KODEN

SUPPLEMENT AND CHANGE OF THE OPERATION MANUAL

COLOR ECHO SOUNDER

Digital

CVS-128

KM−E79 Ver.01.06～

Contents

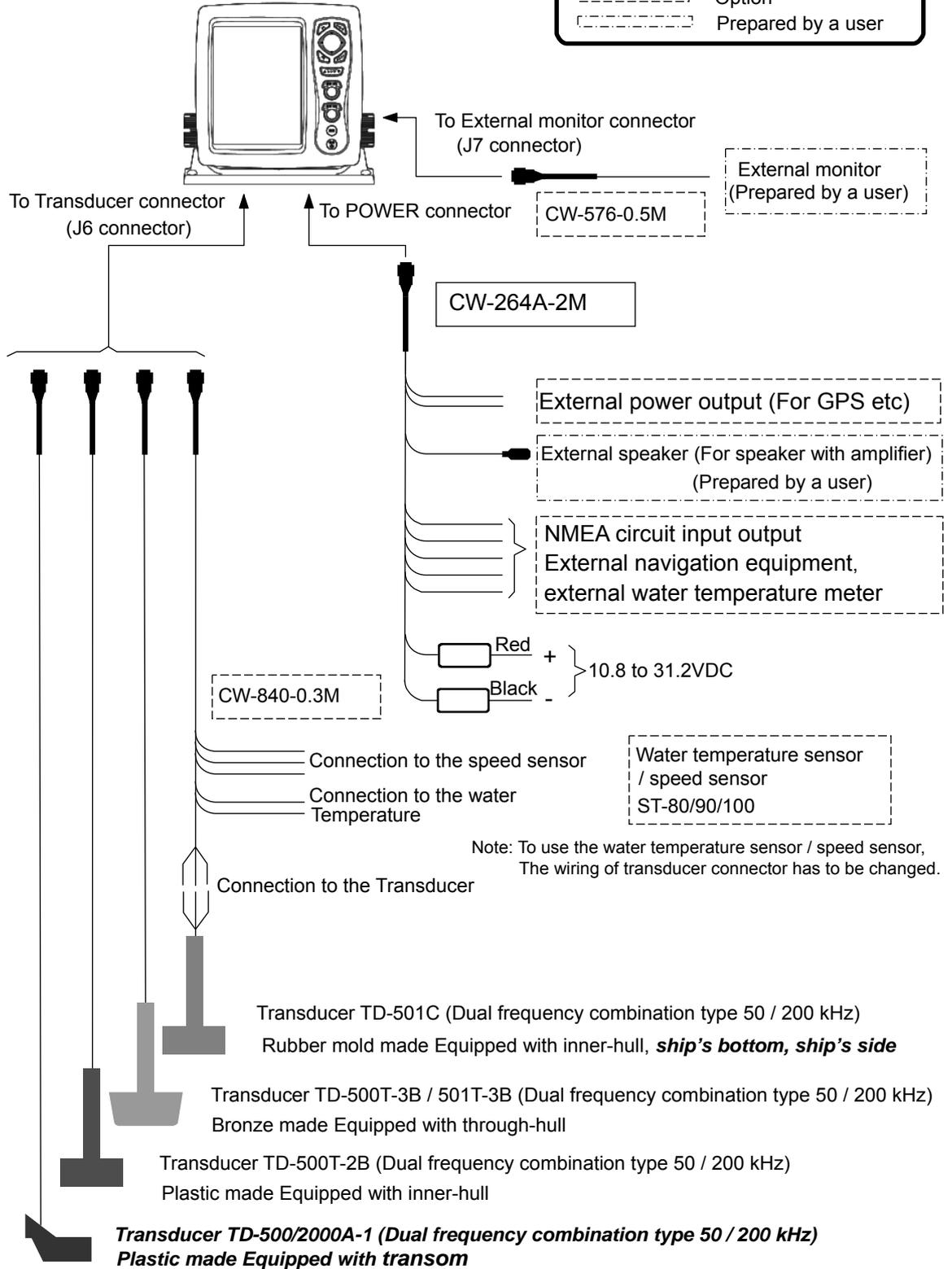Each chapter number stays the same as the original version.

* Additional functions.

System Configuration

Connection Diagram

CVS-128 Display unit
With mounting bracket and hard cover

Legend
Standard configuration
Option
Prepared by a user

To External monitor connector
(J7 connector)

External monitor
(Prepared by a user)

CW-576-0.5M

To Transducer connector
(J6 connector)

To POWER connector

CW-264A-2M

External power output (For GPS etc)

External speaker (For speaker with amplifier)
(Prepared by a user)

NMEA circuit input output
External navigation equipment,
external water temperature meter

Red   +
Black -   10.8 to 31.2VDC

CW-840-0.3M

Connection to the speed sensor

Connection to the water
Temperature

Water temperature sensor
/ speed sensor
ST-80/90/100

Note: To use the water temperature sensor / speed sensor,
The wiring of transducer connector has to be changed.

