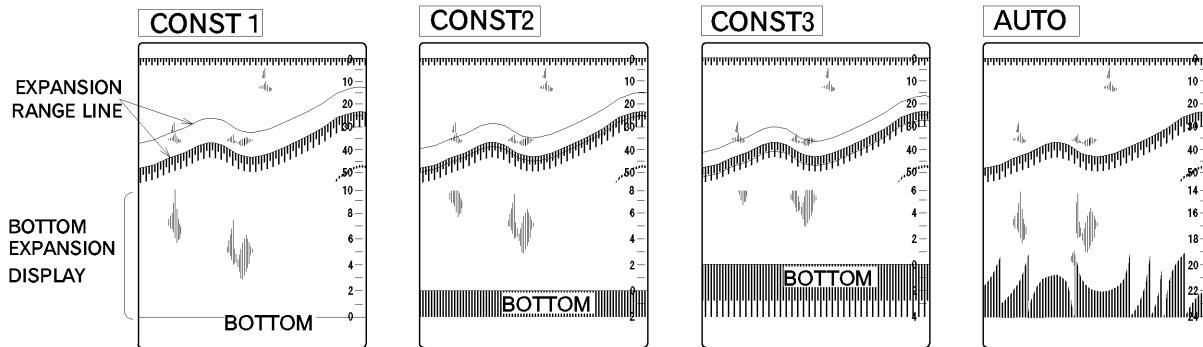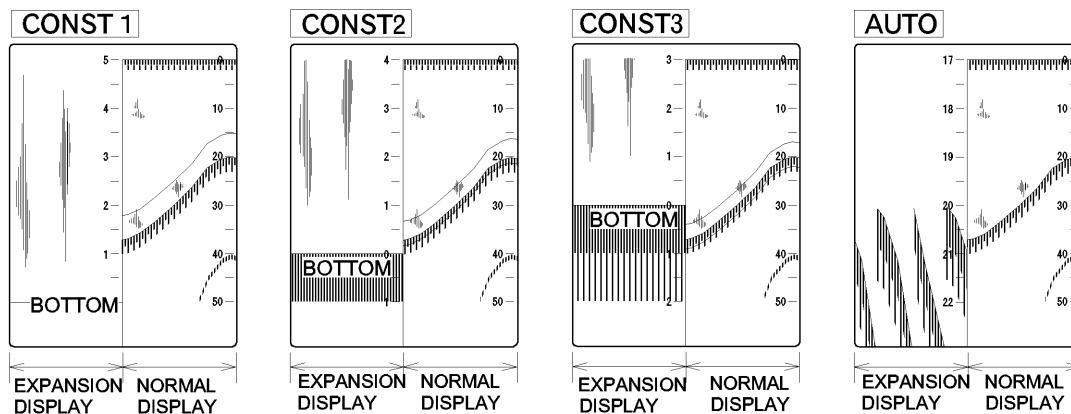
2. SCREEN DIVISION

◎　To select the screen division either VERTICAL or HORIZONTAL.

・Each press of the △ or ▽ Phased range key changes HORIZ with VERT alternately.

PHASED R.

HORIZONTAL　:　displays the picture which is divided into horizontally.
(upper/lower)

VERTICAL　　:　displays the picture which is divided into vertically.
(left/right)

HORIZ

NORMAL DISPLAY

EXPANSION
DISPLAY

VERT

EXPANSION
DISPLAY

NORMAL
DISPLAY
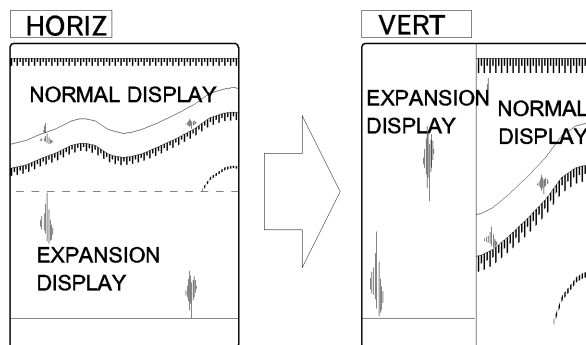
DISPLAY ITEM SELECTION

```
DISP ITEM SEL.
┌─────────────────────┐
│ RETURN MAIN MENU    │
└─────────────────────┘
 DEPTH DISP      MEDIUM
 SCALE           RIGHT
 EXP/VRM         EXP
 TEMP DISP       OFF
 TEMP GRAPH      OFF
 COL. SCALE      ON
 LAT.LONG.       OFF
 SPEED DISP      OFF
 COURSE          OFF
 MARK            MARK
 DISP.POS        LOWER
 DEPTH GRID      AUTO
 PICTURE FEED    AUTO
 A-SCOPE         OFF
 SCALE FONT      SMALL
```
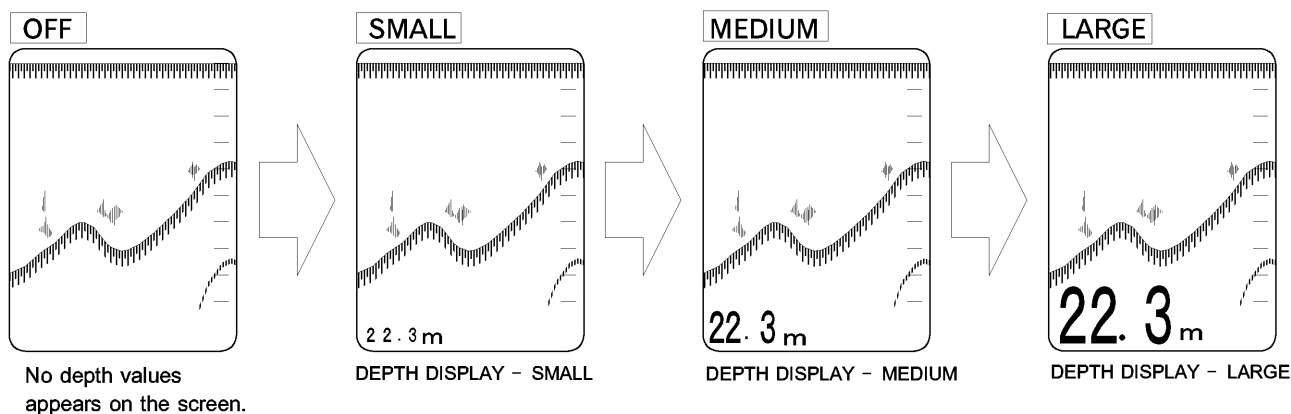
· Use the △ or ▽ EXP/VRM key

to highlight the item you want to change.

· Use the △ or ▽ Phased range key

to set the desired values or to return

to MAIN MENU display when RETURN

MAIN MENU highlighted.

1. DEPTH DISPLAY SIZE

◎　To select the size of the digital display for depth.

· Each press of the △ or ▽ Phased range key changes the size of digital

display for depth, (OFF → SMALL → MEDIUM → LARGE → OFF).

OFF — No depth values appears on the screen.

SMALL — DEPTH DISPLAY – SMALL — 22.3m

MEDIUM — DEPTH DISPLAY – MEDIUM — 22.3m

LARGE — DEPTH DISPLAY – LARGE — 22.3m

2. SCALE POSITION

◎ To select the depth scale position.

・Each press of the △ or ▽ Phased range key changes the Scale position
PHASED R.
display, (OFF → RIGHT → CENTER → OFF) .

You can select the center or right of scale position display.

RIGHT	CENTER	OFF

Scale in the right   Scale in the center   No scale
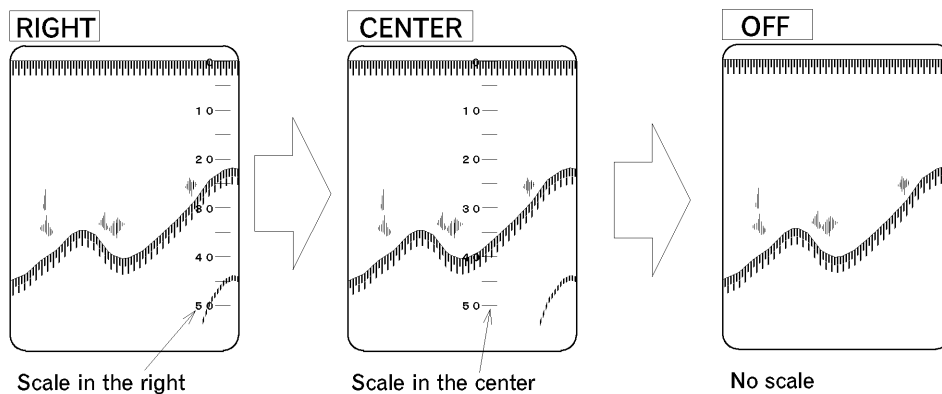
3. EXP/VRM

◎ To activate the Expansion start point or the horizontal dotted line for digital depth
on the screen.

・Each press of the △ or ▽ Phased range key changes EXP with VRM alternately.
PHASED R.

EXP : activates the Expansion start point.

VRM : activates the Dotted line for digital depth.   cf page 69

EXP	VRM

EXPANSION
START POINT

LINE for DEPTH

SCREEN DIVISION : VERTICAL

- 32 -
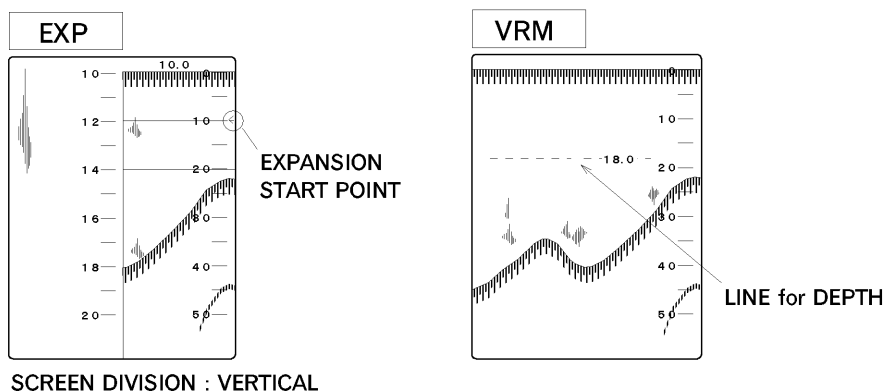
4. TEMPERATURE DISPLAY SIZE

◎ To select the size of digital display for water temperature when an
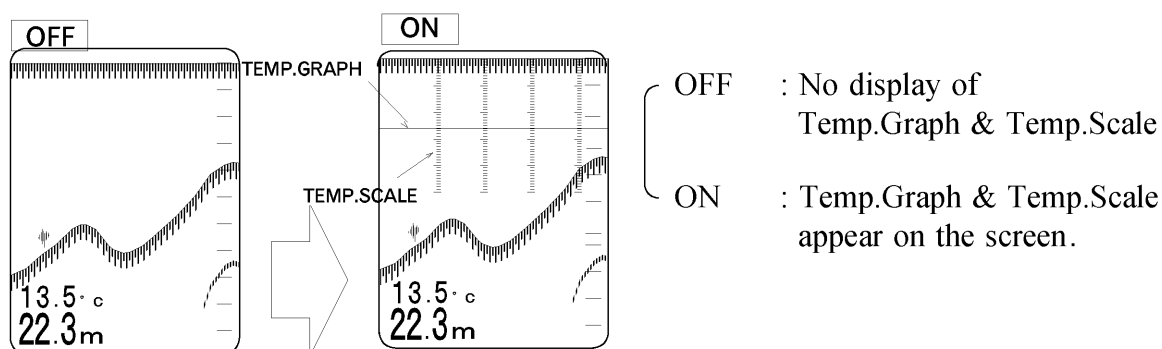
optional water temperature sensor is connected.

・ Each press of the △ or ▽ Phased range key changes the size,

PHASED R.

(OFF → SMALL → LARGE → OFF).

| OFF | SMALL | LARGE |

NO TEMP. DISPLAY   TEMP.DISPLAY IN SMALL   TEMP.DISPLAY IN LARGE
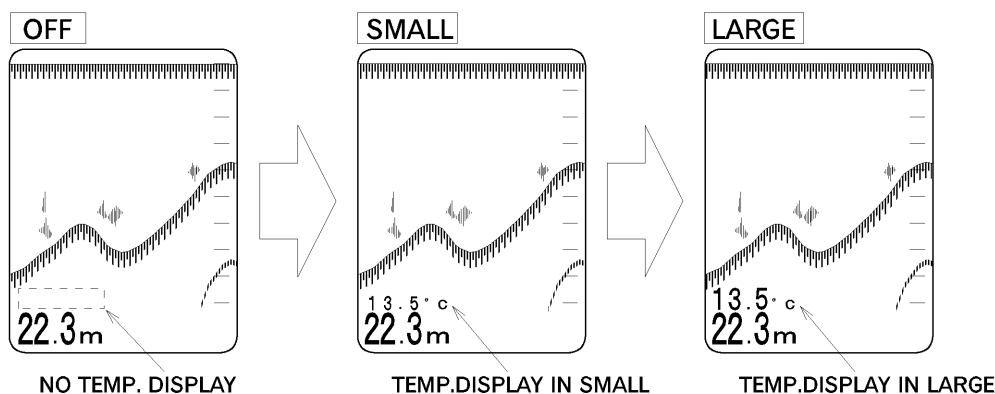
5. TEMPERATURE GRAPH

◎ To select the display of the Temperature Graph either ON or OFF when an

optional water temperature sensor is connected.

・ Each press of the △ or ▽ Phased range key changes On with OFF alternately.

