SKIPPER GDS101

Graphic Depth Sounder
Operation And Installation Manual
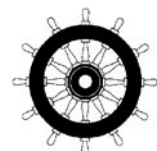
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CONTENTS

1. INTRODUCTION

System Summary.

GDS101 is a navigation sounder with a large, high resolution graphic LCD. The echosounder graphics are continuously shown on the LCD along with complete navigational details.

The Color Bar :

Weak Signal		Light Purple
		Green
Day Vision		Light Green
		Red
		Dark Red
StrongSignal		Black

Weak Signal		Aqua
		Green
		Yellow
Night Vision		Purple
		Red
StrongSignal		Black
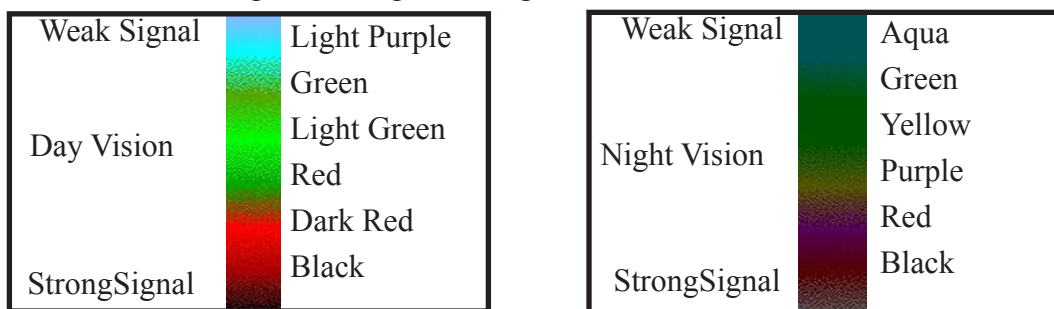
It is possible to connect an external printer to the operator unit. The sounder contains a 24 hour history memory. That can be printed out. Depth, time and all available navigation data are stored continuously so that the last 24 hours of information is always available.

All this information may also be printed on the external printer. All IMO requirements are met or exceeded. Comprehensive interfaces are available including NMEA0183 inputs and outputs.

TRANSDUCERS.

GDS101 is prepared for connection of the following transducers: 38, 50 and 200 kHz. One or more of the transducers may be connected at the same time, and the desired transducer may be selected from the operator panel.

OPERATOR PANEL.

The operator unit contains a graphic dot-matrix supertwist LCD display and a keyboard with fixed keys, soft-keys and a rotating encoder. The function of each soft-key button depends on the active screen, and the buttons are labelled on the lower rim of the LCD. The display is backlit, and contrast and backlight intensity may be adjusted by the user. The echo-gram is normally displayed continuously on the LCD and stored in the 24 hour history memory. An optional external printer is used if hard-copy documentation is required. The operator unit is normally flush mounted. Power supply options are 115/230V AC or 24V DC. The power consumption is appx. 70 Watts at 115/230V AC or 50 Watts at 24V DC.

DATA ENTRY.

Several screens may be selected to enter various settings and calibration parameters. Each screen has a selection of soft-key buttons.

Screens 1 through 3 are primary operation screens with appropriate operator controls. Screens 4 through 10 are calibration set-up and system supervision screens.

The various screens will be described in detail later.

RECORDED DATA STORAGE.

The displayed echogram and other navigational data is continuously stored in the 24 hour history memory.

A standard printer type Hewlett Packard may be connected for paper copy, Ask Skipper Electronics for specification.

Since the printer is only required when hard copy documentation is absolutely necessary, the paper consumption is expected to be limited under normal conditions.

WARNING!   False bottom echoes may occur when :

         a: The bottom is out of range.

         b: Extreme noise conditions are present.

         c: Bottom signal may be lost for other reasons, like wakes, or aeration below transducer.

The bottom line shown on the GDS 101 screen is a synthetic signal, made by the sounder`s computer.
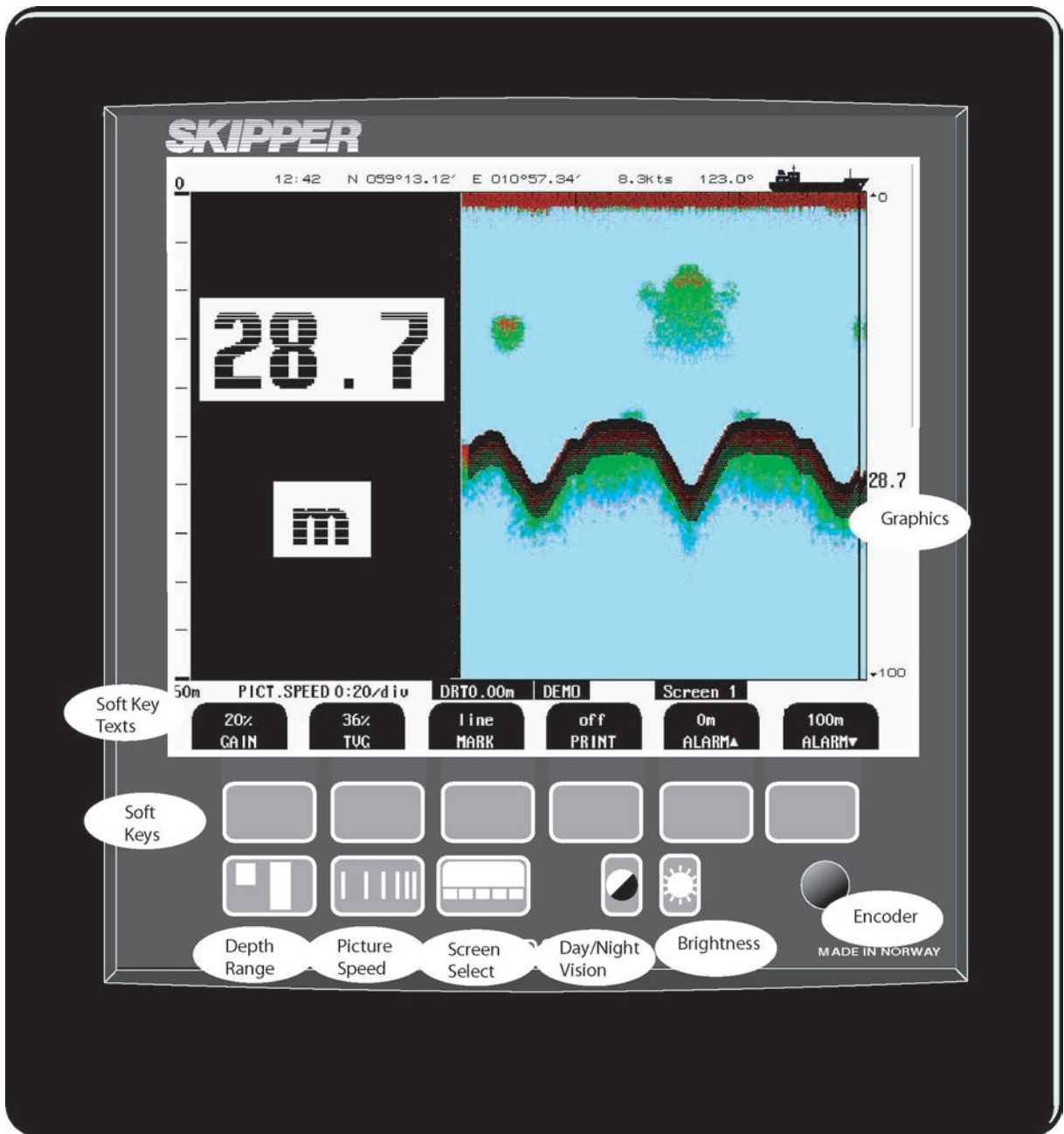
Fig. 1.1 Main Display Unit Panel Layout

Navigator

GPS
LORAN
DECCA
SATNAV

NMEA 0183

Trigger/ Bottom Pulses

IR201 Repeater

SKIPPER IR201

● **080**

Speed Log

SKIPPER

6.65kt

▲

►

2.25kt

A B
C D

NMEA 0183

NMEA 0183

080 IR201 WT

100/200 ppnm

External Printer

Cabinet

SKIPPER

220VAC/24VDC
2 x 2.5 sq. mm.
Screened
Yard Supply

Computer System

NMEA 0183

(RS232 C)

Superstructure

Transducer
Junction Box

Hull

1 pair each
xducer,
2.5 mm
screened
Yard Supply

Steel
Pipe
(Yard Supply)

External Alarm

0 - 10V / 4-20 mA

Analogue Depth Information

Optional external Keyboard

Optional remote VGA and/or
LCD Monitor

Optional PT200 Temperature
Sensor Input

Remote Transducer
Selector

Transducer Tank

Standard Supply except Yard Supply cables

Fig. 1.2 System Diagram

INTERFACING.

The GDS101 has various interface possibilities.

Outputs.

Transmitter and Bottom Pulse Outputs.
Analogue Output 0 - 10 V or 4 - 20 mA.
NMEA0183 Interface Outputs of Depth Information.
External Alarm Relay Output.
External Printer.

Inputs

Log Input 100/200 Pulses per nautical Mile.
NMEA0183 Interface Input of Position, Heading, Speed, UTC.
Remote Control and Synchronisation of Transmitter.(Option)
Remote Transducer Switch

ALARMS.

Shallow and deep alarms may be selected from Screen 1. A potential free relay contact is provided in GDS101 for interface to external alarm systems.

HISTORY MEMORY

GDS101 has a 24 hour history memory. Depth, time and all available navigation data are stored continuously so that the last 24 hours of information is always available, and may be printed if an external printer is connected..

OPTIONS.

Repeaters.

Graphic CRT or LCD display or digital depth slave repeaters may be connected to the system. Along with the graphic display repeaters there may also be installed remote keyboards.

Remote Sounding Control.

This option lets the GDS101 being controlled remotely in synchronised, burst or single ping modes.

Auto Range

This option will automatically adjust the depth range to maintain the bottom contour within the middle half of the screen.