Connection to the Transducer

Transducer TD-501C (Dual frequency combination type 50 / 200 kHz)
Rubber mold made Equipped with inner-hull, *ship's bottom, ship's side*

Transducer TD-500T-3B / 501T-3B (Dual frequency combination type 50 / 200 kHz)
Bronze made Equipped with through-hull

Transducer TD-500T-2B (Dual frequency combination type 50 / 200 kHz)
Plastic made Equipped with inner-hull

*Transducer TD-500/2000A-1 (Dual frequency combination type 50 / 200 kHz)
Plastic made Equipped with transom*

Configuration of Equipment

Standard Equipment Configuration List

No	Name of item	Type	Remark	Weight/ Length	Quantity
1	Display unit	CVS-128	600 W/1 kW output with mounting bracket and knob	3.2 kg	1
2	Hard cover	E57MB11060		250 g	1
3	DC power cable (Combined cable)	CW-264A-2M	With 12 connector at one end/ un-treated at the other end	2 m	1
4	Fuse	F-7161-3A Cylinder (ø **6.4x30**)	Normal fusion type for main power		2
5	Cap	LTWCAP-DABCFXC1	For transducer cable connector		1
6	Operation Manual	CVS-128.OM.E	English		1
7	Quick Reference	CVS-128.QR.E	English		1
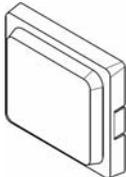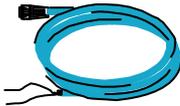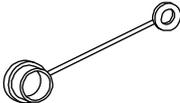
Type of transducer

No	Specification	Frequency	Material / Length of the cable	Mounting method	Beam width (Right and left x back and forth)
1	TD-500T-2B	50/200 kHz 600 W	Plastic 9m	Inner-hull	50kHz 50°x50° (-6dB) 200kHz 17°x17° (-6dB)
2	TD-500T-3B	50/200 kHz 600 W	Bronze 9m	Through-hull	50kHz 50°x50° (-6dB) 200kHz 17°x17° (-6dB)
3	TD-501C	50/200 kHz 1 kW	Rubber mold 10m	Inner-hull *Ship's bottom installation* *Ship's side installation (The CW-840-0.3M is needed)*	50kHz 58°x20° (-6dB) 200kHz 17°x 6° (-6dB)
4	TD-501T-3B	50/200 kHz 1 kW	Bronze 9m	Through-hull	50kHz 20°x22° (-6dB) 200kHz 5°x 5° (-6dB)
5	*TD-500/2000A-1*	*50/200 kHz 600 W*	*Plastic 10m*	*Transom* *With water temperature sensor and speed sensor.*	*50kHz 69°x69° (-6dB) 200kHz 16°x16° (-6dB)*
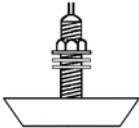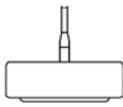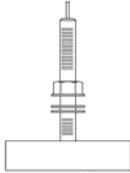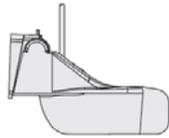
⚠ *Caution: For Inner-hull installation, an Inner-hull kit is necessary.*

1.2 Power On/Off

Power on

1   Press the [BRILLᴓ] key to power on. The startup menu is displayed. When started up, the internal memories (ROM, RAM) are automatically checked. When checking is normally finished, the menu below is displayed.
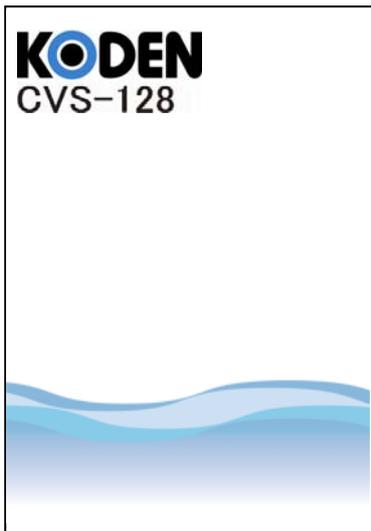
⚠ **Caution: If an error occurs in the memory check, the LED on the operation panel blinks. The unit may be not function normally. If you suspect trouble, contact the dealer of your purchase or our company.**

2   Language Selection at Initial Startup.

When powering on first, the [Language] menu is displayed.

Language
English
日本語

Select the language with [▲] key or [▼] key. (The language can be selected by rotating the [GAIN (HF) Knob] or [GAIN (LF) Knob].)

3   *When the installation of a transducer is "Inner-hull", please select "Yes".*

Inner-hull
No
Yes

Press [▶] and [▼] keys in sequence, and select "Yes".

4   Press the [MENU] key to decide the *language and the inner-hull.*

5   After a few seconds, the menu sets the screen as selected in [DISP].

⚠ **Caution: In addition to English, Japanese, there are several compatible languages.**