PHASED R.

| OFF | ON |

TEMP.GRAPH

TEMP.SCALE

OFF   : No display of
Temp.Graph & Temp.Scale

ON   : Temp.Graph & Temp.Scale
appear on the screen.

⚠ CAUTIONS

◎ To present a temperature, temp.graph and temp.scale will require
that the ES-1080 is connected to an optional temp. sensor.
Select the sizes of these displays via "MAIN MENU - DISP.
ITEM SEL.- TEMP.DISP".
・ They will not appear on the screen when "TEMP.DIP - OFF"
selected.
・ Please select OFF while disconnecting the temp.sensor.

6. COLOR SCALE

◎ To select Color Scale display either ON or OFF.

· Each press of the △ or ▽ Phased range key changes ON with OFF
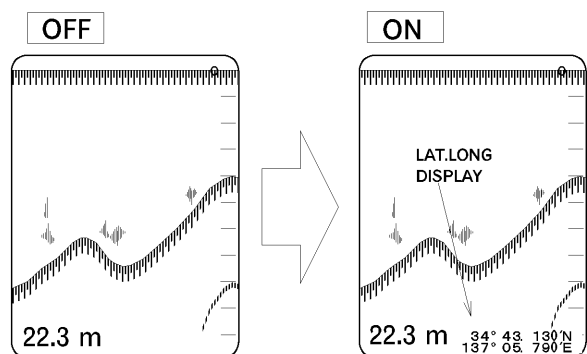
　　PHASED R.

alternately.

ON

OFF
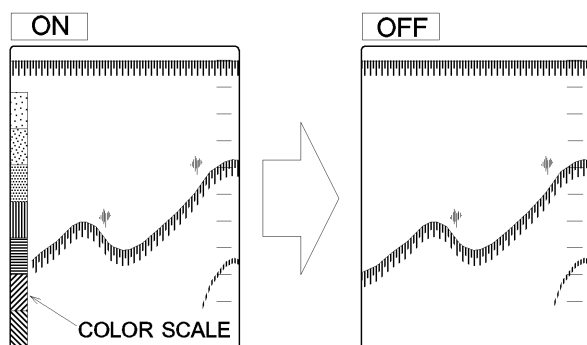
COLOR SCALE

ON : Color scale appears on the screen.

OFF : Color scale disappears

from the screen.

7. LATITUDE/LONGITUDE

◎ To present ship's position in the ES-1080 display will require that a navigator

is connected via the NMEA (NMEA-0183) input port.

· Each press of the △ or ▽ Phased range key changes On with OFF

　　PHASED R.

alternately.

OFF

ON

LAT.LONG
DISPLAY

22.3 m

22.3 m 34° 43. 130'N
137° 05. 790'E

ON : Position in latitude/longitude
appears on the screen.

OFF : Position (latitude/longitude)
presentation disappears
from the screen.

NOTE !

The display for Lat/Long, Ship speed and Course in the following page
appears on the screen only when NMEA-0183 input signal is interfaced.
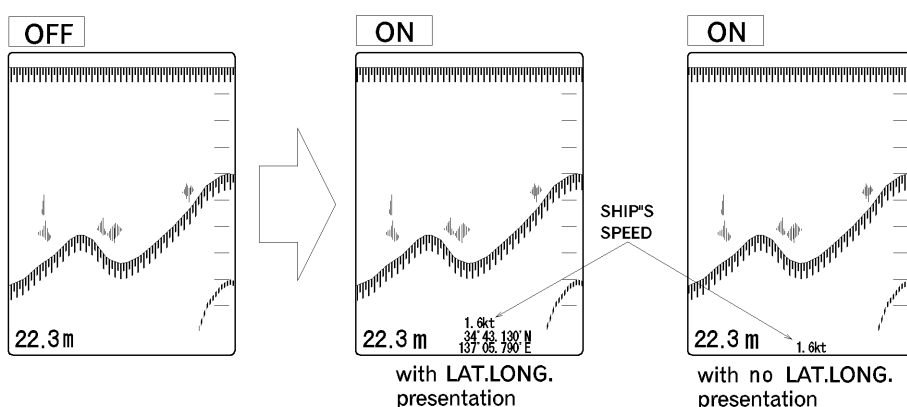
8. SPEED DISPLAY

◎ To present ship's speed in the ES-1080 display will require that a navigator
is connected.

・Each press of the △ or ▽ Phased range key changes On with OFF alternately.

PHASED R.

⌜ ON : Speed presentation appears on the screen.

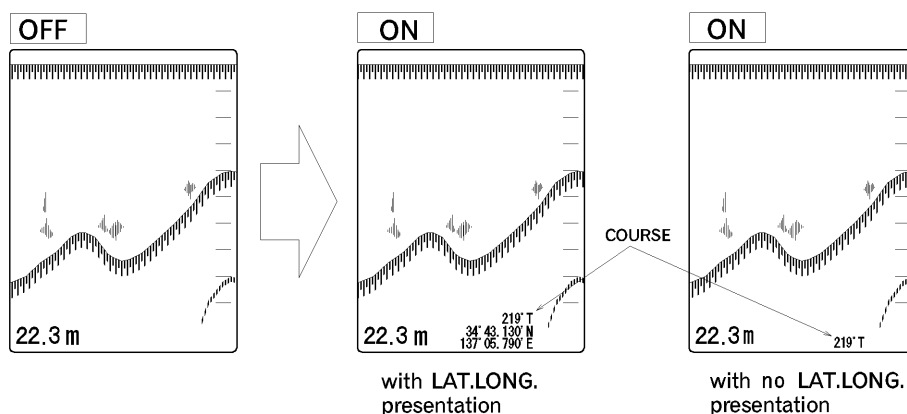⌞ OFF : Speed presentation disappears from the screen.

OFF	ON	ON
22.3 m	22.3 m	22.3 m
	1.6kt	1.6kt
	34°43.130′N	
	137°05.790′E	
	with LAT.LONG. presentation	with no LAT.LONG. presentation

SHIP"S SPEED

9. COURSE DISPLAY

◎ To present ship's course in the ES-1080 display will require that a navigator
is connected.

・Each press of the △ or ▽ Phased range key changes ON with OFF alternately.

PHASED R.

⌜ON : Course presentation appears on the screen.

⌞OFF : Course presentation disappears from the screen.

OFF	ON	ON
22.3 m	22.3 m	22.3 m
	219°T	219°T
	34°43.130′N	
	137°05.790′E	
	with LAT.LONG. presentation	with no LAT.LONG. presentation

COURSE

10. MARK

◎ To select the function with ⊡ MARK key either MARK or TIMER.

・ Each press of the △ or ▽ Phased range key changes MARK with TIMER
PHASED R.

alternately.

MARK : To place a vertical line on the right edge of the screen.

TIMER : To time between the two lines.

◎ Every time MARK key is pressed, the following procedure is performed.
It displays a line and starts to time between two lines.

The count is taken by the second.

It stops to time.

It erases the display of timer.
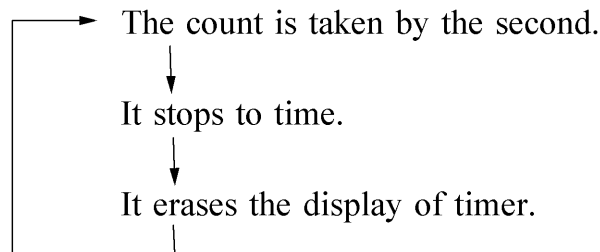
◎ The maximum timing display is 60 minutes.
It starts to display from 1 second, after it times 60 minutes.

◎ Timer stops and is erased when other function settings are changed.

11. DISPLAY POSITION (for DEPTH and TEMPERATURE)

◎ To select the position for Depth and Temperature presentation on the screen.

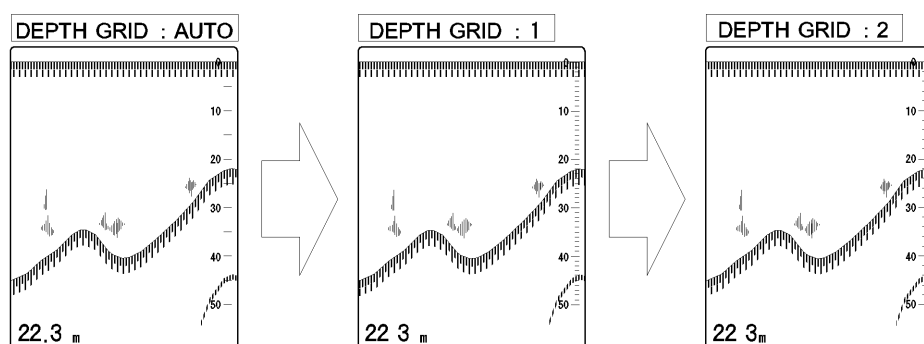・Each press of the △ or ▽ Phased range key changes LOWER with UPPER

PHASED R.

alternately.

DIS. POSITION : LOWER

13.5˙c
22.3 m

DIS. POSITION : UPPER

13.5˙c
22.3 m
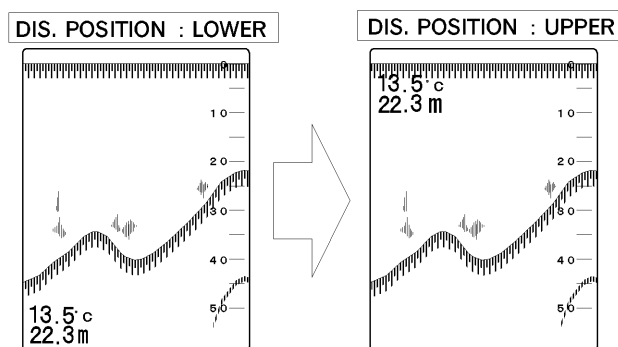
12. DEPTH GRID

◎ To select Depth scale unit.

・Each press of the △ or ▽ Phased range key change the values.

PHASED R.

(AUTO → 1 → 2 → 5 → 10 → 20 → 50 → 100 → AUTO)

DEPTH GRID : AUTO

22.3 m

DEPTH GRID : 1

22 3 m

DEPTH GRID : 2

22 3m

13. PICTURE FEED

◎　You can select Picture feed control either AUTO or FIXED.

・　Each press of the △ or ▽ Phased range key changes the setting,
PHASED R.

Picture feed control AUTO with FIXED.

・　"AUTO" :　　Picture moves to the left by the speed rate in accordance with the current range in use.

・　"FIXED" :　　Picture moves to the left by the speed rate independently of the range in use.
The rate value is entered by Picture Speed key marked ⦀.

14. A-SCOPE

◎　The amplitude scope which appears in the right side of the echo display, can be turned on and off.

・　Each press of the △ or ▽ Phased range key alternates ON with OFF.
PHASED R.

ON : A-Scope display appears on the right one-fourth of the screen.

OFF : A-Scope display disappears from the screen.
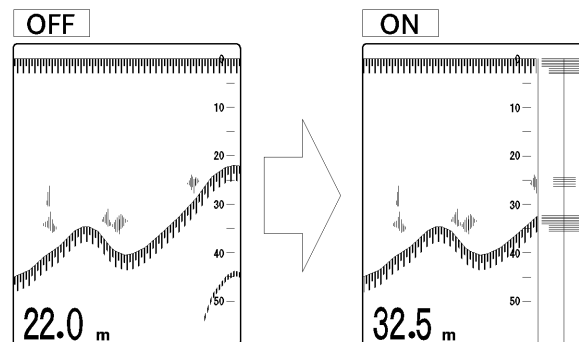
15. SCALE FONT

◎　The font size for the depth scale can be slected.

Each press of the △ or ▽ Phased range key changes the size SMALL
PHASED R.
with LARGE alternately.

The size of this display value can be selected.
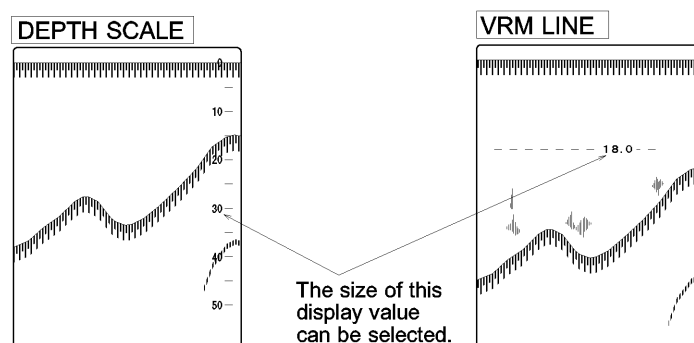
UNIT・ADJUSTMENT

UNIT・ADJUST

RETURN MAIN MENU

DEPTH UNIT   m
TEMP UNIT   ° C
SPEED UNIT   k t
TEMP ADJ   + 0 . 0
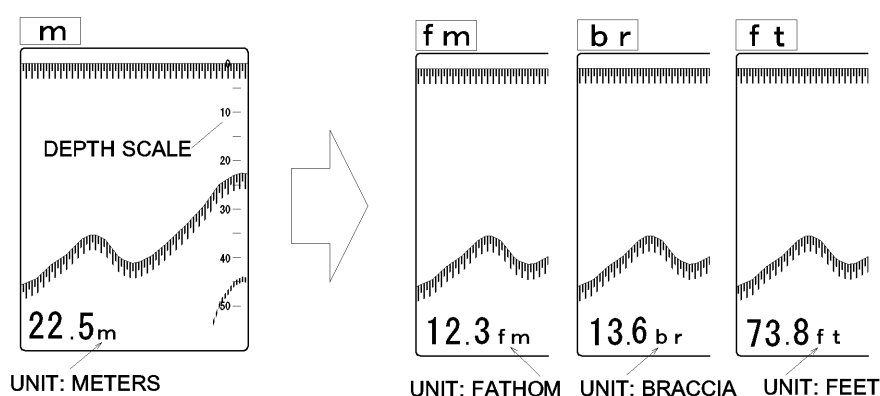DRAFT   0 0 . 0
DEPTH AVR.   1

・ Use the △ or ▽ EXP/VRM key
  EXP/VRM

to highlight the item you want to change.