Sound Speed Calibration

This option will enable adjustment of the sound speed value used for the depth calculations.

GDS101 PRIMARY FUNCTIONS

0 m   15:03 GMT   N 13¡13.20' E 079¡44.5'   14kts   145¡

80.0

m

▲ 50

80

▼ 160

200m   PICT.SPEED 0:08/div

SCREEN 1

20% GAIN	25% TVG	line MARK	off PRINT	50m ALARM▲	160m ALARM▼

Soft-Key Legend on Screen 1

Gain Adjustment 0% - 100% or Auto	TVG Adjustment 0% - 100%	Print Marker or Screen Dump	Printer Start / Stop	Shallow Alarm Setting	Deep Alarm Setting

SCREEN 2

small DIGITAL	50kHz FREQ	line MARK	off PRINT		off SYSTEM

Soft-Key Legend on Screen 2

Large Depth Digits On / Off	Frequency Selection 38 / 50 / 200 kHz	Print Marker or Screen Dump	Printer Start / Stop		System Off On = Any Key (Main Switches and Fuses inside Cabinet)

SCREEN 3

100% POWER	0.00m DRAUGHT				

Soft-Key Legend on Screen 3

Power Adjustment 10% - 100%	Draught Setting

Soft-Key Function Buttons

Fixed-Key Functions

Depth Range Setting.

Display Speed Setting

Menu Select Button

Press the Menu Select Button repeatedly to cycle through the primary "Soft-Key" Screens

Day/Night Vision

Screen Backlight

Encoder Knob

Rotate Encoder while keeping a Key pressed to change Setting or Menu

2. OPERATION

When the installation is complete, and power is connected to the Operator Unit, the system is switch one-off by power switch inside cabinet.

PARAMETER ENTRY

The fixed function buttons and the soft key buttons of the various screens along with the rotating encoder, facilitates entry of parameters, setpoints and other data. The following flow chart illustrates the procedure for changing settings and entering data. The various screens are shown in detail in the Operation Section.

```
┌─────────────────┐                    ┌───────────┐
│                 │───────────────────▶│  PRESS    │
│   Any           │                    │  BUTTON   │
│   Screen        │                    │  ONCE     │
│                 │                    └─────┬─────┘
│                 │                          │
│                 │          ┌───────────────▼────┐
│                 │◀─────────│ Advances to next   │
│ Any valid fixed │          │ fixed state or     │
│ or soft key     │          │ value              │
│                 │          └────────────────────┘
│                 │◀──────────────────────────────┐
└────────┬────────┘                               │
         │                                         │
┌────────▼─────┐                                   │
│  KEEP        │                                   │
│  BUTTON      │                                   │
│  PRESSED     │                                   │
└──────┬───────┘                                   │
       │                                           │
┌──────▼───────────┐  ┌───────────┐  ┌─────────────┴──┐
│ Rotate encoder   │  │ RELEASE   │  │ Check for      │
│ in either        │─▶│ BUTTON    │─▶│ desired result │
│ direction to     │  └───────────┘  └────────────────┘
│ obtain desired   │
│ state or setting │
└──────────────────┘
```
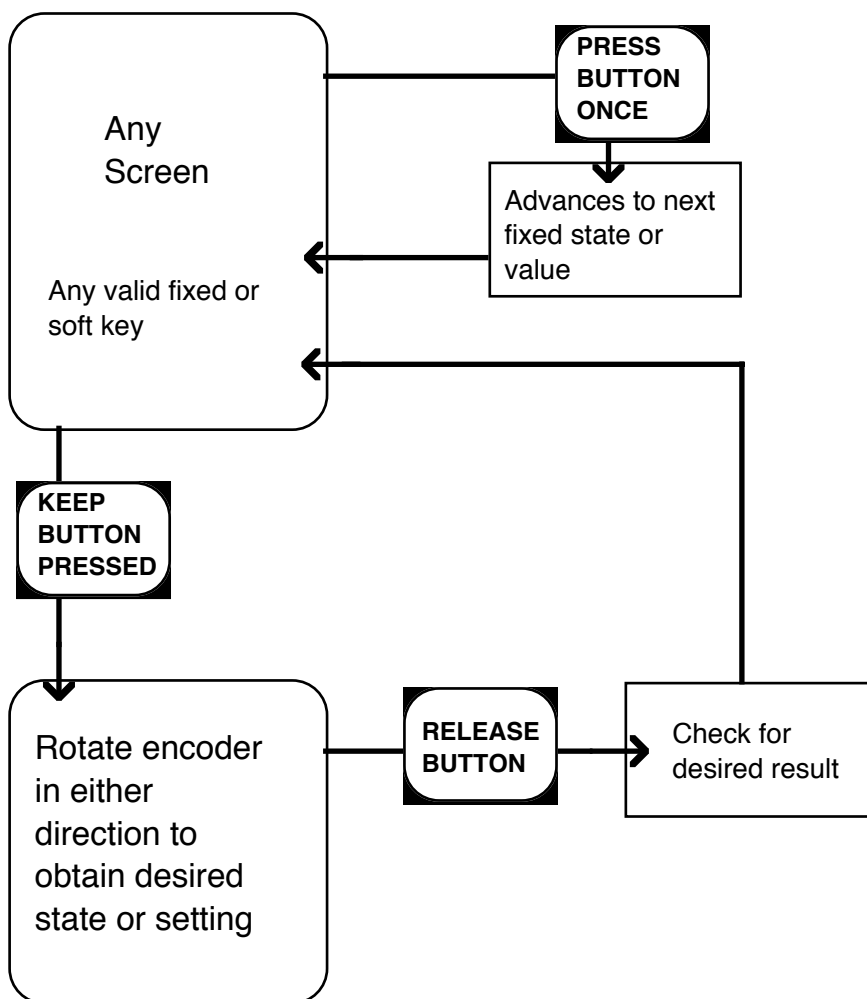
Fig. 2.1   Setting and Parameter Entry Flowchart

Example of parameter entry.

Let us say you want to enter a value of **800 m** for the depth range.

Press the Depth Range button several times and observe the depth range sequencing through the standard values 10, 50, 100, 500, 1000 m. Press till the range is 500 m. Then press the Range button again and keep it pressed while you turn the encoder clockwise. Observe the depth range increase to 800 m, let go of the encoder and release the depth range button. You could also have started from the standard value 1000 m and decreased to 800 m by turning the encoder counter-clockwise.

Buttons with less than 6 possible states or values can be operated without using the encoder at all.

OPERATION SCREENS

Each of the operation screens contains a graphic picture and a selection of up to 6 soft key buttons. The various screens are selected by keeping the "Menu" button pressed and rotating the encoder in either direction. Turning the encoder clockwise cycle the screens in the sequence 1 to10, and counter clockwise rotation cycles the screens in the sequence 10 - 1. Screens no. 1 - 3, covering the primary functions, may also be cycled by repeatedly pressing the "Menu" button.

The screen layouts are outlined in Fig. 2.2 through 2.11. The various Soft Key button functions are described with each screen.

All Screens have 10 vertical subdivisions.
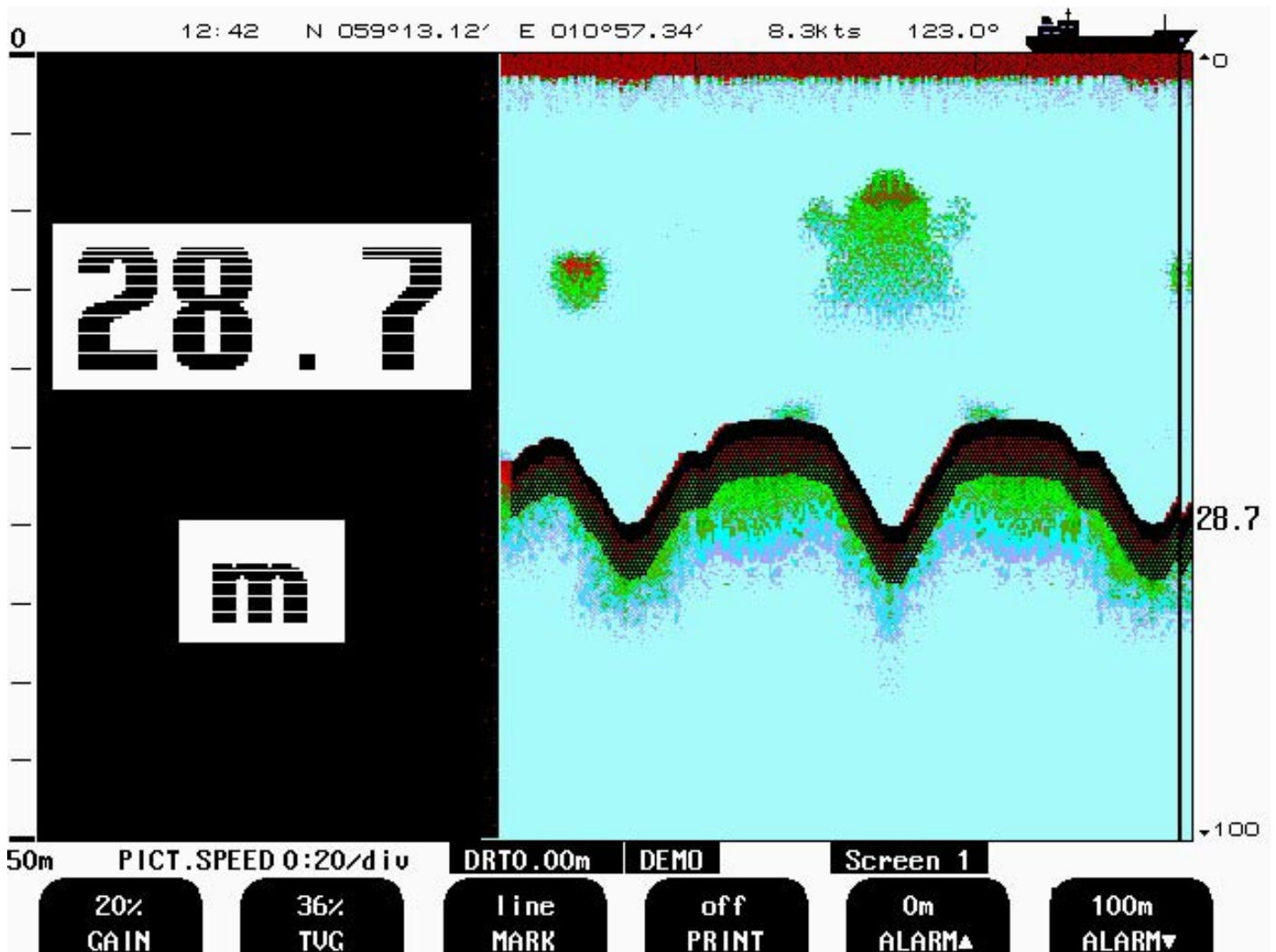
Fig. 2.2   **Screen 1, Primary Operation screen.**

This screen shows the main graphic echo-gram. Left hand digital indication may be enabled from screen 2.