Explanation of the display:
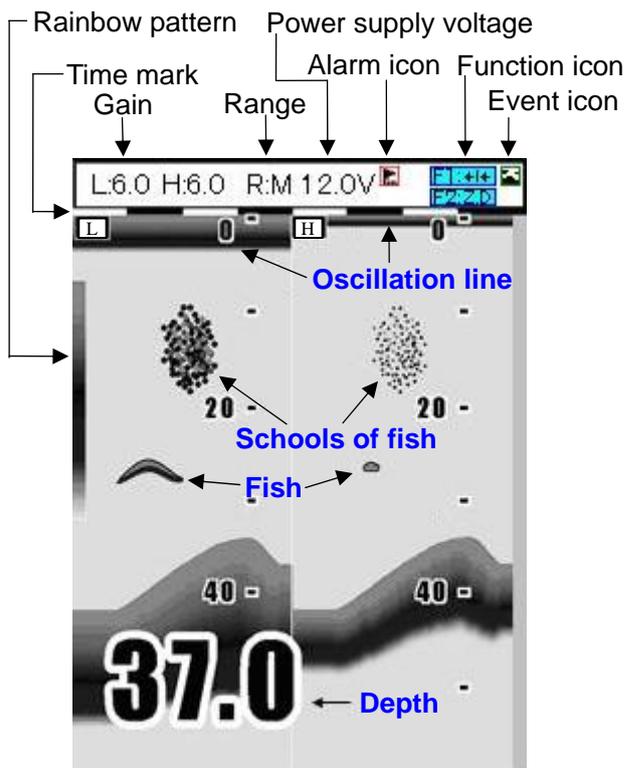
Type of Gain
H: High frequency gain
L: Low frequency gain

Type of Range
R: M: Manual Range
R: A: Auto Range
R: AS: Auto Shift

1.12 Display of fish information

Fish symbol detection adjustment

Detection of fish marks can be adjusted.

Select [Correct] → [Detect adjust f].

Fish marks are hardly displayed. (Error in detection is less)   ←1 2 3 **4** 5 6→   Fish marks are easily displayed. (More possilble false detections)

⚠ *Caution: If the larger the set values become, the more fish marks can be displayed with more false detections.*

⚠ *Caution: For Thru-hull installation, adjust between 1 and 4. For Inner-hull installations, adjust between 3 and 6.*

Size adjustment

The indicated size of fish marks can be adjusted.

Please correct the size when the indicated value is different from the fish that actually caught.

Select [Correct] → [Size adjust].

Values of indicated size will be decreased.   ←1 2 3 4 5 6 7 8 9 10→   Values of indicated size will be increased.

The indicated size will change by approximately 10 to 20 percent of the value, per one setting value.

⚠ *Caution: When a set value of [Detect adjust f] is set at 5 or 6, the size of fish can not be specified and there may be cases where no numerical figures are displayed or only "----" is displayed. When there is no display of numerical figures, it is judged that fish are too small. When "---" is displayed, it is judged that fish is too big.*

Big fish / Big fish color

The fish bigger than a set value [cm] are specified as big fish.

Select keys of [Display2] → [Big fish].

Colors for values of big fish can be assigned.

Select keys of [Display2] → [Color table 2] → [Big fish color].

2.17 Explanation of Menu Item

Change the scale type

The interval of indications of scale can be changed.

1   *Press the [MENU] key.*

2   *Select the [Display2] → [Scale type]. (See [2.1 How to operate the menu])*

3   *Press the [▶] key.*

4   *Select the [Scale type]. (Press the [▲] key or [▼] key)*

5   *Press the [MENU] key to close the menu.*

Change the bottom color

The dark red color of sea bottom can be changed.

1   *Press the [MENU] key.*

2   *Select the [Display2] → [Color table 2] → [Bottom color]. (See [2.1 How to operate the menu])*

3   *Press the [▶] key.*

4   *Select the [Bottom color]. (Press the [▲] key or [▼] key)*

   Black ← 0, , , 176, , , 255 → Red

5   *Press the [MENU] key to close the menu.*

3.3 Setting of Correct Item

Prev	Draft set	0.0m
In out	Sonic speed	Seawater
Correct	Water temp	0.0°C
Setting	Boat speed	0%
Maintain	Beam width H	17°
	Beam width L	50°
	Size adjust	6
	Detect adjust f	4
	Bubble	OFF
	Return	

Bubble

Bubble-prevention process can be activated by setting [Weak] or [Strong].

3.5 Maintenance Menu

Inner-hull

 When the installation of a transducer is "Inner-hull", please select "Yes".

⚠ *Caution: When a setting is altered, the value of Gain (TD) will be initialized.*

3.6 Setting of Adjust2 Item

Prev	STC strength H	0.0
In out	STC depth H	50
Correct	STC strength L	0.0
Setting	STC depth L	50
Maintain	Color adjust	
Adjust2	Image speed adj	0
	Bottom limit	1.0
	Return	

The visivility of the fish school echo can be adjusted by adjusting STC.

Adjustment can be done high-frequency and low-frequency independently.

STC strength adjust Low / High

Set smaller values for higher sensitivity.

STC depth adjust Low / High

Depth limitation of STC adjustment. Unit: Meter

STC can be operated from 0 to the setting depth.

Color adjustment

Rainbow pattern of the echo image can be changed.

Set the value of each color in the range from 0 to 99%. Confirm color distribution by the rainbow pattern of the left side of the screen.

Prev	Prev	
In out	Red	95
Correct	Orange	90
Setting	Yellow	60
Maintain	Green	30
Adjust2	Sea green	20
	Light blue	15
	Marine blue	5
	Return	

EXAMPLE:
When the yellow value is change from 60 to 80 in the setting, the Rainbow pattern becomes as shown below.
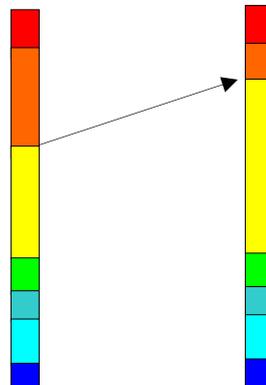
Before the change   **After the change**

Image speed adjustment

The image speed can be adjusted.