・ Use the △ or ▽ Phased range key
  PHASED R.

to set the desired values or to return

to MAIN MENU display when RETURN

MAIN MENU highlighted.

1. DEPTH UNIT

The unit of depth may be selected.

Each press of the △ or ▽ Phased range key changes the unit.
PHASED R.

(m → fm → br → ft → m)

     m   : to display the unit meters.
    fm   : to display the unit fathom. (1fm: 1.8288m)
    br   : to display the unit braccia. (1br: 1.65m)
    ft   : to display the unit feet. (1ft: 0.3048m)

m

DEPTH SCALE

22.5m

UNIT: METERS

f m

12.3 fm

UNIT: FATHOM

b r

13.6 b r

UNIT: BRACCIA

f t

73.8 f t

UNIT: FEET

2. TEMPERATURE UNIT

The unit of water temperature display may be selected when an optional
water temp. sensor connected.

Each press of the △ or ▽ Phased range key changes the unit either
" ° C " or " ° F ".
PHASED R.

° C _centigrade

° F_Fahrenheit

° C : Centigrade

° F : Fahrenheit
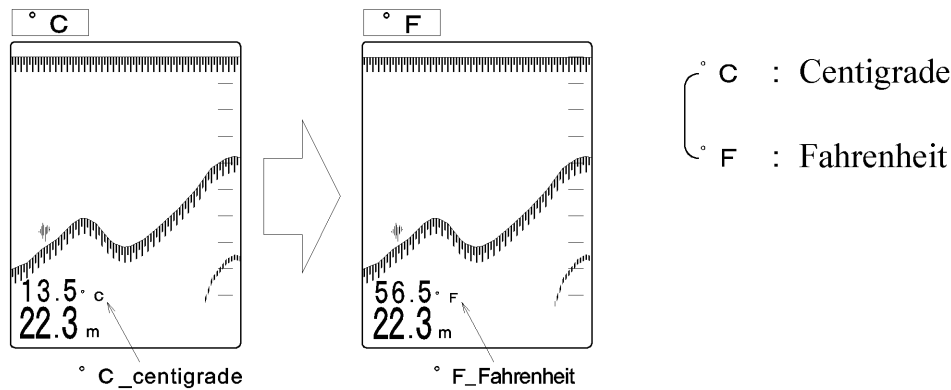
3. SPEED UNIT

The unit of ship's speed display may be selected when an external
navigator connected.

Each press of the △ or ▽ Phased range key changes the unit either "kt" or "km/h".
PHASED R.

in knots

in km/h

kt : Speed can be shown in knots.

1kt = 1.852 km/h

km/h : Speed can be shown

in kilometers/hour.
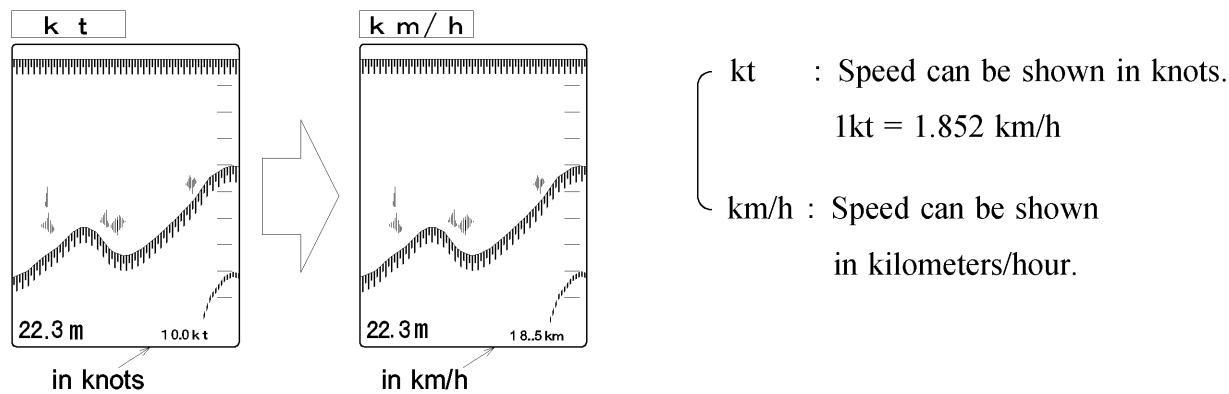
4. TEMPERATURE ADJUSTMENT

To adjust the water temperature displayed in the screen with an optional water temp. sensor connected.

Every time the △ or ▽ Phased range key is pressed, it is adjusted by 0.1°
PHASED R.

in the range from − 9.9 to ＋ 9.9.

＋9.9 : The maximum
          temperature adjustment
＋0.0 : No adjustment
−9.9 : The minimum
          temperature adjustment

△ : increases the values.
PHASED R.

▽ : decreases the values.

5. DRAFT

◎ The ES-1080 provides the draft height adjust control for displaying the depth readout from sea level. Usually, the ES-1080 shows up the depth readout from transducer surface to the bottom.
When your ship's draft height is 1 meter and actual depth from sea level is 5 meters, the display of depth readout is normally 4 meters. If necessary, you can change the difference by the following adjust.

· Press △ or ▽ Phased range key to enter the draft range value. cf page 70
PHASED R.

0 0.0 : disabled.
9 9.9 : max. range.

△ : increases the range.
PHASED R.

▽ : decreases the range.

DRAFT RANGE

NO ADJUSTMENT

1 m

5 m

TRANSDUCER FACE

4 m

4.0 m

AFTER SETTING THE DRAFT 1.0 AND RETURNING TO SOUNDER DISPLAY MODE

5.0 m

ADJUST THE ECHO START DEPTH TO 1.0 WITH THE PHASED RANGE KEYS

5.0 m
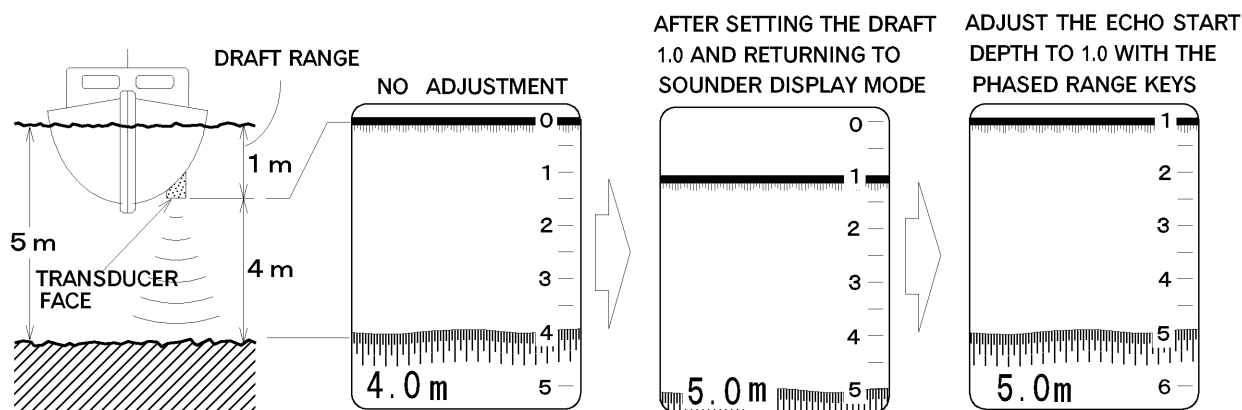
6. DEPTH AVERAGE

◎ By activating this function the changing depth is averaged when the ship is violently rolling or pitching, etc.

Each press of △ or ▽ Phased range key changes the setting,

PHASED R.

"1 ... 2 ... 3 .... 10 ... 1 ...".

The number of equalization expresses the number of times of discharge of a sound wave. " 1" has no equalization and "2.....10" equalizes the depth-sounding value for discharge of a sound wave each time.

⚠CAUTION

◎ Note that the depth values are differ from actual depth when the function of equalization is used in a place with much ups and downs of the seabed.

OTHERS

```
OTHERS

┌─────────────────────┐
│  RETURN MAIN MENU   │
└─────────────────────┘

COLOR SET          A − 1
OUTER DPTH         OFF

TRIGGER            INTRNL
ECHO SIG           INTRNL

OUTPUT             OFF
T.INTVAL ADD       000

TRANS RATE         MEDIUM
PULSE              NORMAL

OPE. MODE          O
SHIFT AR           1
TEMP SENSOR        OP-102
ASHIFT LIMIT       999
```

· Use the △ or ▽ EXP/VRM key
to highlight the item you want to change.

· Use the △ or ▽ Phased range key

to set the desired values or to return

to MAIN MENU display when RETURN

MAIN MENU highlighted.

1.COLOR SETUP (COLOR PALETTE FUNCTIONS)

◎   There is a total of 10 palettes, A-1, A-2, B-1, B-2, C-1, C-2, D-1, D-2, E1 and E2.
A-1, A-2, B-1, B-2, C-1, C-2, D-1 and D-2 are fix and therefore not adjustable.

Palette E-1 and E-2 can be customized to suit individual needs and wishes.
The initial settings: E-1=A-1 and E-2=B-1

Each press of the △ or ▽ Phased range key changes the palette setup,

"A-1…A-2…B-1…B-2…C-1…C-2…D-1...D-2...E-1...E-2 and A-1".

```
┌A-1 · A-2 · B-1 · B-2 ┐
│                      │ : fix and not adjustable
│C-1 · C-2 · D-1 · D-2 ┘
│
└E-1 · E-2 : make your own special palette setup
```

< TO BE CONTINUED >

◎ Select E-1 or E-2 with the △ or ▽ Phased range key and then press the
PHASED R.
∫ Threshold key to display the menu below if you wish to make your

own special palette setup.

COLOR PALLETTE SET MENU

R 15 000000000000000

G 11 00000000000····

B 00 ··············
△ ▽ USE THE PHASED R.KEY

∫ MOVE WITH THE THRESHOLD KEY

1 ←— BACKGROUND COLOR
2
3 COLOR SCALE
4
5
6
7
8 FRAME
△ ▽ USE THE EXP/VRM KEYS
TO MOVE THE FRAME.

Use △ or ▽ EXP/VRM key to
EXP/VRM
move the frame to the level to be set.

Each numeral color intensity

(R: red, G: green, B: blue) will be

displayed on the menu.

Use the ∫ Threshold key to highlight

the color to be changed and select the

color intensity (1 ～ 15) with the

△ or ▽ Phased range key.
PHASED R.

Once the color palette has been set,

return to sounder display, which will

memorize the color setup in E-1 or E-2.

Use ▼ or ▉ key to return to MAIN MENU.

WHAT IS "COLOR PALETTE" ?

There are three basic colors (red. green and blue).

Each color has 15 intensity levels.　By mixing the different

colors and intensity levels the desired color tones may be

created for the display.

RED
WHITE
GREEN BLUE

Palette 1 to 8 can be customized to suit individual needs and wishes.
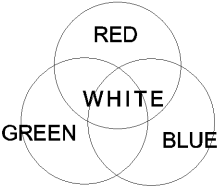
2. OUTER DEPTH

◎ To display the bottom depth in digits by setting this function ON

even if the bottom depth is out of the set range.

・Each press of the △ or ▽ Phased range key changes ON with OFF
PHASED R.

alternately.

⌐ OFF   : No digit depth display in case the bottom depth is out of the range.

└ ON   : The bottom depth is displayed at the bottom of the screen in
digits even if the bottom depth is out of the set range.
However the processor in the ES-1080 automatically adjusts
the transmit pulse rate "MEDIUM" to allow for the longer travel
time to the bottom and return.

3. TRIGGER SIGNAL

◎ To select where the trigger signal is taken from, either INTRNL or EXTRNL.
This function is used when using ES-1080 as a slave display to other
sounding equipment.

・Each press of the △ or ▽ Phased range key changes INTRNL with EXTRNL
PHASED R.

alternately.

⌐ INTRNL   : To select when using only the signal of the ES-1080.

└ EXTRNL   : To select when using the signal from the external unit.

4. ECHO SIGNAL

◎ To select where the echo signal is taken from, either INTRNL or EXTRNL.

・Each press of the △ or ▽ Phased range key changes INTRNL with EXTRNL
PHASED R.

alternately.

⌐ INTRNL   : To select when using only the signal of the ES-1080.

└ EXTRNL   : To select when using the signal from the external unit.

(Select "EXTRNL" when using ES-1080 as a slave

display to other sounding equipment.)

5. OUTPUT

◎ On installing optional kit serial output data is selected in the following sentences.

· By pressing the △ or ▽ Phased range key the desired output sentence is
PHASED R.
selected from the following.

(OFF → 183N → 183T → 600S → OFF)

OFF : No output

1 8 3 N : To output data of DBS, DBT, and MTW every 1 second.

1 8 3 T : To output data of DBT every 1 second.

6 0 0 S : To output data of depth at transfer rate of 600bps every
one second.

NOTE !

◎ DBS : outputs the values for Depth below surface, the values added the draft range. When the draft range is not activated, the same values as DBT are output.

◎ DBT : outputs the values of Depth below transducer that is not related to the draft range.

◎ MTW : outputs the values for Water temeprature when a temperature sensor is connected.

◎ Data transfer rate : indicates the data transmitting rate.

6. TRANSMIT INTERVAL ADDITION RATE

◎ The transmit interval rate can be added to eliminate some double echoes.