Soft Key 1.	GAIN	0 - 100%	Gain Adjustment.(100% is max. Gain)
Soft Key 2	TVG	0 - 100%	Time Variable Gain Adjustment.(0% is max supression)
			Suppression of echoes from 0-40meter
Soft Key 3	MARK	line	Print mark line/Dump screen.
Soft Key 4	PRINT	on/off	Start and stop of continuous printing. (If printer is
			switched off or not connected this button is "Dimmed")
Soft Key 5	ALARM	0 - 100m	Shallow Alarm adjustment.
Soft Key 6	ALARM	0 - 1600m	Deep Alarm adjustment.

**The currently selected Transducer (Frequency) is indicated at the bottom of all screens
along with optional Transducer position, e.g. 200kHz/FWD.
(DRT0.00m and 200kHz/FWD are switching 1 sec. interval.)**

Selection of the Transducer Position Reference is performed in Screen 10.
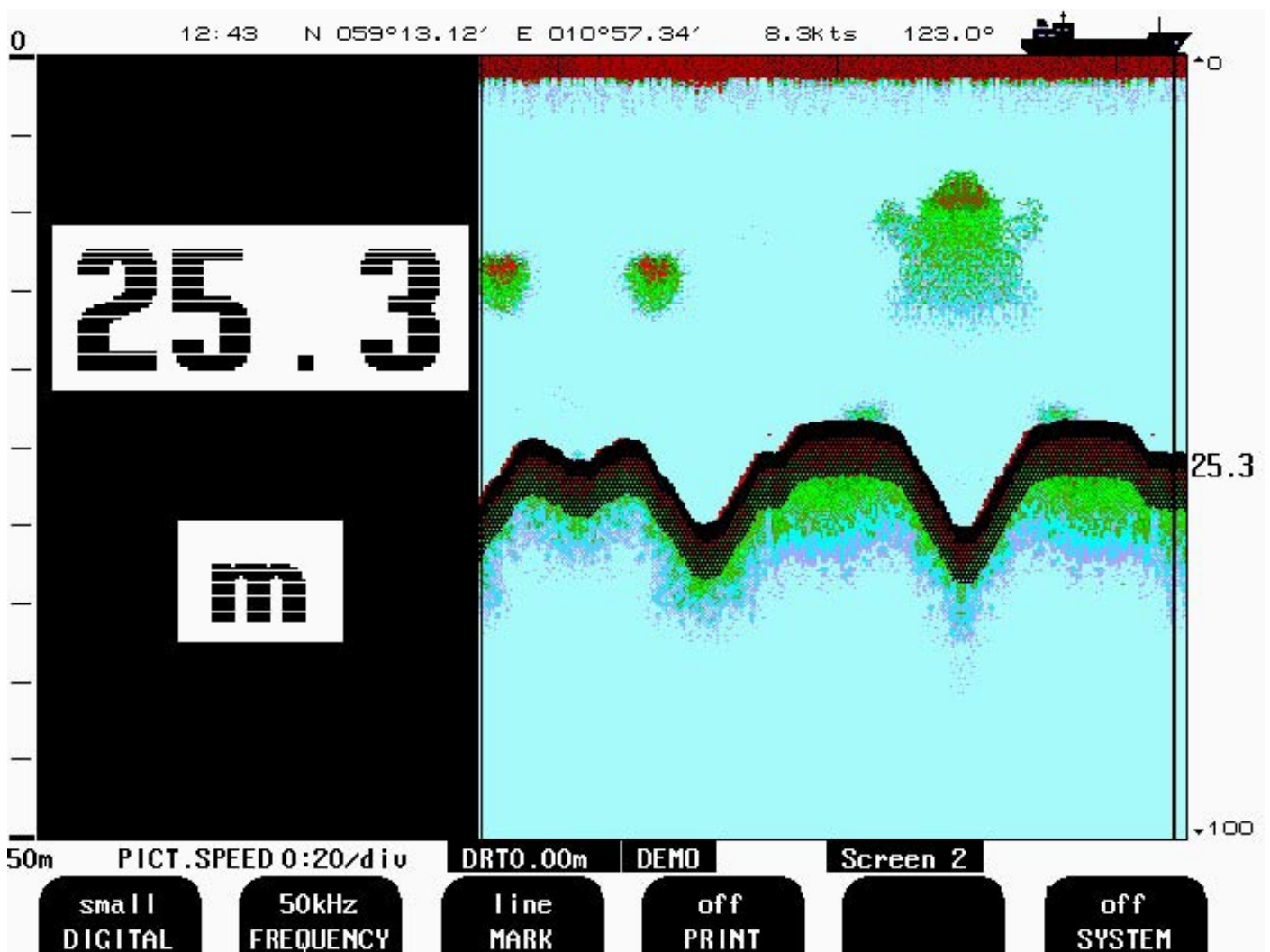
Fig. 2.3   **Screen 2, 2nd Operation screen.**

This screen shows the main graphic echo-gram. Left hand digital indication may be enabled from screen 2.

Soft Key 1.	DIGITAL	off/small/large	Control of digital depth indication.
Soft Key 2	FREQUENCY	38/50/200	Transducer selection.
			(Have to be "Installed " in screen 10 soft key 2 and 3)
Soft Key 3	MARK	line	Print mark line/Dump screen.
Soft Key 4	PRINT	on/off	Start and stop of continuous printing.
Soft Key 5	not used.		
Soft Key 6	SYSTEM	off	Switch off System. Switch on with any button
			(NOTE: Its still power on the GDS 101)

Fig. 2.4   **Screen 3, 3rd Operation screen.**

This screen shows the main graphic echo-gram. Left hand digital indication may be enabled from screen 2.

Soft Key 1.	POWER	0 - 100%	Transmitter power adjustment.
Soft Key 2	DRAUGHT	-100 to 100m	Draught correction, <u>must be set individually for each frequency.</u>
Soft Key 3 option	*SOUND*	*1400 - 1550m/s*	*Sound speed setting.*
Soft Key 4 option	*AUTORANGE*	*on/off*	*Auto Range control.*
Soft Key 5 option	*PING*	*continuos/single/edge*	*Ping control.*

Note.   *Soft Keys 3 through 5 control optional functions.*

Secondary operation screens.

Fig. 2.5   **Screen 4, Calendar and clock setting.**

This screen shows the main graphic echo-gram. Left hand digital indication may be enabled from screen 2.

Soft Key 1.	PRINTER	manual/auto	External Printer start options.
		auto	Printer start, if depth alarm are activated.
Soft Key 2	not used		
Soft Key 3	YEAR.MONTH	01.03 ->	Calendar setting.
Soft Key 4	DAY	1 - 31	Calendar setting.
Soft Key 5	HOURS	0 - 23	Real time clock setting.
Soft Key 6	MINUTES	0 - 59	Real time clock setting.

Note : If GPS is connected soft key 3 to 6 are controlled by GPS
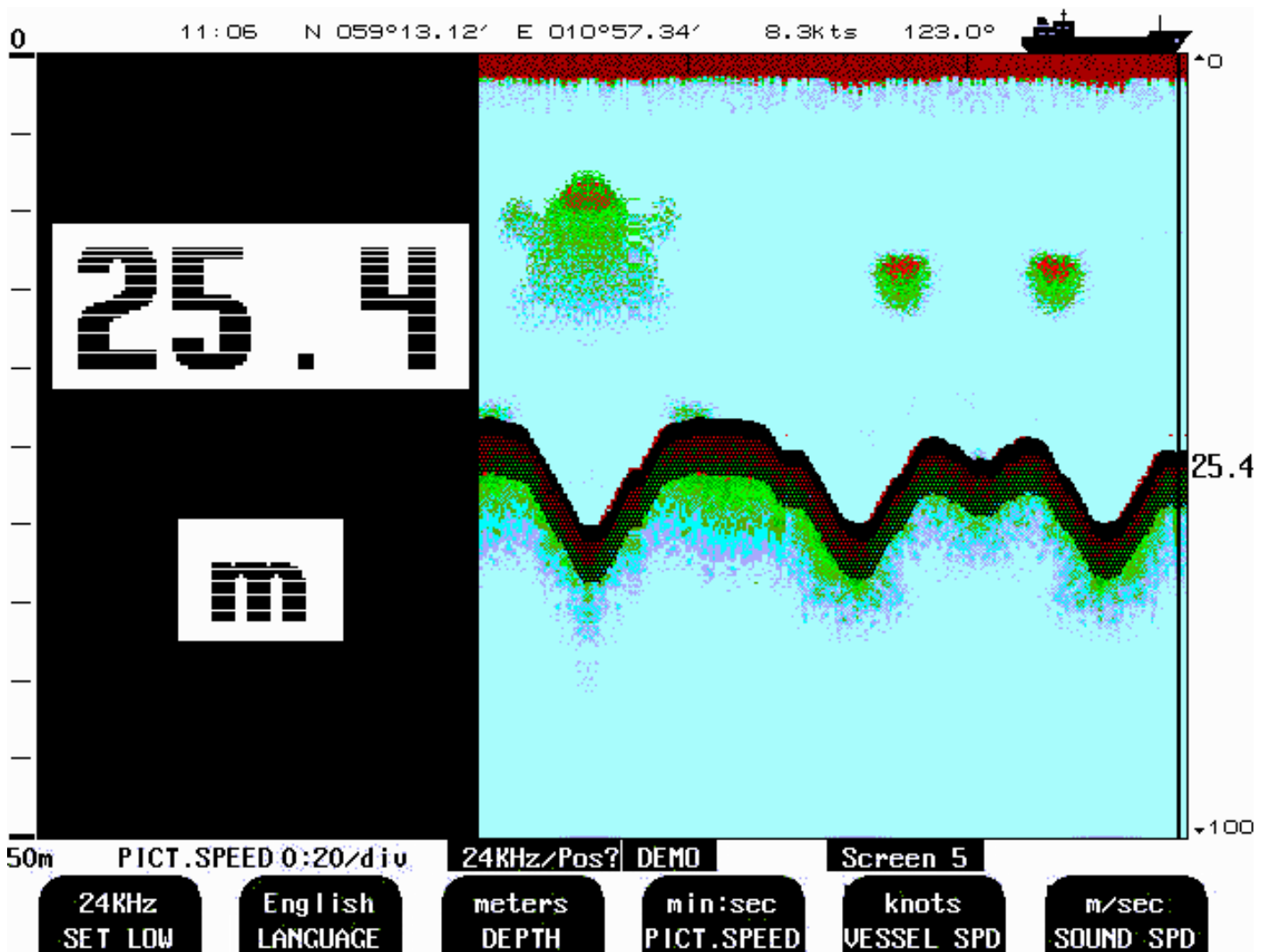
Fig. 2.6   **Screen 5, Language and units of measure Setup.**