The image speed becomes faster in a minus direction, and slower in a plus direction.

⚠ *Caution: Image speed cannot set faster than the maximam speed value.*

Bottom limit

The detection of sea bottom can be changed.

Sea bottom can be detected up to the range of display multiplied by the setting value.

EXAMPLE:
Displayed 20 m, setting value: 2.0, a bottom can be detected up to approximetery 40m.

⚠ *Caution: If the setting value is increased, the image speed becomes slower.*

5.4 Wiring

Pin Assignment of Rear Connector

Pin assignment viewed from the rear of CVS-128 Display unit.

POWER

① Sona-tone R
② Sona-tone L
③ Power +
④ *Outside power (-)*
⑤ NMEA   TX-
⑥ NMEA   TX+
⑦ NMEA   RX+
⑧ NMEA   RX-
⑨ Power -
⑩ Shield
⑪ Sona-tone COM
⑫ *Outside power (+)*

J6

① Speed sensor input
② *Speed sensor power (+)*
③ Transducer input output
④ Transducer shield
⑤ Transducer input output
⑥ Water temperature sensor power
⑦ Water temperature sensor input
⑧ *Speed sensor power (-)*

J7

① R   ⑥ B-GND
② R-GND   ⑦ H-SYNC
③ G   ⑧ V-SYNC
④ G-GND   ⑨ Un-connected
⑤ B   ⑩ Un-connected

⚠ *Caution: Please do not connect each wire to ship's earth.*

Connection with external equipment

The DC power cable contains the connection cables for external equipment such as navigation equipment and KODEN GPS sensor.

Color	Pin	Remark
Red	③	*Power +*
Black	⑨	*Power -*
Orange	⑥	*NMEA TX +*
Blue	⑤	*NMEA TX -*
White	⑦	*NMEA RX +*
Green	⑧	*NMEA RX -*

Color	Pin	Remark
White	②	*Sona-tone*
Red	①	*External speaker output*
Black	⑪	*(with ø3.5 stereo jack)*
Yellow	⑫	*Outside power (+)*
Gray	④	*Outside power (-)*
Shield	⑩	

Connection with GPS-20A

After soldering, implement the waterproof and insulation treatment on the connected part with the self-melting tape.

CVS-128 DC power cable (CW-264A-2M)		GPS-20A (No Type) Connecting up without using a connector	GPS-20A (Type B) Connecting up using a connector*
Color	Remark	Color	Pin
Orange	*NMEA TX +*	Orange	②
Blue	*NMEA TX -*	Blue	③
White	*NMEA RX +*	White	④
Green	*NMEA RX -*	Green	⑤
Yellow	*Outside power (+)*	Red	⑥
Gray	*Outside power (-)*	Black	①

*Optional connector (LTWBD-06PMMP-LC) is necessary.

6.1 Menu List

The factory set value is shown by the bold and underline.

[Disp] key

└──Disp───────── NAV1, Normal (H), Zoom (H), **Dual freq**, Zoom (L), Normal (L), NAV2

【▲RANGE▼】 key

└──RANGE─────── **Auto range**, 5.0, 10.0, 20.0, 50.0, 100, 160, 300, 500, Auto shift

[GAIN(HF)], [GAIN(LF)]

├──Gain select──── Manual, Cruising, **Fishing**

├──Auto adjust ─── - 30 to 10 (H): **0**, (L): **0**

└──Gain───────── 0.0 to 10.0 (H): **6.0**, (L): **6.0**

[BRILL] key

├──LCD brill ─── 1 to 10: **10**

└──Panel brill─── 1 to 10: **10**

[EVENT] key

└─────────── **Store pos**, Store image, Fishing hot spot

[F1] key

└─────────── **Image speed**, IR, Color rejection, Noise rejection, Shift, Zoom range,

Zoom start, A scope, White line, Background color, Disp width,

NAV start, NAV1, NAV2, Image swap, Image recall, Sona-tone

[F2] key

└─────────── Image speed, IR, Color rejection, Noise rejection, **Shift**, Zoom range,

Zoom start, A scope, White line, Background color, Disp width,

NAV start, NAV1, NAV2, Image swap, Image recall, Sona-tone

[MENU] key

Adjust
— Image speed (Speed1, Speed2, Speed3, Speed4, Stop, **Speed5 (1/1)**, Speed6, Speed7, Speed8, Speed9)
— IR (OFF, Weak, **Strong**)
— Color rejection (0 to 50 %: **0%**)
— Noise rejection (0 to 10: **0**)
— TVG (Weak, **Medium**, Strong)
— TX power (20, 30, 40, 50, 60, 70, 80, 90, 100, **Auto**)
— Gain (TD) (-50 to 50: H: **0**, L: **0**)