· Each press of the △ or ▽ Phased range key changes the values between 000 and 999.
PHASED R.

△ : increases the value.
PHASED R.

▽ : decreases the value.

· In the setting values from 0 to 999 the larger values selected, the less double echoes

appears on the screen.

7. TRANSMIT RATE (PULSE REPETITION RATE)

◎ The transmit rate of the sound waves from the transducer can be selected.

・Each press of the ▵ or ▽ Phased range key changes the transmit rate.
PHASED R.

HIGH   : can be set the highest rate according to the range.

MEDIUM   : can be set the standard rate according to the range.

LOW   : can be reduced the standard rate by half.

8. PULSE WIDTH

◎ The transmitted pulse width can be set.

・ The transmitted pulse can be set to these kinds (narrow ・ normal ・ wide ・ detail), where the optimum setting will be applied according to the range automatically.
Or it can be set manually, if a specific pulse width (0.3 ～ 3.6 msec) is required.

・ Select the optimum width of the transmitting pulse by ▵ or ▽ Phased range key.
PHASED R.

・ Each press of ▵ or ▽ key changes the setting.
PHASED R.
(NARROW → NORMAL → WIDE → DETAIL → 0.3 → NORMAL)

NORMAL   : Setting NORMAL changes the value automatically according to the range.   Refer to the list in the next page.

NARROW   : When the searching range is short and higher resolution is required, the pulse width should be set NARROW.
Normal pulse width x 0.5

WIDE   : The longer range gives less resolution.
Normal pulse width x 1.5

DETAIL   : The pulse width changes automatically according to the range and its change is displayed in details.

0.3   : The pulse width is independently of the range in use and its initial value of the pulse width is 0.3 msec.
Refer to the following page.

◎ By presseing ▼ or ▮▯ key the pulse width
is to be set every 0.1 msec unit from 0.3 to 3.6 msec.

┌ ▼ key: increases the value.

└ ▮▯ key: decreases the value.

RANGE DEPTH	PULSE
m	(msec)
0～ 50	0.3
～100	0.6
～240	1.2
～640	2.4
641～	3.6

（msec：1/1000 SECOND）

NOTE !

◎ In actual practice, the short pulse width gives better detection resolution, and

less noise in shallow water.   A long pulse will reach deeper but give less resolution.

9. OPERATION MODE

◎ To select one of the Operation modes that was stored in the memory.

・Each press of the △ or ▽ Phased range key changes 0 with 1 alternately.
PHASED R.

・Each of the setting 0 and 1 can store 3 kinds of operation mode you have

created, that is, in total 6 kinds of operation mode can be stored in the memory.

10. SHIFT AVERAGE - Scale increment

◎ A different shift can be set for the display in the depth range.

・Each press of the △ or ▽ Phased range key changes the value,
PHASED R.

(1 - 5 - 10 - 50 -100 - 1).

・For example in the SHIFT AR 1, the depth on the screen moves by 1 depth
unit and in the SHIFT AR 5 does by 5 depth unit.

11. TEMPERATURE SENSOR

◎ To select one of the interfacing connections for temperature sensor.

・Each press of the $\triangle$ or $\triangledown$ Phased range key changes the item,
PHASED R.
   (OP-102 → OP-41-1 → NMEA-0183 → OP-102).

・To present a temperature via the NMEA-0183 input port, the interface connection should be made to the receptacle on the rear panel of the cabinet.

12. AUTO SHIFT LIMIT

◎ To select the upper limit of the depth value for automatic bottom tracking.

・Each press of the $\triangle$ or $\triangledown$ Phased range key changes the depth value
PHASED R.
by 1 unit between 010 and 999.

$\triangle$: increases the depth value.
PHASED R.
$\triangledown$: decreases the depth value.

For AUTO SHIFT info. cf Page 74

ALARMS

```
ALARM

  ┌─────────────────────┐
  │ RETURN MAIN MENU    │
  └─────────────────────┘
  SHALLOW          OFF

  DEEP             OFF
  FISH             OFF
  TEMP MAX.        OFF
  TEMP MIN.        OFF
  TEMP RANGE       OFF
```

・ Use the [△] or [▽] EXP/VRM key

to highlight the item you want to change.

・ Use the [△] or [▽] Phased range key

to set the desired function ON/OFF or

to return to MAIN MENU display when

RETURN MAIN MENU highlighted.

1. SHALLOW ALARM

◎ To set to sound a "beep" if the echo sounder detects the sea bottom

above (shallower than) the set alarm depth.

・ Each press of the [△] or [▽] Phased range key alternates OFF with 0000.

・ To access the alarm setting and set the value from "0000" into the desired alarm

depth value by pressing the [▼] or [█] key.

The active zone is indicated by a Shallow maker (⌐) on the right side of the screen.

[▼] key : increases the value. (The position of the marker is deeper.)

[█] key : decreases the value. (The position of the marker is shallower.)

It sounds in these areas.

It sounds if the responded level is shallower than the set value.

SHALLOW MARKER (when "OFF" selected, it will not appear.)

2 0 m

"SHALLOW" is selected.
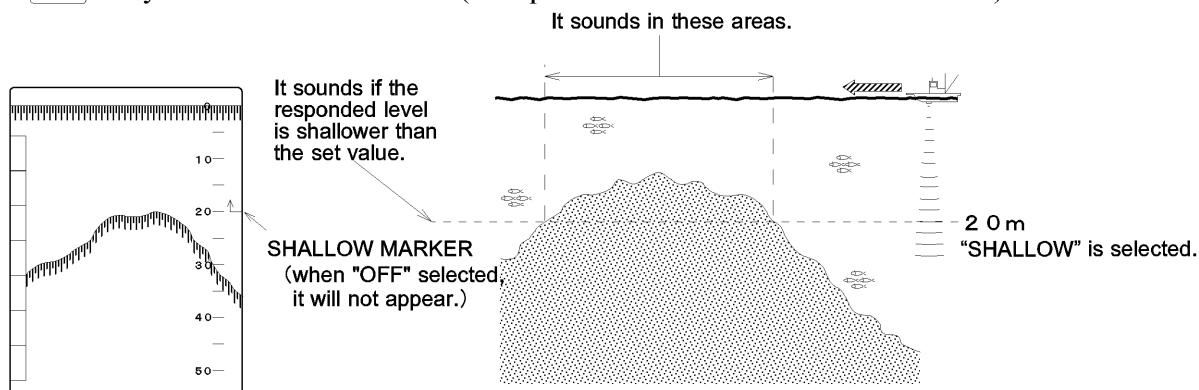
◎ Select "OFF" in case of not utilizing the alarm functions.

Refer to the next page for the way of inactivating this function.

2. DEEP ALARM

◎ To set to sound a "beep" if the echo sounder detects the sea bottom

   below (deeper than) the set alarm depth.

・ Each press of the [△] or [▽] Phased range key alternates OFF with 0000.
PHASED R.

・ To access the alarm setting and set the value from "0000" into the desired alarm

   depth value by pressing the [▼] or [▌] key.

   The active zone is indicated by a Deep maker (↓) on the right side of the screen.

   [▼] key : increases the value. (The position of the marker is deeper.)

   [▌] key : decreases the value. (The position of the marker is shallower.)

It sounds in these areas.

It sounds if the
responded level
is deeper than
the set value.

DEEP MARKER
(when "OFF" selected,
it will not appear.)

30m
"DEEP" is selected.
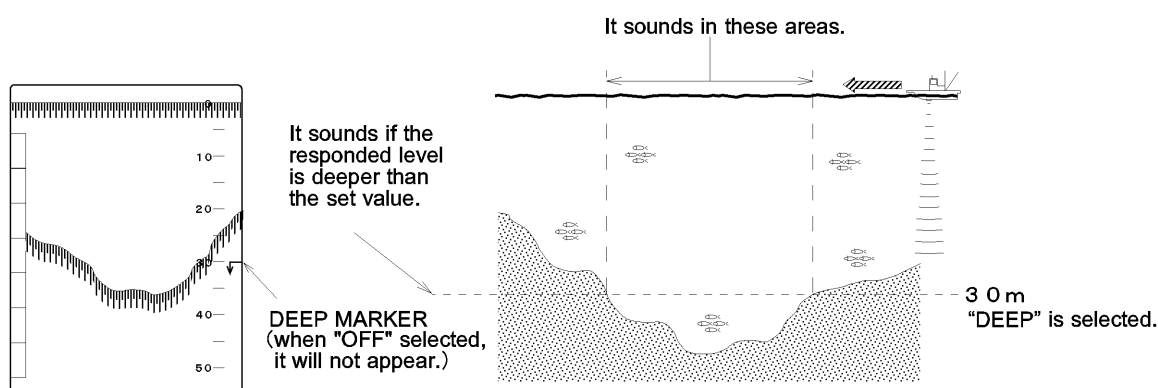
◎ Select "OFF" in case of not utilizing the alarm functions.

How to Inactivate the Alarms

◎ Once the alarm starts to sound, press any key to disable the alarm.

   Pressing any key will silence the alarm and will not cause a menu change.

   Note that all keys are inoperative while the alarm sounds.

3. FISH ALARM

◎ The Fish alarm mode will alert you if any object appears between the

two set points (Deep alarm and Shallow alarm).

This sets the level of the alarm sounding.

· Each press of the △ or ▽ Phased range key alternates OFF with 6.

PHASED R.

OFF : disable Fish alarm
1   : color scale 1-7
2   : color scale 2-7   The alarm sounds
3   : color scale 3-7   in relation to
4   : color scale 4-7   the color scale No.
5   : color scale 5-7
6   : color scale 6-7
7   : sounds in relation to
         color scale No.7

· The desired level can be

selected by pressing the ▼ or

▮ key after entering

6 (initial value).

▼ key : increases the value.
▮ key : decreases the value.

FOR EXAMPLE

set value - color scale 3

COLOR SCALE
1
2
3
4   It sounds
5   against the set
         color in this
6   range.
7

It sounds againt
the level set in
this depth range.

It sounds in these zones.

COLOR SCALE No.2

COLOR SCALE No.3

COLOR SCALE No.7 - BOTTOM

2 0 m
Depth set in "DEEP"

3 0 m
Depth set in "SHALLOW"
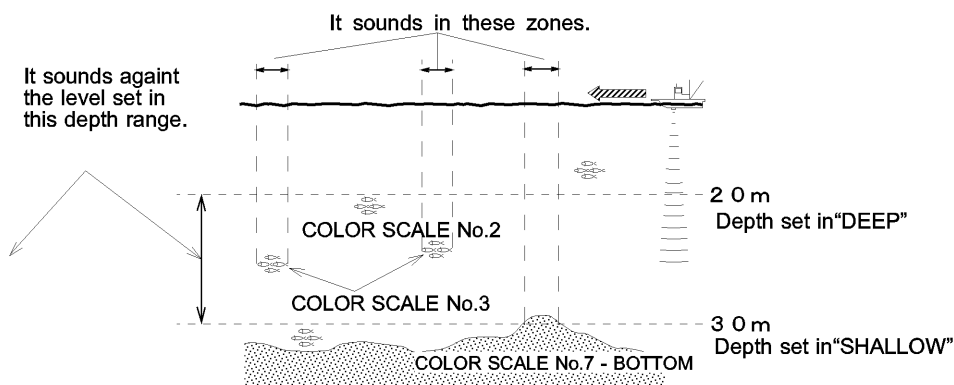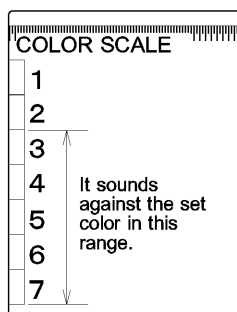
◎ To operate Fish alarm turn both Shallow alarm and Deep alarm

OFF after setting both desired alarm depth.

◎ Select "OFF" in case of not utilizing the alarm functions.

How to Inactivate the Alarms

◎ Once the alarm starts to sound, press any key to disable the alarm.

Pressing any key will silence the alarm and will not cause a menu change.

Note that all keys are inoperative while the alarm sounds.

4. TEMPERATURE MAXIMUM ALARM

◎ The alarm will sound when the water temperature goes above the set degree

that can be set from 0.0 to 35.0 by 0.1 unit (°C) in this case.

An optional temp. sensor is required to activate TEMP MAX alarm.

・ Each press of the △ or ▽ Phased range key alternates OFF with 35.0.
PHASED R.

・ The desired value can be selected by pressing the ▼ or ▌▐ key

after entering 35.0 (initial value).   ▼ key : increases the value.

▌▐ key : decreases the value.

◎ Select "OFF" in case of not utilizing the alarm functions.

5. TEMPERATURE MINIMUM ALARM

◎ The alarm will sound when the water temperature goes below the set degree

that can be set from 0.0 to 34.9 by 0.1 unit (°C) in this case.

An optional temp. sensor is required to activate TEMP MIN. alarm.

・ Each press of the △ or ▽ Phased range key alternates OFF with 00.0.
PHASED R.

・ The desired level can be selected by pressing the ▼ or ▌▐ key

after entering 00.0 (initial value).   ▼ key : increases the value.

▌▐ key : decreases the value.

◎ Select "OFF" in case of not utilizing the alarm functions.

How to Inactivate the Alarms

◎ Once the alarm starts to sound, press any key to disable the alarm.

Pressing any key will silence the alarm and will not cause a menu change.

Note that all keys are inoperative while the alarm sounds.

6. TEMPERATURE RANGE ALARM

◎   The alarm will sound when the water temperature goes above the set degree

the defined changed value compared to the change of the last 1 minute,

ranging from 00.0 to 09.8 by 0.1 unit (°C) in this case.