This screen shows the main graphic echo-gram. Left hand digital indication may be enabled from screen 2.

| Soft Key 1. | SET LOW | 24/28/30/33/38KHz | Adjust indicated frequency of lower frequency channel. (see chapter 5. **Low frequency indication**) |
Soft Key 2	LANGUAGE	English etc.	Screen language selection.
Soft Key 3	DEPTH	m etc.	Unit of measurement for depth.
Soft Key 4	PICT.SPEED	m:s/div etc.	Unit of measurement for picture speed.
Soft Key 5	VESSEL SPEED	knots etc.	Unit of measurement for vessel speed.
Soft Key 6	SOUND SPEED	m/s etc.	Unit of measurement for sound speed.
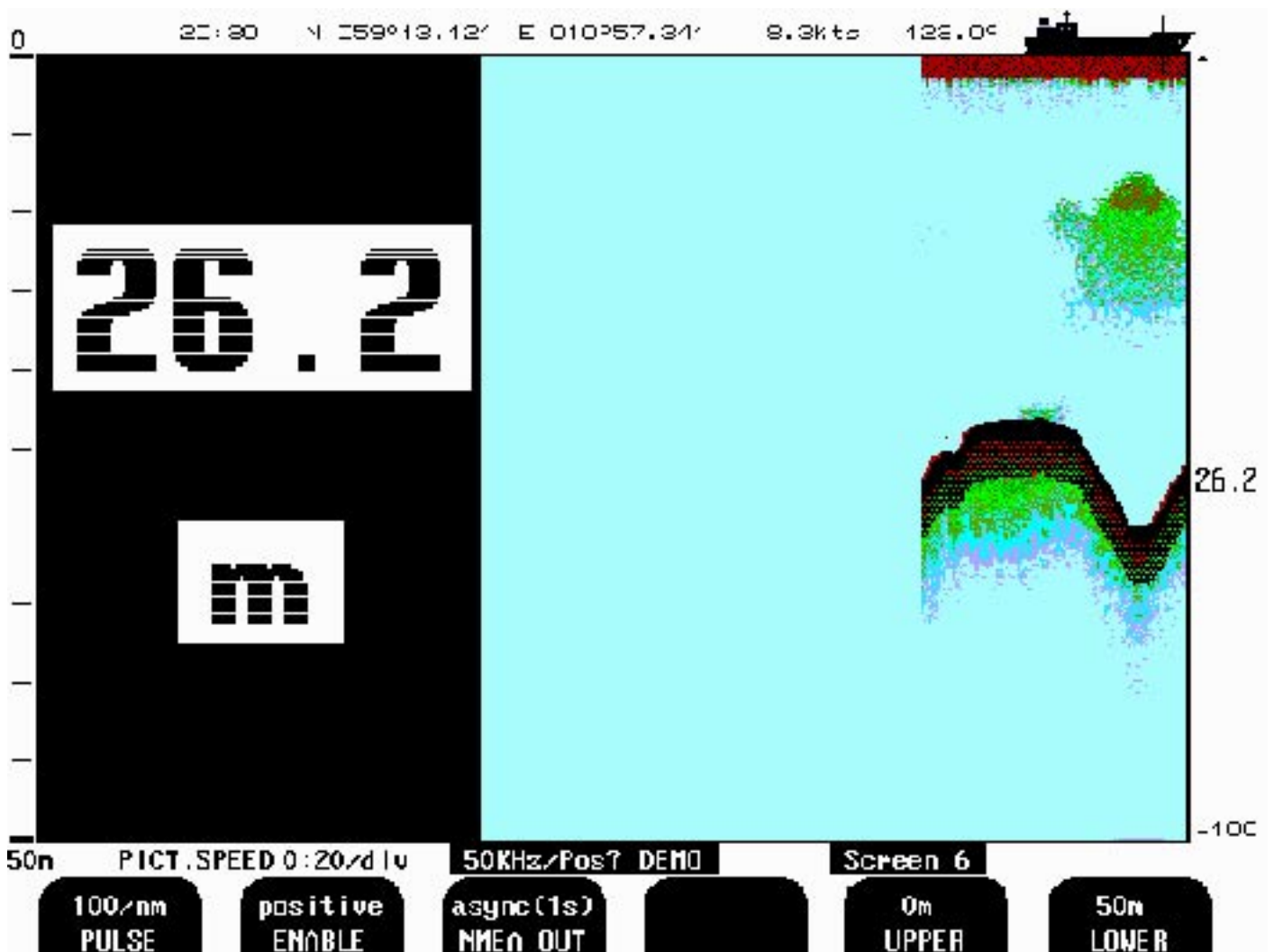
Fig. 2.7   Screen 6, Interface Setup screen.

This screen shows the main graphic echo-gram. Left hand digital indication may be enabled from screen 2.