D.range
— Shift step (**1m**, 10m, 1/8, 1/4)
— Zoom type (**Bottom**, Bottom Discrimination, Zoom, Bottom Zoom, Bottom Follow Zoom)
— Zoom range (2.5 to 200 m: **10.0 m**)
— Zoom start (0 to 800 m: **0m**)
— Disp width (Left2, Left1, **Center**, Right1, Right2)
— Range preset
  - Range 1 (2.5 to 1200 m: **5.0**)
  - Range 2 (2.5 to 1200 m: **10.0**)
  - Range 3 (2.5 to 1200 m: **20.0**)
  - Range 4 (2.5 to 1200 m: **50.0**)
  - Range 5 (2.5 to 1200 m: **100**)
  - Range 6 (2.5 to 1200 m: **160**)
  - Range 7 (2.5 to 1200 m: **300**)
  - Range 8 (2.5 to 1200 m: **500**)

Display1
— A scope (**OFF**, ON)
— White line (**OFF**, 1, 2, 3, 4, 5, Auto)
— Background color (Pale blue, Marine blue, Blue, **Dark blue**, Black, Darkkhaki, Mediumseagreen, Light grey, White, Night mode)
— Color tone (Monochrome, 8 color, 16 color, **64 color**)
— Depth value (OFF, Small, Middle, **Large**)
— Water temp graph (**OFF**, ON)
— Fish symbol (**OFF**, Symbol 1 to Symbol 10)
— Symbol info (**OFF**, Depth, Size, Bottom<=>Fish)

Display2
— Detection area (**OFF**, ON)
— Scale display (OFF, One, **All**)
— Scale (Small, Middle, **Large**)
— Image direction (←|← , →|→ , ←|→)
— Bottom detection (**Auto**, High frequency, Low frequency)
— Color table1 (Header information, Header BG color, VRM, Depth, Scale, Scale line, Detection area H, Detection area L)
— Color table2 (Symbol info, Menu BG color, *Big fish color, Bottom color*)
— *Scale type (0, 1)*
— *Big fish (20 to 90: 50)*