An optional temp. sensor is required to activate TEMP RANGE alarm.

・ Each press of the △ or ▽ Phased range key alternates OFF with 00.0.

PHASED R.

・ The desired level can be selected by pressing the ▼ or ▮ key.

after entering 00.0 (initial value).   ▼ key : increases the value.

▮ key : decreases the value.

◎ Select "OFF" in case of not utilizing the alarm functions.

How to Inactivate the Alarms

◎   Once the alarm starts to sound, press any key to disable the alarm.

Pressing any key will silence the alarm and will not cause a menu change.

Note that all keys are inoperative while the alarm sounds.

TR/RX MENU

◎ When using the ES-1080 equipped with the TR/RX board (NO.719), TR/RX MENU may be adjusted as below.

· Note that the TR/RX MENU has not set up under the factory setting and the following message appears when turning on the power of the unit.

> The TR/RX MENU has not set up.
> Call up "MAIN MENU - TR/RX MENU" display to set TR/RX MENU.

· While appearing this message, the settings can not be changed as TX POWER "LOW" (PWR-LOW on the screen) is selected.

· After the below setting via the "TR/RX MENU" is completed, this message will not appear and then "MAIN MENU - FUNCTION SET - TX POWER" starts to be available. Check the transducer connector has been wired properly.

```
TR / RX MENU

RETURN MAIN MENU
TRANSDUCER        200k 50 Φ ×1
FREQUENCY         200kHz

TR FREQUENCY      200.000
RX FREQUENCY      200.000
BAND WIDTH        WIDE

JUMPER SET        A
```

· Use the △ or ▽ EXP/VRM key to highlight the item you want to change.

· Use the △ or ▽ Phased range key to set the desired function or to return to MAIN MENU display when RETURN MAIN MENU highlighted.

※ Note 1): The above item will not appear when the TR/RX board other than No.719 board is equipped.

Note 2): The above indication, JUMPER SET A is not effective until the jumper setting (refer to the page 58) is completed.

※ **Refer to the next pages for the details of this function.**

1. TRANSDUCER

◎ To select the transducer connected to the ES-1080.

・Press △ or ▽ Phased rangekey to select the desired transducer from
PHASED R.
the registered transducers.

If you can not find the transducer you need, select "OTHERS".

2. FREQUENCY

◎ Select the nearest frequency you need when "OTHERS" in the above item 1.
TRANSDUCER is selected.   This setting is not required when one of the
registered transducers is selected in the item "TRANSDUCER".

・ Each press of △ or ▽ Phased range key changes the frequency in order.
PHASED R.

3. TR FREQUENCY

◎ The transmitting frequency for the transducer is adjusted by this setting.

・ It displays the transmitting frequency (corrected value) that is selected
in the item 1 "TRANSDUCER" or in the item 2 "FREQUENCY".

・ This function adjusts the difference between the frequency selected in the above
and the desired frequency.

・ Press △ or ▽ Phased range key to set appropriate value in the setting.
PHASED R.

△ : increases the values.
PHASED R.

▽ : decreases the values.

◎ The appropriate transmitting frequency can be adjusted here while watching
the picture.   Change also the TR frequency when the RX frequency
explained in the next page is changed for avoiding the interference.

・ The frequency adjusted here will be cleared when the setting of
"TRANSDUCER" or "FREQUENCY" is changed.

4. RX FREQUENCY

◎ The receiving frequency for the transducer is adjusted by this setting.

・ It displays the receiving frequency (corrected value) that is selected

in the item 1 "TRANSDUCER" or in the item 2 "FREQUENCY".

・ This adjusts the difference between the frequency selected in the above

and the desired frequency.   The correction can be set every 1kHz.

・ Press △ or ▽ Phased range key to set appropriate value in the setting.

PHASED R.

△ : increases the values.

PHASED R.

▽ : decreases the values.

◎ The appropriate receiving frequency can be adjusted here while watching

the picture.   Change the RX frequency to avoid the interference, if required.

・ The frequency adjusted here will be cleared when the setting of

"TRANSDUCER" or "FREQUENCY" is changed.

5. BAND WIDTH

◎ To set amplifier band width of frequency RX amplifier.

・ Each press of △ or ▽ Phased range key changes the width,

PHASED R.

"NARROW - WIDE - NARROW".

・ When NARROW is chosen, the noise suppression is greater however

resolution in shallow water is lower.   For increased resolution, select WIDE.

6. JUMPER SETTING

◎ The current "JUMPER SET" appears just below "TR/RX MENU" on the screen after selecting one of the registered transducers from "TRANSDUCER". However it will not appear when "TRANSDUCER - OTHERS" selected.

· One of the following, "A, B, C, D, E or J12" appear on the screen.

  Set the necessary jumper according to the sign displayed on the screen. When "J12" is displayed on the screen, add a jumper in the accessory box of the main unit.

· In case of connecting a transducer other than the registered one, please contact your nearest Suzuki dealer.

◎ The ES-1080 must be turned off and disconnecting the power cables while setting the jumper.

· How to set the jumpers on TR/RX board.

  - Remove 4 screws on the blind (in the fig.1) of the rear panel.

  - The jumper terminals (from A to E), a jumper plug and the jumper terminal J12 can be seen as shown in the Fig.2.

  - Pull this jumper plug out from the board and insert it into the terminal indicated on the screen. Note that the plug side for A-E is different from J12 when inserting the terminal on the board.

  - Put the blind back after setting the necessary jumper.
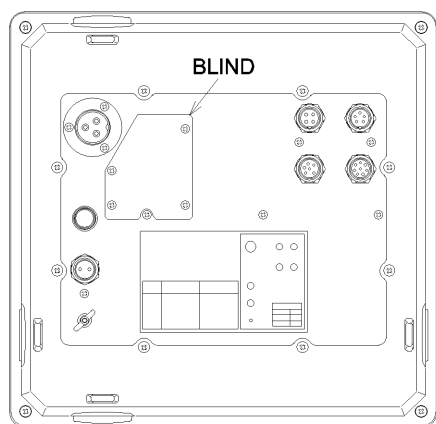
Fig. 1   Fig. 2
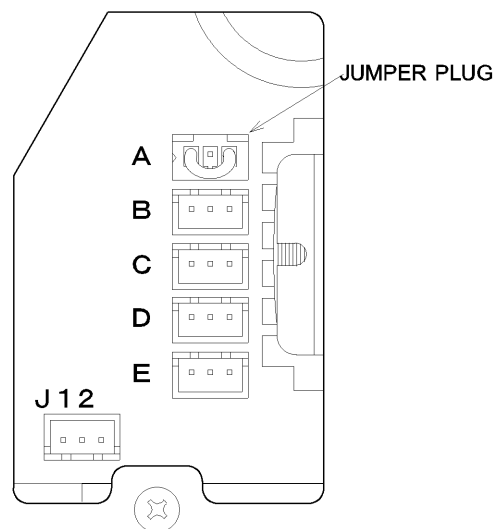
FUNCTION DIALS AND KEYS

This chapter provides you the explanation for function dials and keys.

CONTROL DIALS

MODE SELECTION DIAL

◎ You can select an appropriate display mode.

・ MENU 1 and 2 can be used to set the basic functions on the ES-1080.

・ The following displays differ depending on the function set by

   "SCREEN DIVISION".   The below figures show the samples of vertical division.

NORMAL DISPLAY &
BOTTOM EXPANSION
DISPLAY

NORMAL DISPLAY &
PARTIAL EXPANSION
DISPLAY

NORMAL DISPLAY &
NAVIGATION DISPLAY

RANGE SETTING DISPLAY

NORMAL FULL DISPLAY

MODE SELECTION DIAL

FUNCTION SETTING MENU
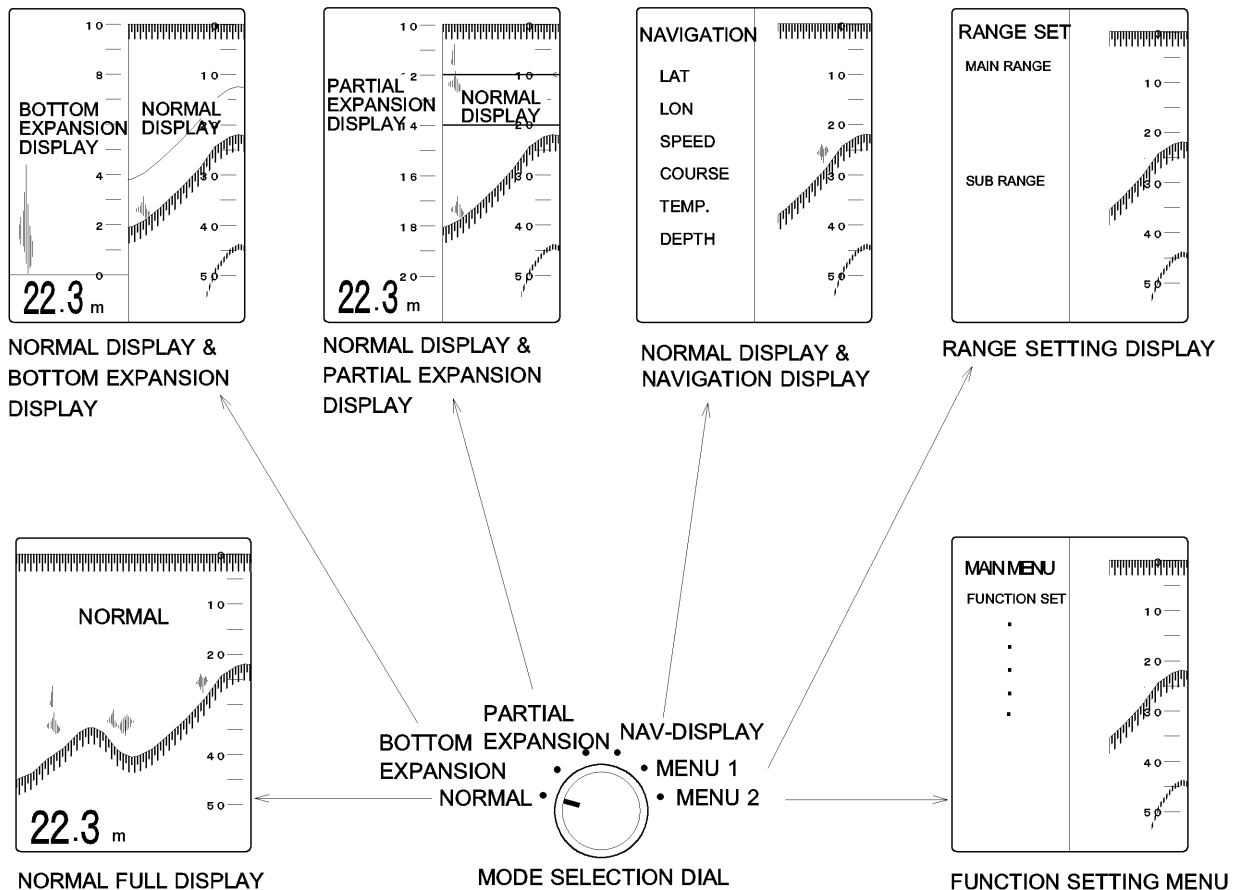
* For more detailed explanation for each mode, refer to the following pages.

1. NORMAL MODE

NORMAL DISPALY

This range is selected
with the range dial.

22.3 m
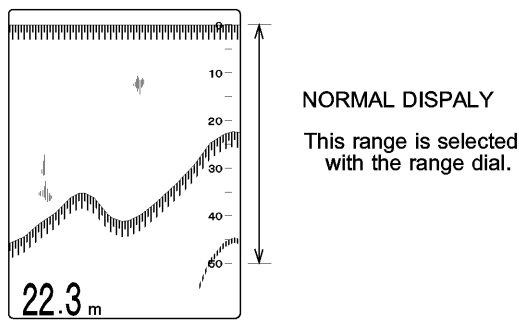
Normal sounder display mode on
the full screen.

2. BOTTOM EXPANSION MODE

SCREEN DIVISION : HORIZONTAL

EXPANSION RANGE LINE

NORMAL DISPALY

This range is selected
with the range dial.

BOTTOM EXPANSION DISPLAY

This range is selected
with the expansion dial.

expanded
area

22.3 m

Screen division may be set on the
Menu 2 function setting menu
display.

Under screen division HORIZONTAL
setting Normal mode is displayed
on the upper half of the screen.
Bottom expansion mode is displayed
on the lower half.

SCREEN DIVISION : VERTICAL

NORMAL DISPALY on the right

This range is selected
with the range dial.

BOTTOM EXPANSION DISPLAY
on the left

This range is selected
with the expansion dial.

22.3 m

BOTTOM
EXPANSION
DISPLAY
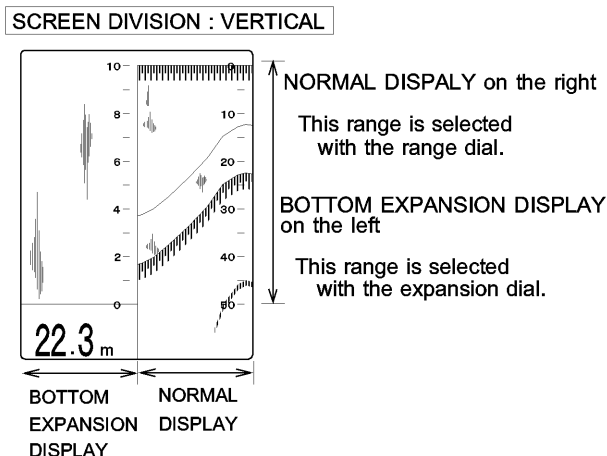
NORMAL
DISPLAY

The expansion range line is indicated
by a line on the Normal mode.