Soft Key 1.	PULSE	100/200/400/20000	Log pulse input calibration.
Soft Key 2	ENABLE	pos/neg	select polarity of external sync signal (remote sounding control option)
Soft Key 3	NMEA OUT	async(1s) / synchronous	Select between synchronous (with sampling rate) and asynchronous (1s period) NMEA output update.
Soft Key 4	not used		
Soft Key 5	UPPER	0 - 98m	Analogue output shallow limit = 0V.
Soft Key 6	LOWER	0 - 99m	Analogue output deep limit = 10V.
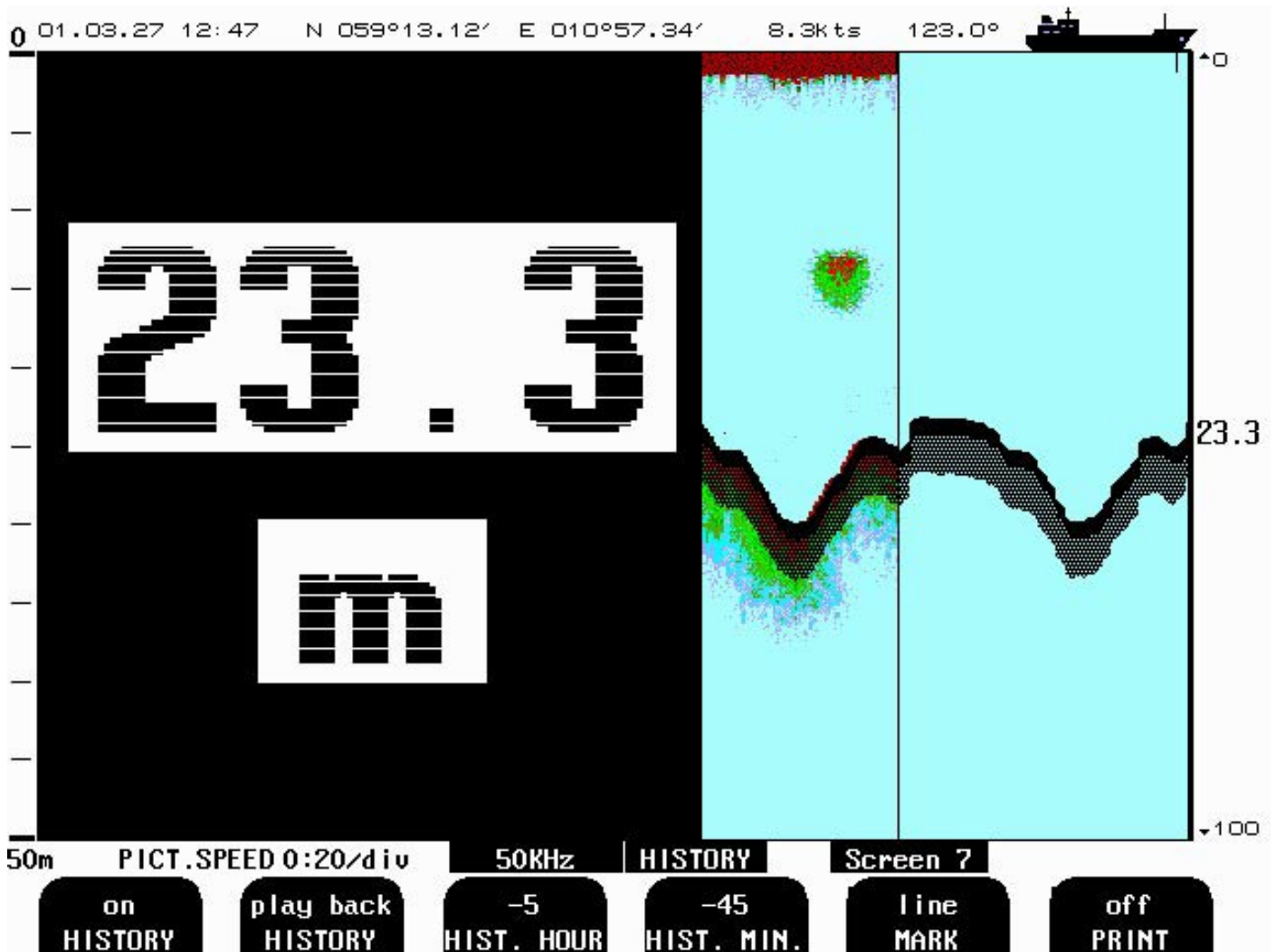
Fig. 2.8   **Screen 7, History Memory Control Screen.**
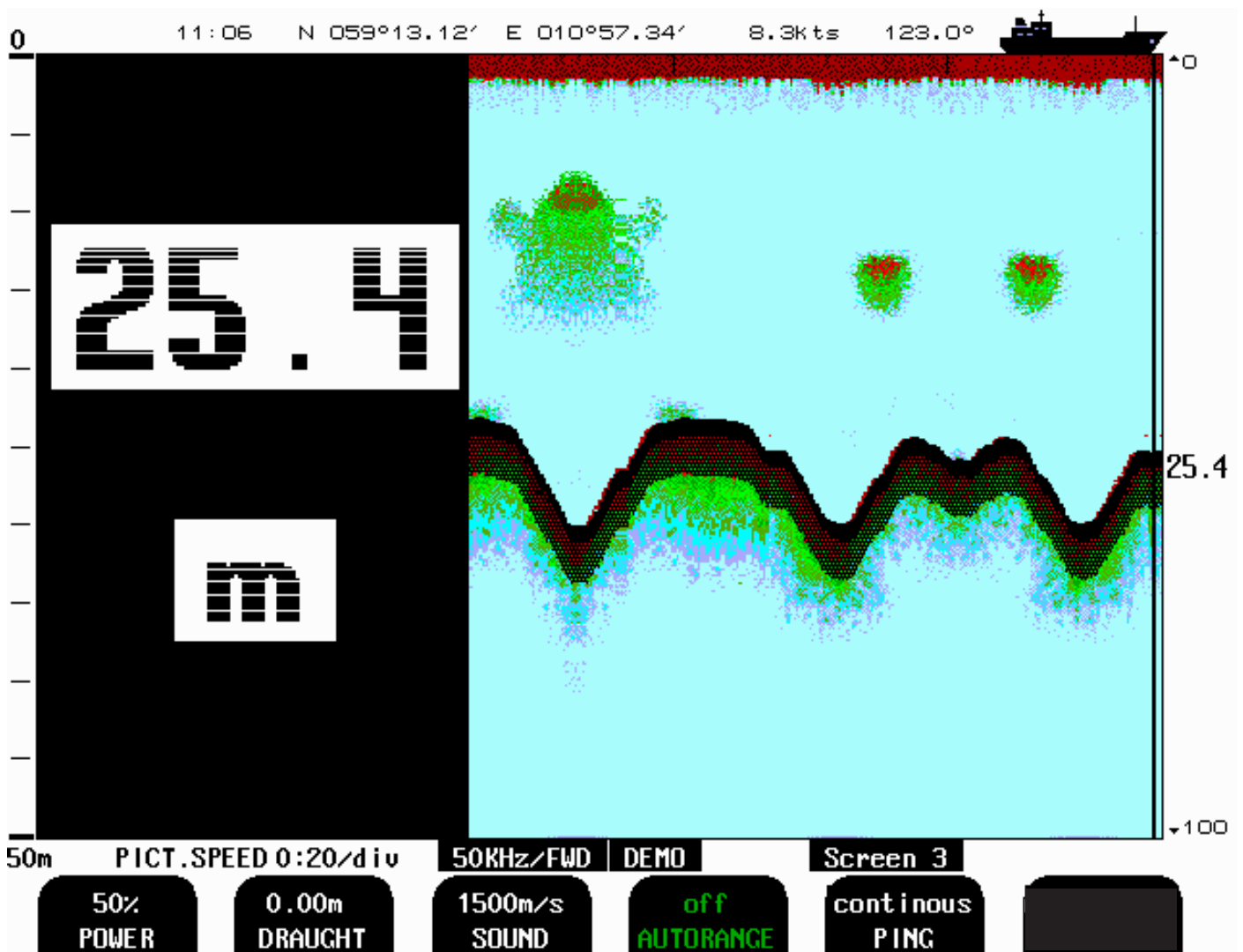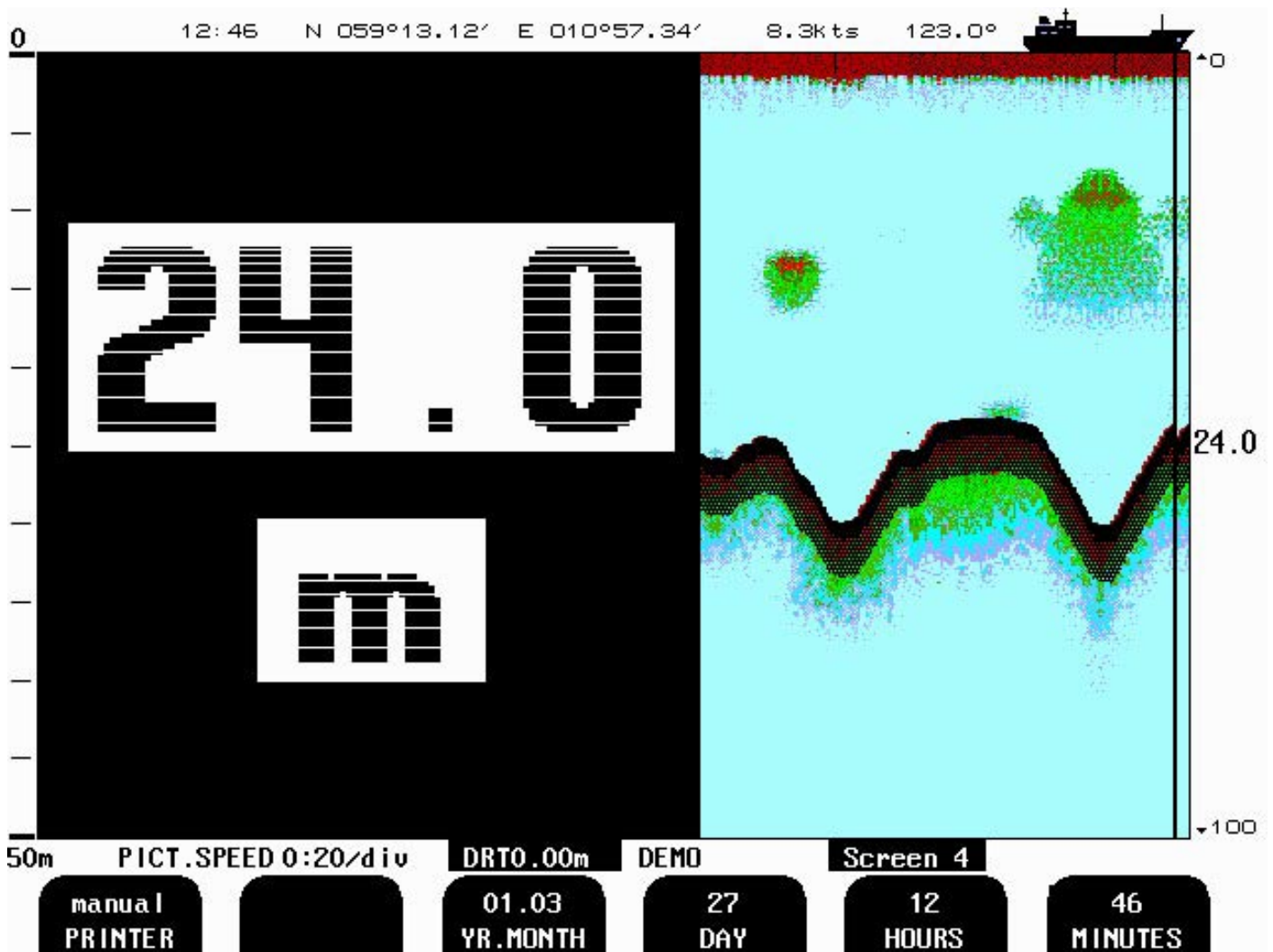
This screen shows the main graphic echo-gram. Left hand digital indication may be enabled from screen 2.