A

A

```
├─ Alarm 1 ──────── Bottom alarm (OFF, ON)
│                          ├─ Upper depth (0 to 800 m: 5 m)
│                          └─ Lower depth (1 to 800 m: 50 m)
│                   Fish alarm (OFF, ON)
│                          ├─ Position (0 to 800 m: 5 m)
│                          ├─ Range (1 to 800 m: 50 m)
│                          └─ Level (Weak, Medium, Strong)
│
├─ Alarm 2 ──────── Water temp alarm (OFF, ON (Inside), ON (Outside))
│                          ├─ Upper temp alarm (- 5 to 45.0 °C: 20.0 °C)
│                          └─ Lower temp alarm (- 5 to 45.0 °C: 15.0 °C)
│                   Speed alarm (OFF, ON (Upper), ON (Lower))
│                          └─ Speed limit (0 to 80 kn: 0 kn)
│                   Arrival alarm (OFF, ON)
│                   XTE alarm (OFF, ON)
│                   NAV alarm range (5 to 999 m: 10 m)
│
├─ NAV ──────────── NAV start (No.1 to No.10)
│                   NAV cancel (Yes, No)
│                   WPT edit (No.1 to No.10)
│                   WPT delete (No.1 to No.10)
│                   Background color (OFF, White, Black)
│                   NAV 1 (Normal (H), Zoom (H), Dual freq, Zoom (L), Normal (L))