The expansion range may be selected
with the expansion dial.

Under screen division VERTICAL
setting Normal mode is displayed
on the right side of the screen.
Bottom expansion mode is displayed
on the left side.

Note that the expansion range line is not
displayed on the screen when "SCREEN
DIVISION- BTM EXPN - AUTO" selected.

3.PARTIAL EXPANSION MODE
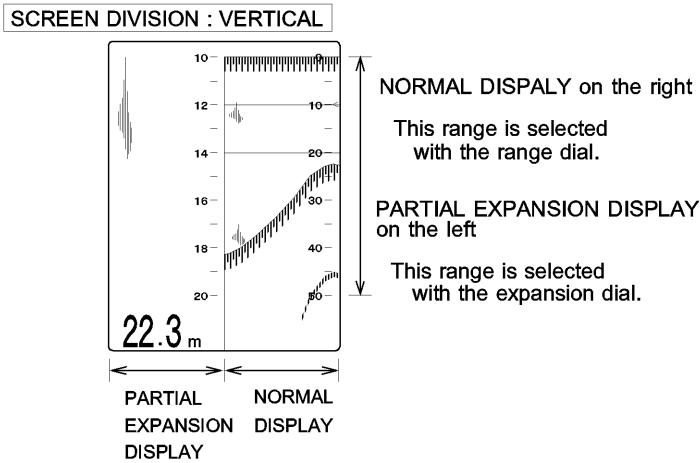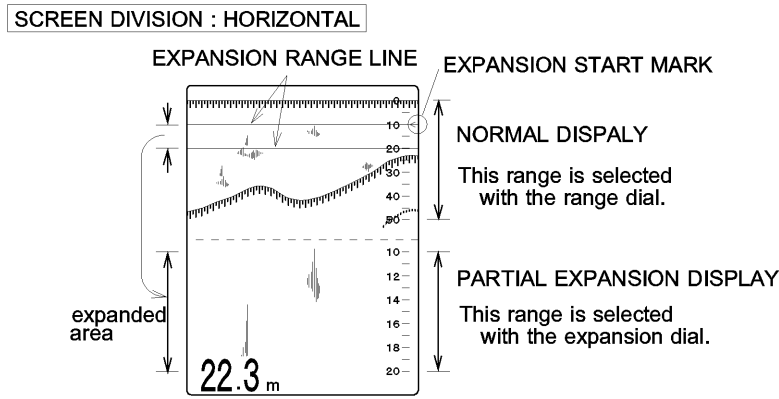
SCREEN DIVISION : HORIZONTAL

EXPANSION RANGE LINE   EXPANSION START MARK

NORMAL DISPALY

This range is selected
with the range dial.

PARTIAL EXPANSION DISPLAY

This range is selected
with the expansion dial.

expanded
area

22.3 m

SCREEN DIVISION : VERTICAL

NORMAL DISPALY on the right

This range is selected
with the range dial.

PARTIAL EXPANSION DISPLAY
on the left

This range is selected
with the expansion dial.

22.3 m

PARTIAL   NORMAL
EXPANSION   DISPLAY
DISPLAY

◎ Screen division may be set on the
Menu 2 function setting menu display.

· Under screen division HORIZONTAL
setting Normal mode is displayed
on the upper half of the screen.
Partial expansion mode is displayed
on the lower half.

· The expansion range line is indicated
by two lines on the Normal mode.

· The expansion range may be
selected with the expansion dial.

· Under screen division VERTICAL
setting Normal mode is displayed
on the right side of the screen.
Partial expansion mode is displayed
on the left side.

4.NAVIGATION (DATA) DISPLAY MODE

NAV DISP

LATITUDE

LONGITUDE

SPEED

COURSE

WATER
TEMP.

WATER
DEPTH
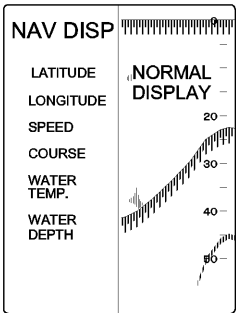
NORMAL
DISPLAY

◎ Sounder normal mode is displayed
on the right half of the screen.
Navigation data is displayed
on the left half of the screen.

NOTE !

◎ Navigation data is only available when ES-1080 is connected to
an optional equipment.

◎ Water temperature data is only available when the ES-1080 is
connected to an optional water temperature sensor.

5. MENU 1 (RANGE SETTINGS)

◎ To display the RANGE SET MENU.

· To customized the ranges of the range dial, set desired ranges with

"RANGE SET MENU" before operating this unit. [cf] Page 19/20

```
RANGE SET

   MAIN RANGE
     NUMBER          RANGE DEPTH

       [1]          [0 0 0] — 0 0 2 5
        2            0 0 0  — 0 0 5 0
        3            0 0 0  — 0 1 0 0
        4            0 0 0  — 0 1 5 0
        5            0 0 0  — 0 2 0 0
        6            0 0 0  — 0 3 0 0
        7            0 0 0  — 0 5 0 0


   EXPANSION RANGE
     NUMBER          RANGE DEPTH

        1            0 0 0 1
        2            0 0 0 2
        3            0 0 0 5
        4            0 0 1 0
        5            0 0 2 0
        6            0 0 3 0
        7            0 0 4 0
        8            0 0 5 0
```

6. MENU 2 (FUNCTION SETTINGS)

◎ To display the FUNCTION SET MENU.

· To set up a fundamental function.

· To customized the functions, set desired functions with

"FUNCTION SET MENU" before operating this unit. [cf] page 21

```
      MAIN MENU

    [ FUNCTION SET ]
    REDUCTION
    SCREEN DIVISION
    DISP ITEM SEL
    UNIT · ADJUST
    OTHERS
    ALARM
    TR/RX MENU
```

RANGE DIAL

◎ Range dial allows the user to set the displayed depth range to begin at some point below the surface.

NORMAL DISPLAY

22.3m

RANGE

USE THIS DIAL TO SET
THE RANGE FROM 1 TO 7.
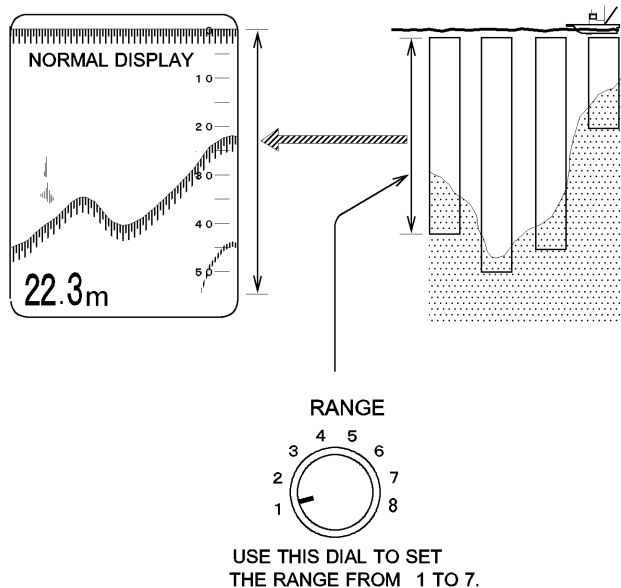
· Factory setting range

1	:	2 5
2	:	5 0
3	:	1 0 0
4	:	1 5 0
5	:	2 0 0
6	:	3 0 0
7	:	5 0 0
8	:	A U T O

· how to choose : **cf** page 19
the desired range

· No.8 / AUTO RANGE : **cf** page 74

EXPANSION RANGE DIAL

NORMAL DISPLAY

BOTTOM EXP.
DISPLAY

22.3 m

USE THIS DIAL TO
SET THE PARTIAL
EXPANSION RANGE.

EXPANSION RANGE.

NORMAL DISPLAY

PARTIAL EXP.
DISPLAY

22.3 m
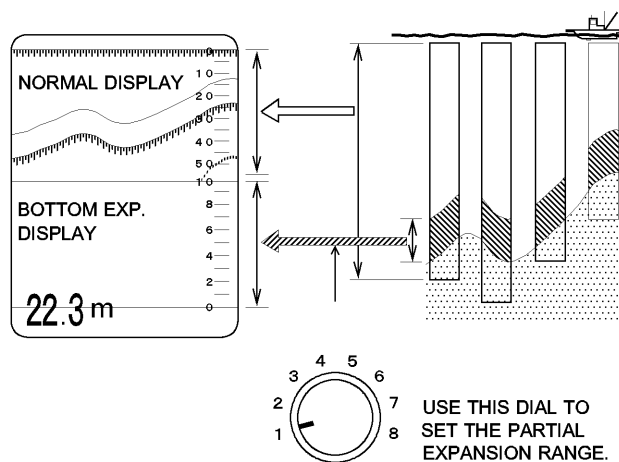
◎ This function allows you to take a closer look at a particular section of the water underneath your boat. You can expand the view near the bottom or select the partial expansion range.

· The expansion range

1	:	1
2	:	2
3	:	5
4	:	1 0
5	:	2 0
6	:	3 0
7	:	4 0
8	:	5 0

· The amount of expansion can be adjusted.

· how to choose : **cf** page 20
the desired range
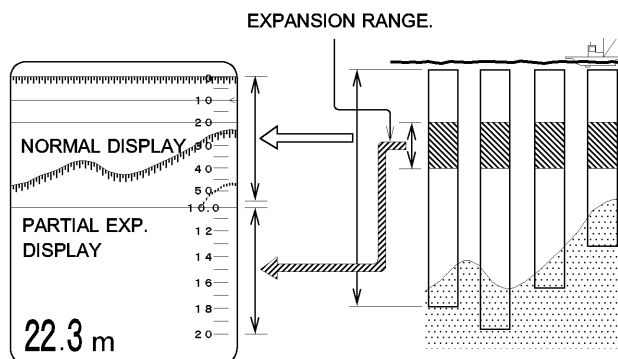
GAIN DIAL

◎ To adjust the level of sensitivity of the received echo signal.

· Turning the dial clockwise increases the gain level, keep turning the dial until the sea bottom is shown in red.

THE LEVEL OF GAIN IS TOO LOW.

THIS PICTURE SHOWS THE CORRECT GAIN LEVEL.

THIS PICTURE IS AT THE CORRECT GAIN LEVEL,BUT THE WATER IN THE MIDDLE LAYER IS FULL OF UNWANTED ECHOES DUE TO DIRT.

THE LEVEL OF GAIN IS TOO HIGH.
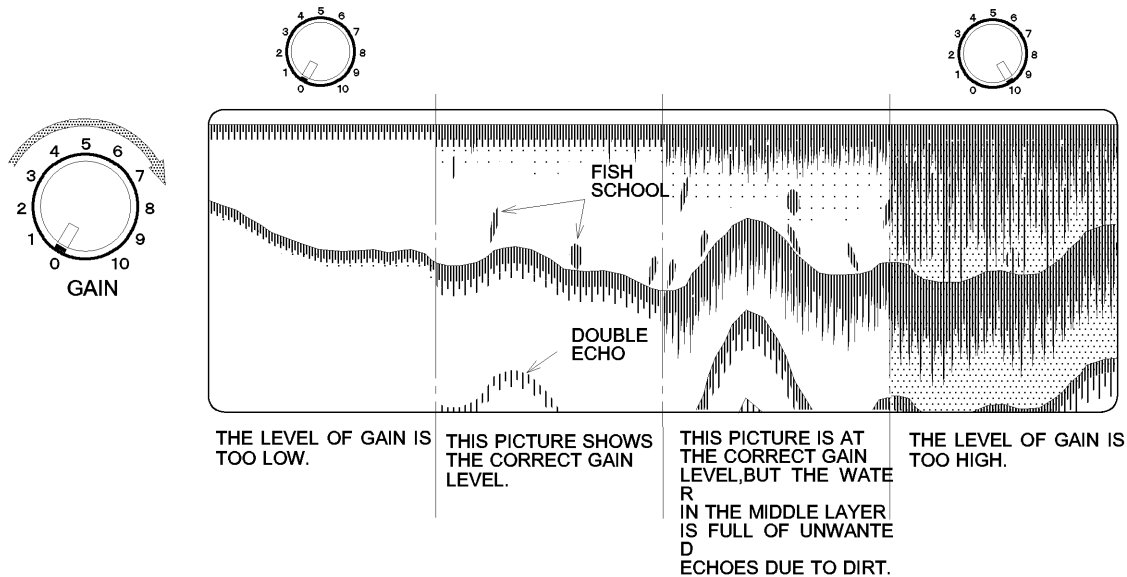
· The strongest echoes are displayed in red and as the received echoes get weaker they are indicated as follows; red → orange → yellow → green → light green → blue → light blue.

· When the target is the sea bottom the gain level setting can be low because the echo from the sea bottom is very strong.　However, when the target is fish the level of gain must be increased to pick up the weaker echo.
Increasing the gain too much will display unwanted echoes from bubbles and plankton etc.

· If the sea bottom echo is weak due to seaweed, mud etc. adjust the gain level to pick up the weaker echo.

· When passing over the transducer face, bubbles reflect the sound wave and appear as echoes on the screen.　In this case, no echoes (fish school) may be displayed even though at a maximum gain level.

NOTE !

◎ The Settings above can be entered from MENU 2 - FUNCTION SET - GAIN UP".

FAR GAIN DIAL

◎ To adjust the level of TVG curve or STC selected in the function set.

1. Selection of TVG CURVE （1 ～ 4）

◎ To control the level of the sensitivity of the received deep echo signal.