Soft Key 1.	HISTORY	on/off	Start/stop(keep) History Recording.
Soft Key 2	HISTORY	Record/Playback	Record/Playback of History.
Soft Key 3	HIST.HOUR	-24 - 0 hour	History Playback Spooling, hours.
Soft Key 4	HIST.MIN	-59 - 0 min	History Playback Spooling, minutes.
Soft Key 5	MARK	line	Print mark line/Dump screen.
Soft Key 6	PRINT	on/off	Start and stop of continuous printing.
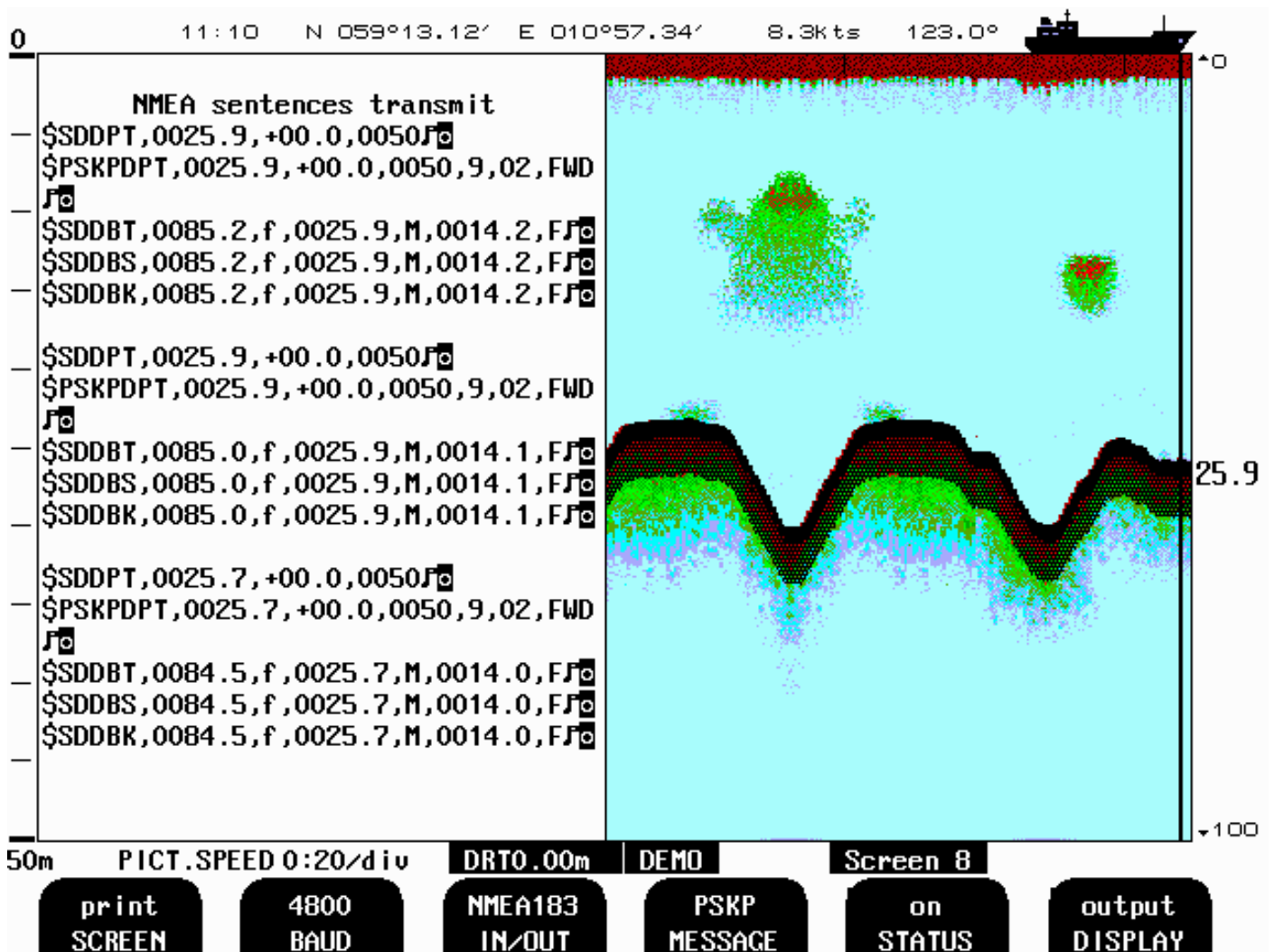
Fig. 2.9   **Screen 8, NMEA Control Screen.**

This screen shows list of received NMEA messages and half screen echo-gram.

Soft Key 1.	PRINT	screen	Print Screen.
Soft Key 2	BAUD	4800/9600	NMEA Baud Rate Selection
Soft Key 3	IN/OUT	NMEA0183/RS232	I/O Port Selection
Soft Key 4	MESSAGE	DPT/DBS/DBT/DBK/XDR	
		EN250/PSKPDPT	Select if message should be on/off by soft key5.
		CHECK SUM	Select if PSKPDPT should contain check sum or not by soft key5.
Soft Key 5	STATUS	on/off	Select if enabled Message by soft key 4 should have on or off status.
Soft Key 6	DISPLAY	off/input/output	Message display Operation.
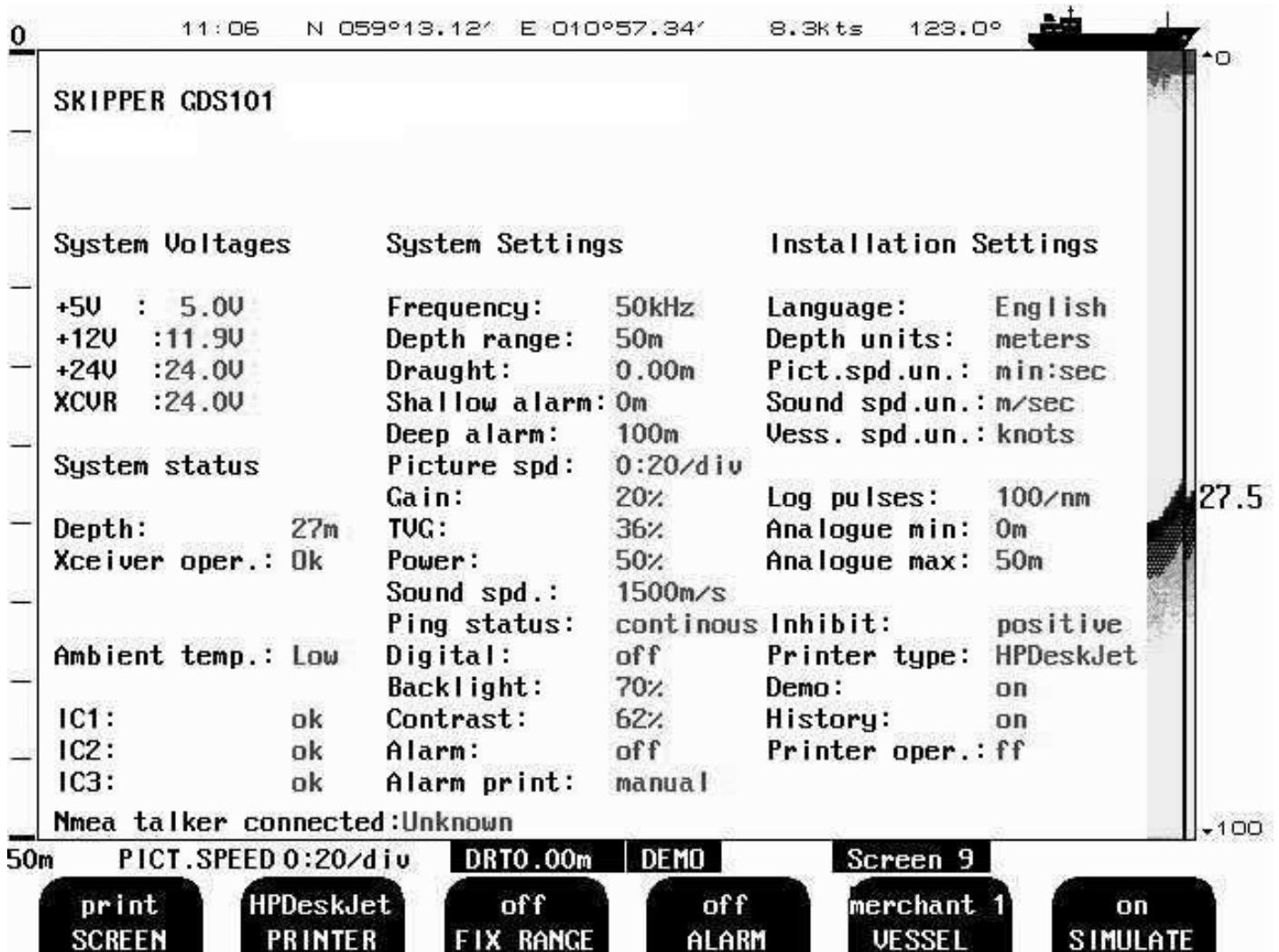
Fig. 2.10   **Screen 9, System Status Screen.**

This screen shows a comprehensive list of system settings and parameters.