│                   NAV 2 (Normal (H), Zoom (H), Dual freq, Zoom (L), Normal (L))
│
├─ Image ────────── Image swap (A|B, B|A)
│                   Image recall (No.1 to No.10)
│                   Image comment (No.1 to No.10)
│                   Image delete (No.1 to No.10)
│
├─ System ───────── EVENT key set (Store pos, Store image, Fishing hot spot)
│                   F1 key set (Image speed, IR, Color rejection, Noise rejection, Shift, Zoom range,
│                          Zoom start, A scope, White line, Background color, Disp width,
│                          NAV start, NAV 1, NAV 2, Image swap, Image recall, Sona-ton)
│                   F2 key set (Image speed, IR, Color rejection, Noise rejection, Shift, Zoom range,
│                          Zoom start, A scope, White line, Background color, Disp width,
│                          NAV start, NAV 1, NAV 2, Image swap, Image recall, Sona-tone)
│                   Operation guide (OFF, ON)
│                   Sona-tone (OFF, ON)
│                   Key lock
```
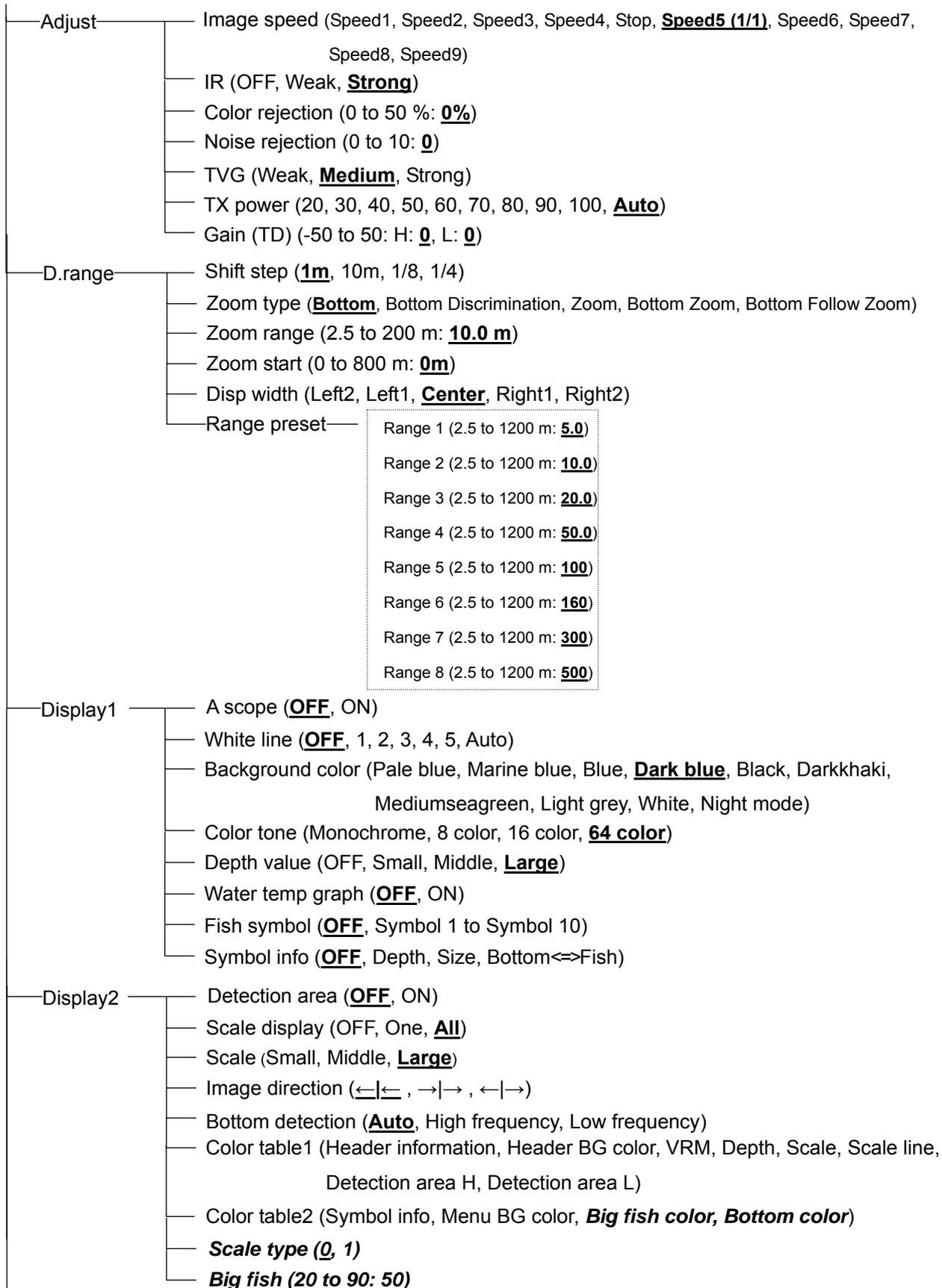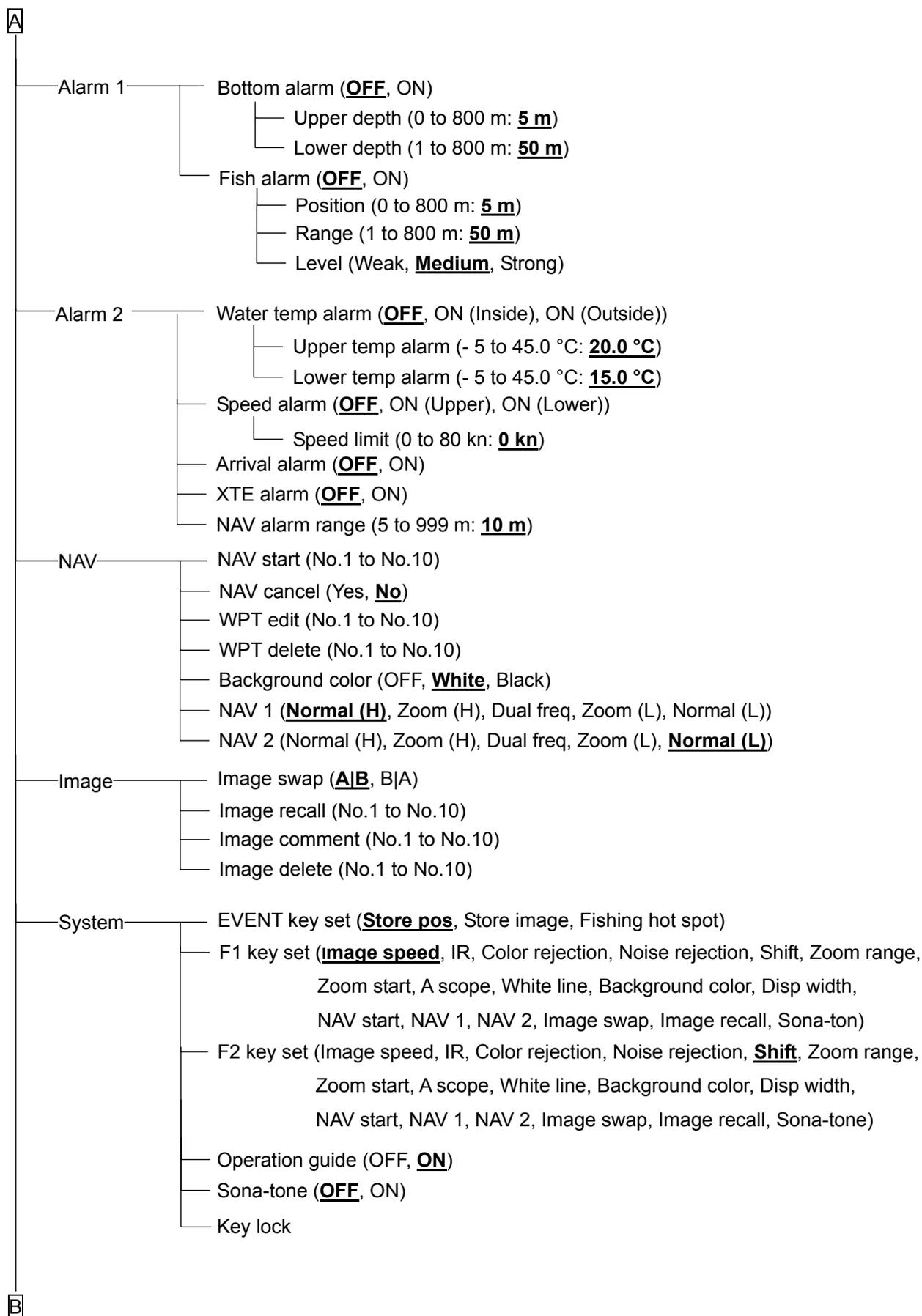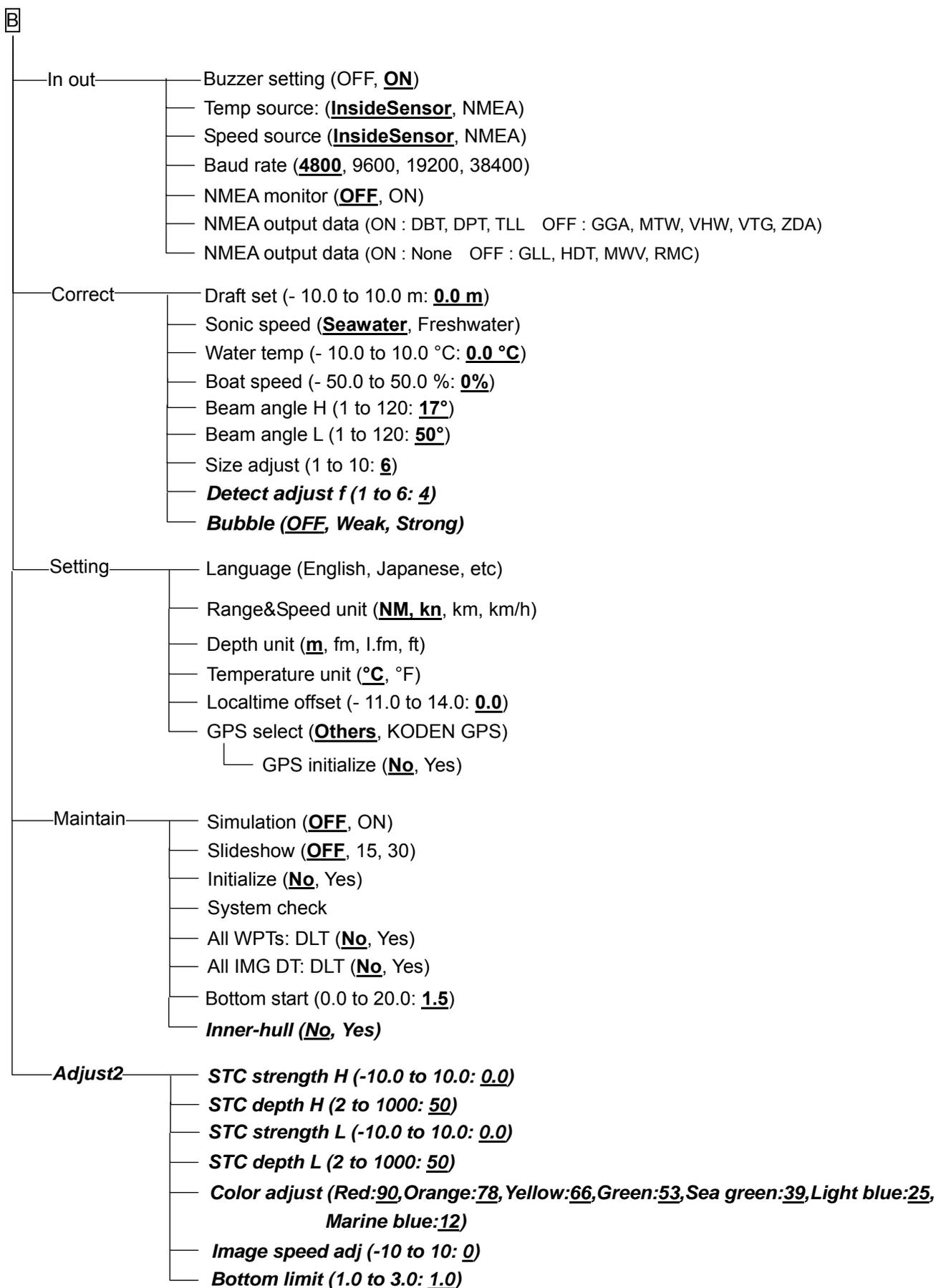
B