· Turning the dial clockwise does not increase the gain level close to the transducer but increases the gain level as the depth increases.

· For further true display, it corrects the display differences between the shallow echo and the deep echo.

· The sensitivity achieved using this dial influences the sensitivity achieved using the GAIN DIAL and TVG CURVE function on FUNCTION SET MENU.

FAR GAIN

FAR GAIN : OFF

FAR GAIN : MEDIUM
TURNING THE FAR GAIN DIAL CLOCK-
WISE INCREASES THE GAIN FOR DEEP
ECHOES.
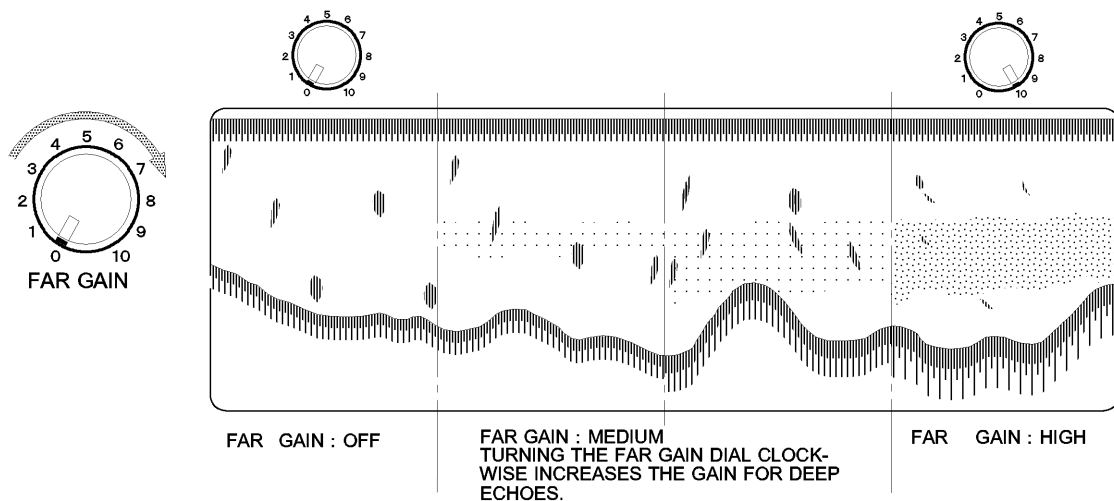
FAR GAIN : HIGH

WHAT IS "FAR GAIN"?

◎ The power of the sound wave is absorbed at a certain rate when travel through the water. The higher the frequency, the higher the rate of absorption. For example after travelling 1 kilometer the power of a 50kHz sound wave will decrease to 1/8 of its original strength. The power of a 200kHz sound wave will decrease to 1/300 of its original strength. Use this FAR GAIN dial to counteract the absorption effect by increasing received echo signal of deep echoes.

2. Selection of " STC - Sensitivity Time Control ".

◎ To reduce receiver gain for shallow water echoes and restores it with
depth in such a manner as to equalize echo strengths at different depths.

· This initial gain suppression is at maximum in the fully
counterclockwise position.

· Use this function effectively by adjusting gain value and GAIN UP function.

FAR GAIN

| FAR GAIN : OFF (NO STC) | TURNING THE FAR GAIN DIAL COUNTER-CLOCKWISE INCREASES THE STC. | IT IS TURNED TOO MUCH. EVEN FISH SCHOOL AND BOTTOM ARE SUPPRESSED. |

⚠ CAUTIONS
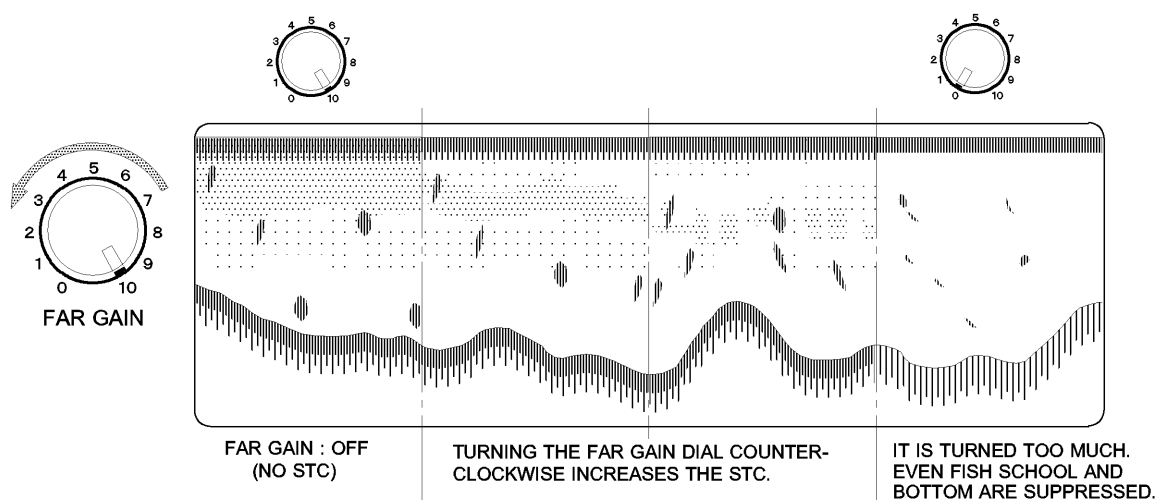
◎ In case of using FAR GAIN DIAL as STC function there is no effect
at the dial 10 and increase the effect as turning the dial into the dial 0.

At this time turning too much to counterclockwise suppresses even
fish school or bottom signal.

BRIGHTNESS DIAL

◎ To turn the power on by turning the dial clockwise.
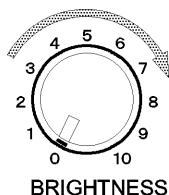
BRIGHTNESS

Further turning in a clockwise direction increases
screen brightness.

KEY OPERATION

OPERATION MODE KEYS

◎ Use these keys to select one of the 3 kinds (in total 6 kinds by using MENU 2 - OTHERS) of operation mode you have created. [cf] Page 48

Press one of these keys after its registration so that the desired operation mode can be available immediately.

· Previously set each desired function on MENU 2 and close it when registering operation mode key numbers.

· By holding one of the [1] ([2] . [3]) keys for 2 seconds until a beep sounds, all functions set currently are memorized. If the key is released before a beep sounds, nothing can be memorized.

· Press appropriate OPERATION MODE KEY until a beep sounds to activate this function. 3 beep-sounds indicates that nothing has memorized and changed.

· During the operation by one of the operation modes the settings can be changed and activated the changed settings, however pressing one of the operation keys again returns to the previous operation mode.
To register the changed setting, hold the operation mode key for 2 seconds.

· The activating operation mode key number appears at the top of the screen depending on key pressed. Nothing appears when the operation mode is not registered.

CURRENTLY SELECTED
OPERATION MODE KEY

It appears on the screen.

M — 0 — 1

· number of the selected operation mode key

· selected via "MENU 2 - OTHERS"

M-0-1

10
20
30
40
50

22.3 m
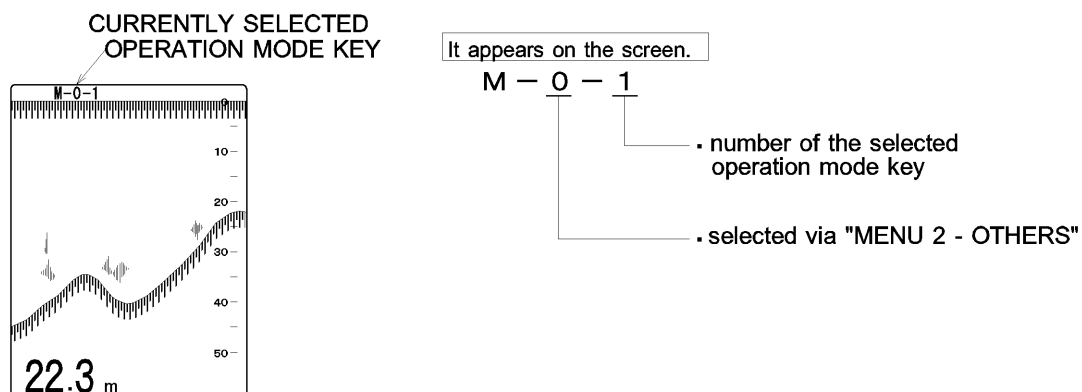
EXPANSION/VRM KEYS

◎ To active the settings adjusted in "MENU 2 - DISP ITEM SEL - EXP/VRM" .

1. EXPANSION START POINT

◎ To set the expansion start point for Partial expansion mode.

EXPANSION START DEPTH   EXPANSION RANGE LINE

PRESS THIS KEY TO POINT UP.

EXP/ VRM

PRESS THIS KEY TO POINT DOWN.

EXP.MODE   NORMAL MODE

EXPANSION START MARK

SCREEN DIV : VERT
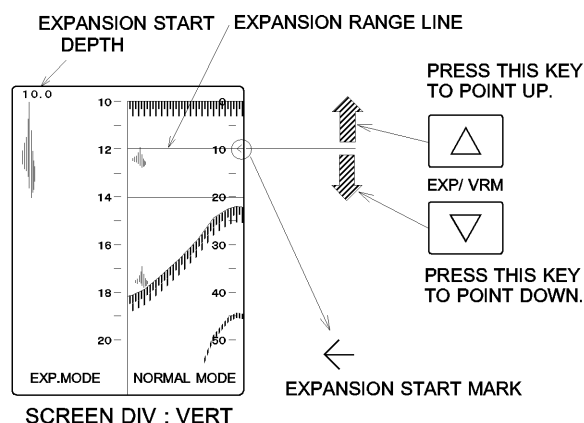
· The numeral expansion start depth will be displayed on the upper left corner of the screen.

2. VRM LINE

◎ If you want to monitor a particular depth in greater detail then the marker line is a very convenient method.   It also allows you to change the depth monitored merely by changing the marker line position.

VRM LINE   DEPTH

PRESS THIS KEY TO LINE UP.

EXP/ VRM

PRESS THIS KEY TO LINE DOWN.
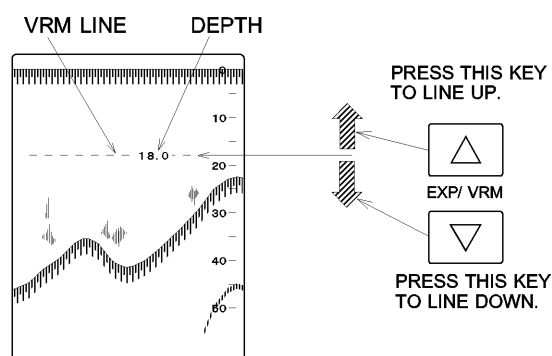
· Its depth value is presented on the right side of the line.

· Pressing both △ and ▽ EXP/VRM
EXP/ VRM

keys at the same time alternates VRM

line on with off.

MEMORY WRITE/READ KEY
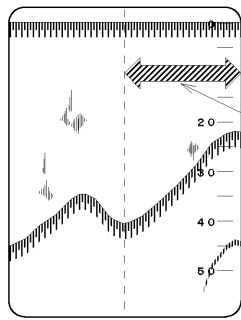
PRESS THIS KEY
TO MEMORIZE
THIS HALF
OF THE SCREEN.

MEMORY WRITE KEY

WHEN THIS KEY IS
PRESSED, THE MEMORIZED
DATA WILL BE DISPLAYED
HERE.

MEMORY READ KEY

◎ To memorize the right half of the screen.

· Each press of the memory write key ▼ will memorize the right half of the screen, erasing the previously memorized data.

◎ To display the memorized data above.

· Pressing the memory read key ▌ will display the above memorized data on the left half of the screen.

· When the memory read key ▌ is pressed again the data will be erased from the screen.

⚠ CAUTION

◎ The memorized data will be erased when the power is turned off.

PHASED RANGE KEYS

WHEN THIS KEY IS
PRESSED, THE DISPLAY
OF START DEPTH WILL
BECOME SHALLOWER.

PHASED R.

This value changes.

The depth values change.

WHEN THIS KEY IS PRESSED,
THE DISPLAY OF START DEPTH
WILL BECOME DEEPER.

CHANGES THIS
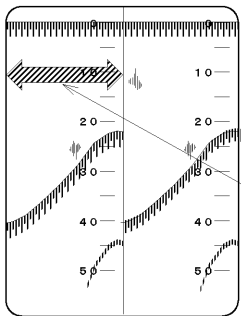DISTANCE

22.3m

THIS DISTANCE IS SELECTED
WITH THE RANGE DIAL.
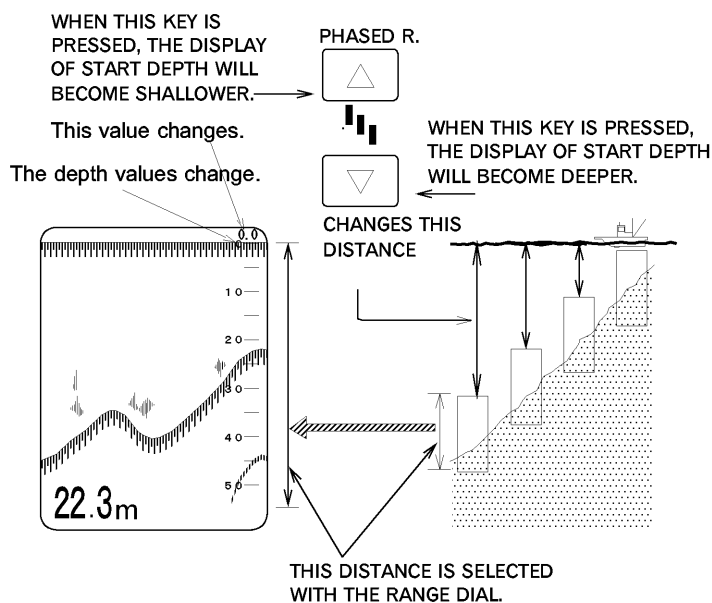
◎ For the selection of the depth start point at the top of the screen.