Soft Key 1.	PRINT	screen	Print screen.
Soft Key 2	PRINTER	HP DeskJet / Epson (Lq300+) / Epson D88 / Built-in thermal printer.	
			Select type off printer that are connected.
Soft Key 3	FIX RANGE	on/off	Limit Search Range to Window
			on FIX RANGE gives better detection in case of noisy signal.
Soft Key 4	ALARM	on/off	Internal Alarm Buzzer Control.
Soft Key 5	VESSEL	merchant1/2, Navy1/2	Upper right Screen Icon Selection.
Soft Key 6	SIMULATE	on/off	Built-in Simulator Control.
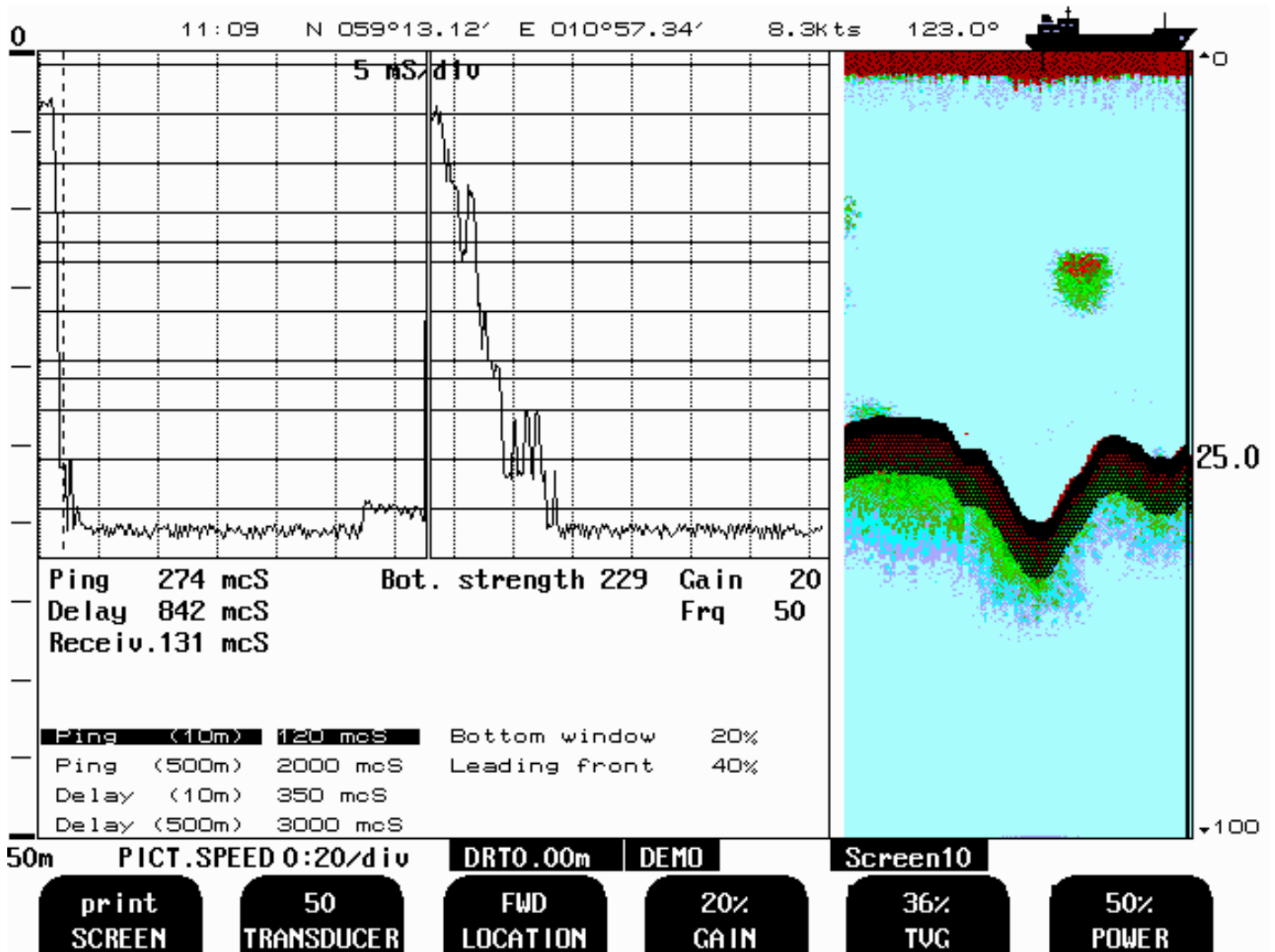
Fig. 2.11   **Screen 10, Oscilloscope Screen.**

This screen shows oscillator program of receiver output versus time and half screen echo-gram.

Soft Key 1.	PRINT	screen	Print screen.
Soft Key 2	TRANSDUCER	200, 50, 38	Transducer selection for Soft key 3
Soft Key 3	LOCATION	Pos?,not installed,	(Pos? is default setting) If "NOT installed" is selected for one of the Frequenses it will not be available in screen 2,soft key 2.
		Fwd, Aft, Port, Strb	To select position of transducer
		Fwd/Aft, Port/Strb	2 Transducers with Transducer selector (ENS518) See page 52 Remote Transducer selector See page 53 for Nmea sentence
Soft Key 4.	GAIN	0 - 100%	Gain Adjustment.
Soft Key 5	TVG	0 - 100%	Time Variable Gain Adjustment.
Soft Key 6	POWER	0 - 100%	Transmitter power adjustment.

Bottom detection

GDS101 employ a bottom detection algorithm that will try to extract the bottom signal from all kinds of noise and secondary echoes. When GDS101 is tracking the bottom normally, a thick black line is shown, and below that, a ribbon with a hatched pattern. This pattern has two levels of hatching. The darkest represent strong and unambiguous bottom echoes. The lighter hatching represents weaker signals possibly occasional detection misses. If the software can detect no bottom for several pings, the hatched ribbon disappears.

During normal bottom tracking, a digital value is shown by the bottom contour at the right side of the screen. If the software algorithm losses track of the bottom altogether, a warning beep is heard and the black line and hatching band disappears. A warning message: "Lost bottom" is shown in the screen's lower right corner.

Ping to Ping filtering

Part of the bottom detection algorithm is the ping to ping filtering. The next bottom is searched for in a time and strength window based on the strength and timing of the previous bottom echoes. This procedure reduces the probability of tracking schools of fish or secondary echoes as bottom.

If no bottom is detected in the calculated window, the window is gradually increased in size until the full time and strength window is used.

Bottom Search Range

The FIX RANGE function in Screen 9 is used to control the search range for the bottom detection algorithm. When this function is on, bottom is only searched for within the selected display range. When the function is off, bottom is searched for within the entire functional range of the echo sounder.

Power ON/OFF

During normal daily operation, the system may be switched off from Screen 2. This operation does not disconnect the system from the power supply, but all power consuming components are switched off. The system may be switched on again by pressing any button.

Do not run the sounder for a long time without a submerged transducer connected.

Alarm acknowledgement.

When the depth alarm is activated, the alarm may be acknowledged by pressing any button.

Fixed Key Functions.

Depth Range

The Depth Range button can be used to set the depth limit between 10 and 1600 m. Standard values available by repeatedly pressing the button are 10, 50, 100, 500 and 1000m.

Picture Speed

Picture speed may be referred to either time or Vessel speed. If no speed log is connected, Picture Speed will always be referred to time. ("mm:ss/div").
Time referenced Picture Speed may be selected between 20 Seconds per division and 5 minutes per division.
Vessel Speed referenced Picture Speed may be selected between 0.04 nm per division and 5 nm per division.
If a speed log is connected, it is possible to select a "speed/div" unit in Screen 5.
The ping-rate range depends on the Depth Range, and the fastest ping rate at shallow depths is about 5 pings per second.

Menu

The menu button facilitates selection of one of the 10 screen and soft key layouts. The 3 primary operation screens may be cycled by repeatedly pressing the MENU button. Access to the remaining screens is through encoder operation. The screens are cycled in an endless, bi-directional loop, e.g. turning the encoder counter-clockwise, will activate Screen 10 after Screen 1.

Turning the encoder with no buttons pressed always force Screen 1.

Day / Night & Back light adjustment

Back light may be continuously controlled by means of the appropriate buttons and the encoder. Press either button and rotate the encoder until a satisfactory setting is obtained, then release the button.
Day / Night vision see chapter 1. INTRODUCTION System Summary for Color bar explanation.
Day / Night vision may be changes by means of pressing the Day / Night Button. (see fig. 1.1)

The settings are maintained in the non-volatile memory, and the last settings are restored on power up.

It is also possible to cycle through 3 standard backlight / picture settings by repeatedly pressing the brightness button. The 3 settings are:

1.	Minimum	backlight,	Day/Night vision
2.	Half	backlight,	Day/Night vision
3.	Maximum	backlight,	Day/Night vision

Gain

Gain may be adjusted from 0 to 100% to allow for optimal echo levels from bottom and other objects. The GAIN setting affects signals from all depths.

TVG

Time **V**ariable **G**ain may be adjusted from 0 to 100 % to allow for detailed echo control from the 0 - 50 m depth range.
A low setting will reduce the gain in the area near the surface to suppress noise and unwanted echoes from this area.

Digital indication

On the operation screens, two sizes of large digital depth indicators may be selected from Screen2.
"Small" digits occupy approximately 40% of the net echo-gram screen width.
"Large" digits occupy approximately 55% of the net echo-gram screen width.

Frequency

The Frequency selector toggles among 38, 50 and 200 kHz.

Output Power

Power may be adjusted from 10 to 100 % in case of difficult shallow water conditions. Too high power in such cases will possibly saturate the receiver or cause detection of unwanted secondary bottom or surface echoes.
When a range of 10m is selected, Output Power is automatically limited to 10%.

Draught

Draught may be compensated to allow real depth from surface to be shown on the screen and printout.
Negative draught values may be entered to compensate for transducers fitted above the keel.
This setting also affects the NMEA transmitted values.
Draught compensation is indicated on the screen by a flashing number to alert the operator to the fact that the shown depth value is adjusted.

External Printer Operation

The optional external printer is started and stopped by the **Print** buttons. The printer may be used for continuous printing over a period of time or the current screen contents may be dumped to the printer for reference if something interesting is observed.
The **Print** buttons switch continuous printing on and off.
The **Mark** buttons will write a line mark on the paper if it is pressed whenever the printer is running.
If the **Mark** button is pressed when the printer is off, this will initiate a screen dump of the present screen contents.
If printer is switched of, or Not connected print button is "Dimmed".

Alarm settings

Depth alarm settings are performed from Screen 1. Alarm limits are referred to the indicated depth. The local alarm buzzer may be disabled from screen 9, but the external alarm relay will always operate. The only way to disable the alarms completely, is to reduce the shallow alarm to zero depth and increase the deep alarm to maximum range.
An active shallow alarm limit must be less than an active deep alarm limit. Alarm limits are enforced with hysteresis.

A depth alarm may automatically start the optional printer if this function is enabled on Screen 4.

Clock and Calendar Settings

Manual Clock and Calendar adjustments are carried out in Screen 4. If a Satellite navigator giving UTC messages is connected to the NMEA input, the clock and calendar will be automatically updated and manual adjustment is not required.

History Memory

GDS101 has a 24 hour history memory. Depth, time and all available navigation data are stored continuously so that the last 24 hours of information is always available.
The history memory is controlled from Screen 7.

The normal history modes are "on" and "recording". New depth information is continuously stored in the memory while the oldest samples are discarded. Only bottom information is stored along with time and whatever navigational information is available in the GDS101 (Position, Speed, Heading).

By switching history "off", the stored 24 hours will be kept in the memory and no new samples will be written. As a warning that the memory is not recording, "History off" is flashing at the bottom of the screen.

History modes "on" and "playback" will start playing the contents of the history memory on the screen and on the optional printer if it is running. As a warning that the displayed bottom contour is from the memory and not real time, "History" is flashing at the bottom of the screen.