B

In out
- Buzzer setting (OFF, **ON**)
- Temp source: (**InsideSensor**, NMEA)
- Speed source (**InsideSensor**, NMEA)
- Baud rate (**4800**, 9600, 19200, 38400)
- NMEA monitor (**OFF**, ON)
- NMEA output data (ON : DBT, DPT, TLL   OFF : GGA, MTW, VHW, VTG, ZDA)
- NMEA output data (ON : None   OFF : GLL, HDT, MWV, RMC)

Correct
- Draft set (- 10.0 to 10.0 m: **0.0 m**)
- Sonic speed (**Seawater**, Freshwater)
- Water temp (- 10.0 to 10.0 °C: **0.0 °C**)
- Boat speed (- 50.0 to 50.0 %: **0%**)
- Beam angle H (1 to 120: **17°**)
- Beam angle L (1 to 120: **50°**)
- Size adjust (1 to 10: **6**)
- *Detect adjust f (1 to 6: 4)*
- *Bubble (OFF, Weak, Strong)*

Setting
- Language (English, Japanese, etc)
- Range&Speed unit (**NM, kn**, km, km/h)
- Depth unit (**m**, fm, I.fm, ft)
- Temperature unit (**°C**, °F)
- Localtime offset (- 11.0 to 14.0: **0.0**)
- GPS select (**Others**, KODEN GPS)
    - GPS initialize (**No**, Yes)

Maintain
- Simulation (**OFF**, ON)
- Slideshow (**OFF**, 15, 30)
- Initialize (**No**, Yes)
- System check
- All WPTs: DLT (**No**, Yes)
- All IMG DT: DLT (**No**, Yes)
- Bottom start (0.0 to 20.0: **1.5**)
- *Inner-hull (No, Yes)*

Adjust2
- *STC strength H (-10.0 to 10.0: 0.0)*
- *STC depth H (2 to 1000: 50)*
- *STC strength L (-10.0 to 10.0: 0.0)*
- *STC depth L (2 to 1000: 50)*
- *Color adjust (Red:90,Orange:78,Yellow:66,Green:53,Sea green:39,Light blue:25, Marine blue:12)*
- *Image speed adj (-10 to 10: 0)*
- *Bottom limit (1.0 to 3.0: 1.0)*

6.2 Specification

Item	Content
Model	CVS-128
Output power (RMS)	600W or 1kW
Output frequency	50 kHz and 200 kHz
Output method	Single or Alternate
TX rate	3000 times/minute at maximum (In case of single frequency, Range 2.5m and Interference rejection off)
Pulse width	50 µs to 3.0 ms
Display size and type	8.4 inch color TFT LCD
Display resolution	640 x 480 pixels（VGA）
Basic range	2.5 to 1200 (m), 10 to 3600 (ft), 2.5 to 700 (fm / l. fm) (8 ranges can be set to users choice)
Zoom range	2.5 to 200 (m) , 10 to 650 (ft) , 2.5 to 150 (fm/ l. fm)
Range unit	m, ft, fm, l.fm
Shift	Max 1200 (m), 3600 (ft), 700 (fm / l. fm)
Shift step	1m, 10m, 1/8, 1/4
Presentation modes	High frequency, Low frequency, Dual frequency, Zoom image (Bottom lock, Bottom discrimination, Bottom zoom, Zoom, Bottom follow zoom), Nav mode, Left and right divided A-scope display can be added to all above modes
Presentation colors	64 colors,16 colors, 8 colors, Monochrome
Back ground color	Blue, Dark blue, Black, White, Nighttime color, Other 5 colors
Alarms	Bottom, Fish, Temperature*, Speed**, Arrival***, XTE***
Image speed	9 steps & stop
Functions	Interference rejection, Color rejection, VRM, Noise rejection, White line, Draft correct, Water temperature correct, Boat speed correct, Store image (10 images), Sona-Tone^{TM}, Fishing Hot Spot, Event memory, Simple plotter, Panel illumination, Power reduction, Fish information, Detection area display etc
Auto functions	Range, Shift , Gain
Function registration	Image speed, A scope, Shift, Interference rejection, Color rejection, Noise rejection, Zoom range, Zoom start, White line, Background color etc
Language	Chinese, English, French, Greek, Italian, Japanese, Korean, Spanish, Thai
Input data format and sentences	NMEA0183 Ver.1.5 / 2.0 / 3.0 GGA, GLL, HDT, MTW, MWV, RMC, VHW, VTG, ZDA
Output data format and sentences	NMEA0183 Ver.2.0 (DBT : Ver.1.5) DBT, DPT, GGA, GLL, HDT, MTW, MWV, RMC, TLL, VHW, VTG, ZDA
NMEA input / output ports(s)	1
Power supply	10.8 to 31.2 V DC
Power consumption	25 W or less (12V DC)
Environmental	
Operating temperature	- 15 °C to + 55 °C
Water protection	IPX5
Store temperature	- 30 °C to + 70 °C
Upper limit of humidity	93 % ± 3 % (At + 40 °C)
Size of cabinet	274 x 263 x 133mm
Weight	3.2 kg

*   Requires data from Temp sensor
** Requires speed data from Speed sensor or GPS sensor
*** Requires data from GPS sensor

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