· The range can be selected by "MENU 2 - OTHERS - SHIFT AVERAGE". cf Page 48

· Phased range is available in 1 unit step (0 to 999).

· This function may be used to show the desired area expanded on the screen.

· AUTO SHIFT cf Page 74

MARK KEY

◎ Select "MARK" from "MENU 2 - DIS ITEM SEL.-MARK" to active this function.

1. MARK

10 —

20 —

30 —

40 —

50 —

22.3 m

PRESS THIS KEY TO
DISPLAY A LINE AT
THE RIGHT EDGE OF
THE DISPLAY
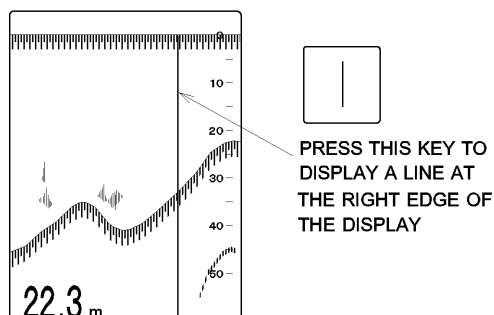
◎ To mark a line on the display.

· Pressing this key ⎸ will set a yellow

vertical line at the right edge of the display.

2. TIMER

TO DISPLAY TIME

00:36

10 —

20 —

30 —

40 —

50 —

22.3 m

PRESS THIS KEY TO
START TO TIME.
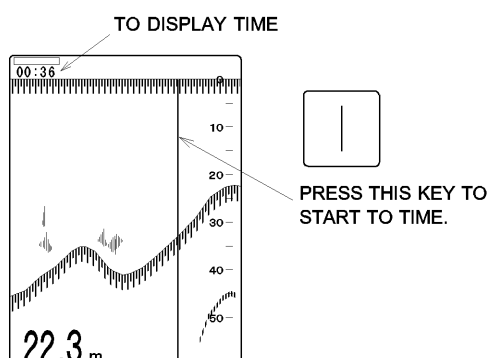
◎ To time between the two lines.

· Pressing this key ⎸will start to time.

· The second press of this key ⎸
will stop timing.

· The third press of this key ⎸
will erase the digital display of timer
from the screen.

PICTURE SPEED KEY

◎　The picture speed rate may be changed.

・　Each press of �│║│║│ key changes the setting as follows.

┌→ PF-STOP → PF-4/1 → PF-3/1 → PF-2/1 → PF-1/1 → PF-1/2 → PF-1/4 → PF-1/8 → PF-1/12 ─┐

　　(stop)　　　　　(fig. 4)　　　　　　　　　　　(fig. 1, 2, and 3)
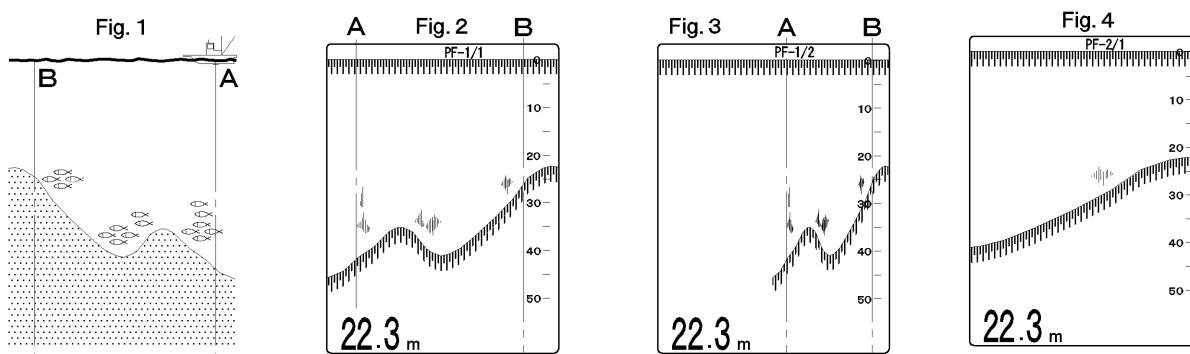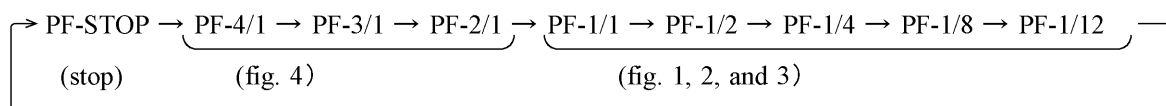
・　〔Selection of PF 1/1 ～ PF 1/12〕
　　As you see in the Fig.1 the ship travels from point A to B.
　　In case of the higher rate of movement of the targets on the
　　display screen, moving from right to left, it will be adjusted
　　like Fig.2. and in case of the lower rate of movement of the
　　targets on the display screen, it will be adjusted like Fig.3.

・　〔Selection of PF 2/1 ～ PF 4/1〕
　　In case of the higher rate of movement than PF 1/1, the expanded
　　picture will be displayed as you see in Fig.4.

WHAT IS PICTURE SPEED ?

◎　Picture speed rate refers to the speed the picture travels from right to left
　　on the screen.　1/1 refers to 1 vertical line of picture per 1 sound transmission,
　　and 1/2 refers to 1 vertical line of picture per 2 sound transmissions.
　　Furthermore 2/1 refers to 2 vertical lines of picture per 1 sound transmission,
　　and 4/1 refers to 4 vertical lines of picture per 1 sound transmission.
　　There is no relation to ship speed.

THRESHOLD KEY

◎ To remove and recall weaker echoes by color scale from the screen.

・ Each time this key ⬚ is pressed the weakest color will be erased.

COLOR SCALE

PRESS THIS KEY
TO ERASE WEAKER
ECHO COLORS AS
ABOVE.

7 COLORS   6 COLORS   5 COLORS   4 COLORS   3 COLORS
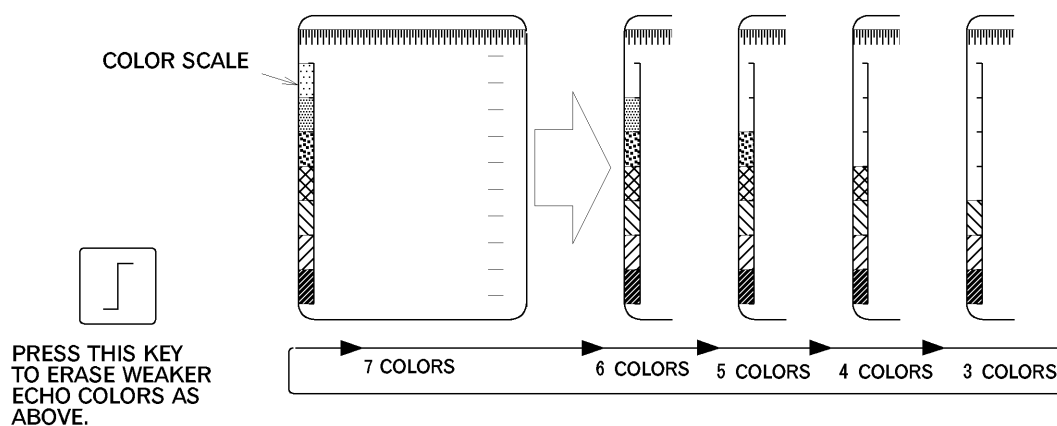
WHAT IS THRESHOLD ?

◎ The equipment will pick up and display unwanted echoes from small

objects in the water.   With the threshold function it is possible to

eliminate these unwanted echoes from the screen.

AUTO RANGE / AUTO SHIFT

AUTO RANGE FUNCTION

◎ The range will change automatically to always show the full depth from transducer face to sea bottom regardless of changes in depth.

"AUTO RANGE" DISPLAY

THIS RANGE
CHANGES
AUTOMATICALLY.

· Select 8 (AUTO) on the range dial to start the auto range function.

· When this function is activated, "AUTO RANGE" will be displayed in the right of the top screen.

AUTO SHIFT FUNCTION

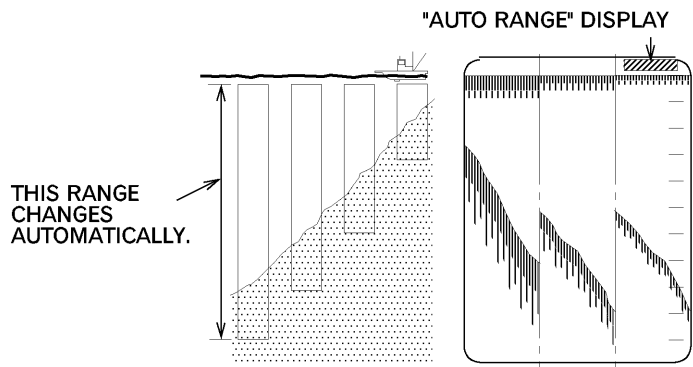◎ The phased range will change automatically to always track the bottom in the specified range.

· Press both △ and ▽ Phased range keys at the same time to start the
  PHASED R.
  auto shift function. When this function is activated, "AUTO SHIFT" will be displayed in the right of the top screen.

· Pressing either one of the phased range keys cancels this function.

"AUTO SHIFT" DISPLAY

PRESS BOTH
PHASED
KEYS
AT THE
SAME TIME.

THIS RANGE CHANGES
AUTOMATICALLY.
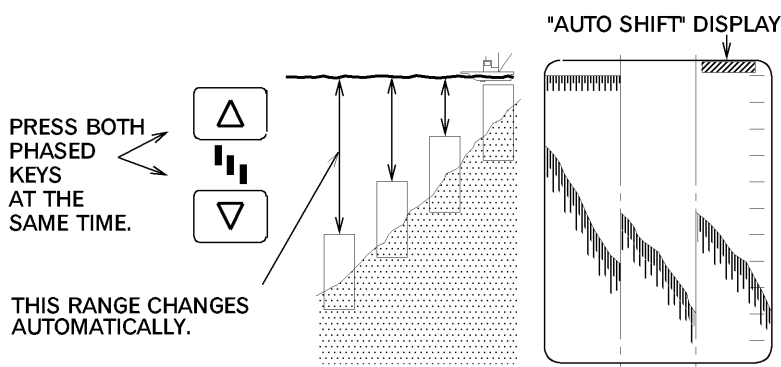
NOTE !

◎ For auto range and auto shift functions to work successfully, the sea bottom echo must be in red or orange which are the strongest scale colors.

◎ Even when the sea bottom echo is in red or orange, if there is interference due to bubbles etc., the function may not be able to track the bottom. In this case, if the bottom is not located after 16 transmissions, the depth scale will return to 0 and start searching again. If the function is unable to locate the bottom the scale will continue to fluctuate.

SPECIFICATIONS

SPECIFICATIONS - 1

1. RANGE	7 ranges available (setting ranges up to 3000m, fm, br or up to 6000ft)
2. PHASED RANGE	0 ~ 999 m, fm, br, 0 ~ 2999 ft (selectable shift range)
3. BOTTOM / PARTIAL EXPANSION	8 ranges available (setting ranges up to 250m, fm, br or up to 500ft)
4. FREQUENCY **(Single frequency)**	20, 24, 28, 38, 40, 45, 50, 60, 70, 75, 80, 150 or 200kHz
5. DISPLAY MODES	Normal Display mode Normal/Bottom Expansion Display mode Normal/Partial Expansion Display mode Navigation/Normal Display mode +A-scope, +Color palette, +Range setting mode
6. DISPLAY DATA	Depth Scale, Depth, Water Temp. Scale, Water Temp.*, Expansion Start Point, Latitude/Longitude *, Ship's Speed *, Course * , Timer
7. FUNCTION SET DISPLAY	Picture Speed, Interference Reduction, Auto Shift, Auto Range Operation Mode
8. ADDITIONAL DISPLAY	Second Interval Mark (30 seconds intervals) Color Scale, Water Temp. Graph * , Marker line, Expansion Range Line, Expansion Start Mark, TX Power
9. ADDITIONAL FUNCTIONS	Operation Mode, Gain Adjustment, TVG Adjustment, Far Gain, STC Interference Reduction, Jamming Reduction, Noise Reduction White Line, Clutter, Dynamic Range, Threshold Key, Auto Range Auto Shift, Transmit Interval Addition Rate, Scale Position Depth Grid, Draft Adjustment, Water Temp. Adjustment Outer Depth, Pulse Selection, Memory Write/Read Keys Stop Watch function, TX Power, Expansion mode (4 modes), Depth Display Position, Temperature Display Position, User settings Color Selection (8 Fix Color setup + Color Palette 2 Color setup) Temp. Alarm (Shallow/Deep/Fish), Backup function

SPECIFICATIONS - 2

1. DISPLAY UNIT	10.4 inch TFT color LCD （640 x 480 pixels）
2. POWER SUPPLY	voltage DC10.5 ~ 40V, Maximum power consumption 45W
3. INTERFACE Input Data	Water Temp. Sensor (OP-102 or OP-41-1)*, Temp. Data (NMEA-0183), Navigator (NMEA-0183), External Sounder
4. INTERFACE Output Data	Depth and Temp. Data (NMEA 0183)*, External Sounder
5. WEIGHT	6 kg (BRACKET INCLUDED)

NOTE: * shows optional equipment required.