The "history hours" and "history minutes" buttons used with the encoder, will enable positioning within the 24 hour memory to observe the desired part of the time frame during playback.

Simulator

The GDS101 contains a built in simulator to exercise the screen and various interface signals. The simulator may be switched on and off on Screen 9.
When the simulator is operating, "Demo" is flashing at the bottom of the screen.

Status Screen

The Status screen, Screen 9 shows a list of various system parameters useful for documenting system set-up and system operating status. The contents of this screen will be valuable information in situations where manufacturer support is required.

Oscilloscope Screen

The Oscilloscope screen, Screen10 is useful when monitoring transceiver performance. The oscillogram shows the signal returned from the transceiver plotted against time and will enable service personnel to evaluate system performance and facilitate any troubleshooting.

Non-volatile Parameter Memory.

The system contains non-volatile memory to maintain installation and user parameters like Language and unit of measurement selection, Contrast and Backlight settings, etc.
These parameters are kept in EEPROM memory and are automatically restored on power up. If the user parameters have never been set, default values are used.

OPTIONS.

Repeaters/Slaves

Graphic display or digital depth slave repeaters may be connected to the system. Along with the graphic display repeaters there may also be installed remote keyboards.

Remote Sounding Control.

This option lets the GDS101 being controlled remotely in synchronised, burst or single ping modes. If installed, this option is accessible on Screen 3.

Auto Range

This option will automatically adjust the depth range to maintain the bottom contour within the middle half of the screen height. If installed, this option is accessible on Screen 3.
When the optional printer is started, Auto Range is automatically disabled, and the present depth range is selected as fixed.

Sound speed calibration

This option will enable adjustment of the sound speed value used for the depth calculations. The standard value is 1500 m/s, but the user may set values from 1400 to 1550 m/s to accommodate accurate propagation speed in known water conditions. If installed, this option is accessible on Screen 3.

External Printer

Printer for endless paper or inkjet printer for single sheets (ask for actual type) may be connected for hardcopy requirements.

3. USER MAINTENANCE

TRANSDUCER MAINTENANCE.

The transducers are virtually maintenance free, but occasional cleaning may be necessary depending on sea water conditions.

OPERATOR UNIT MAINTENANCE.

The operator unit contains no user serviceable parts, and requires no maintenance apart from occasional cleaning of the front panel. Please use a soft cloth and no chemicals except cleaning alcohol.

Trouble Shooting

Symptom	Cause	Remedy
Basic System Integrity		
No Picture on LCD Screen	No AC or DC power to the system	Check Switches and Fuses on the Terminal Board inside the GDS101 Cabinet.
	System is in Standby	Press any Button on Panel
	To low Screen backlight	Increase backlight Setting, Change to Day Vision
	Defective LCD module or Interface	Replace Module or Interface PCB
	Voltage(s) out of Range	Replace Terminal PCB
Picture is difficult to read	Backlight is too weak	Increase Backlight Setting
	Night vision is on during day time.	Increase Backlight Setting, Ore change to day vision
Display Backlight malfunctions, Display picture is visible	Defective Backlight tubes	Replace Tube Assembly
	Defective Backlight power inverter	Replace Keyboard PCB
Rotary Encoder malfunctions	Defective Encoder or interface	Replace Keyboard PCB or Interface PCB
Panel Buttons malfunction	Defective Buttons or interface	Replace Keyboard PCB or Interface PCB
	One button stuck	Check Key Switches or Replace Keyboard PCB

```
0          11:06    N 059°13.12'  E 010°57.34'    8.3kts    123.0°

  SKIPPER GDS101


  System Voltages        System Settings           Installation Settings

  +5V  :  5.0V           Frequency:     50kHz      Language:      English
  +12V :11.9V            Depth range:   50m        Depth units:   meters
  +24V :24.0V            Draught:       0.00m      Pict.spd.un.:  min:sec
  XCVR :24.0V            Shallow alarm: 0m         Sound spd.un.: m/sec
                         Deep alarm:    100m       Vess. spd.un.: knots
  System status          Picture spd:   0:20/div
                         Gain:          20%        Log pulses:    100/nm   27.5
  Depth:        27m      TVG:           36%        Analogue min:  0m
  Xceiver oper.: 0k      Power:         50%        Analogue max:  50m
                         Sound spd.:    1500m/s
                         Ping status:   continous  Inhibit:       positive
  Ambient temp.: Low     Digital:       off        Printer type:  HPDeskJet
                         Backlight:     70%        Demo:          on
  IC1:          ok       Contrast:      62%        History:       on
  IC2:          ok       Alarm:         off        Printer oper.: ff
  IC3:          ok       Alarm print:   manual
  Nmea talker connected:Unknown
 50m     PICT.SPEED 0:20/div    DRT0.00m   DEMO          Screen 9

   print        HPDeskJet       off         off        merchant 1      on
   SCREEN       PRINTER      FIX RANGE      ALARM        VESSEL      SIMULATE
```

The status Screen (9) contain information that will faciliate analysis and correction of several problems. A printout of the Status and Oscilloscope Screens should be sent by fax with any report about functional Disturbance. This will greatly facilitate remote failure Analysis.

If it is at all possible to cycle through the screens and observe this information, several assumptions may be made regarding operation of the GDS101 System. Although some of the subsystems necessary for this basic system operation may still suffer from minor or intermittent operation disorders, the fact that it is possible to select and observe this screen, indicate correct operation of the following GDS101 Subsystems:

1.   The Computer is operating.
2.   The Screen Interface (VGA) Board is working.
3.   The Keyboard interface Board with Backlight and LCD power supplies is working.
4.   The Keyboard Interface Part of the I/O Board is working.
5.   The Power Supplies on the terminal board are basically working.

Symptom	Cause	Remedy
Status Screen Diagnosis		
Main Voltages out of Range +5V: 4.7V - 5.3V +12V: 11.3V - 12.7V +24V: 22.5V - 25.5V	Defective Power Supply Power Supply Overload	Replace Terminal Board. +5V: Computer or I/O Board Problem. +12V: Transceiver Problem. +24V: Screen Backlight Problem
Transceiver (XCVR) Voltage low	Power Setting to low Defective Power Supply	Increase Power Setting Replace Terminal Board or I/O Board.

The other information on the Status screen is a collection of information which may be observed and manipulated with the various screen softkey selections. As a reference, it will often be more convenient to observe the various settings together on this screen than to cycle from screen to screen to check on the softkey texts.

0 m   *15:03 GMT*   N 13°13.20' E 079°44.5'   14kts   145°

20 mS/div

Bot(tom). strength

70% of previous bottom strength (minimum tracking requirement for next)

Dynamic after-ring cutoff (< Minimum amplitude)

Filter width:
Peaks with smaller distance are considered one

Bottom window

Current depth

Leading front

Minimum amplitude

▲ 50

80

▼ 160

Ping	795mcS	Bot. strength	226	Gain	20
Delay	1253mcS	PRF	2	Frq	50
Receiv.	333mcS				

```
Ping    (10m)    150micS    Bottom window   20%
Ping    (500m)   3000micS   Leading front   40%
Delay   (10m)    350micS    Filter width    15cm
Delay   (500m)   3000micS   Min amplitude   24
```

200m PICT.SPEED 0:08/div   SCREEN 10

| print SCREEN | | | 20% GAIN | 25% TVG | 100% POWER |

This Oscilloscope Screen (10) shows a typical oscillogram of a bottom echo (the tall peak in the centre of the diagram) and a weaker fish echo to the left of it. The horizontal axis represent time for the sound to travel down and back from an object. The vessel is located at the left edge of the grid, and the right edge represent the deep range. The vertical axis represent the magnitude of the echo signal received.

Symptom	Cause	Remedy
Basic Functionality		
No Bottom Detection or Bottom Contour	Too low Gain Setting Too low TVG Setting Too low Power Setting Wrong Frequency Selection	Adjust Settings Select correct frequency
Bottom tracking is intermittent or erroneous	Marginal Gain, TVG or Power Settings Weather Conditions Transducer installation faulty	Adjust settings Try adjusting Gain, TVG or Power Settings. Check transducer wiring, Receiver LED on interface Board or Oscilloscope Screen.
Bottom tracking is masked by high noise levels	Too high Gain Setting Too high TVG setting To high Power Setting	Adjust settings

Symptom	Cause	Remedy
NMEA Interface etc.		
NMEA input signals are not listed in the NMEA Screen (8).	Wrong Polarity input Signals	Swap NMEA0183 Input wires
NMEA input signals are listed in the NMEA Screen (8), but not accepted by the GDS101	GDS101 Initialisation Irregular Message Mnemonic	Cycle GDS101 power after NMEA Connection is established. Check Remote (Talker) Setup.
NMEA output signals are not accepted by the remote system	Remote (Listener) Setup	Verify correct Remote (Listener) Setup.
Analogue output malfunctions.	Incorrect Range Setting.	Verify upper & lower Limits in Screen 6.
Pulse output malfunctions	Incorrect Pulse Frequency Setting.	Verify Pulse Setting in Screen 6.
External Control Inputs malfunction, Inhibit/External Printer Control	Incorrect Polarity or Function Settings	Verify Settings in Screen 6.

4. INSTALLATION

STANDARD SYSTEM SUPPLY.

A Basic GDS101 system consists of the following units. See **Fig. 4.1**:

Pos.   Description

1   Operator Unit with installation material
2   Transducer Junction Box(es)
3   Approved transducer steel tank(s)
4   Transducer(s) with attached cable(s) and installation material
5   Operation and Installation Manual

TRANSDUCER INSTALLATION.

Location.

Single transducers are normally installed in the foreship. Larger vessels are often fitted with two trans-ducers, one fore and one aft.

Optimal system operation is achieved by fitting the transducer as deep as possible on the hull.
The transmitting surface of the transducer must be installed horizontal. On vessels with a deep keel, if the transducer must be fitted higher than the keel, it should be fitted towards the side, as far from the keel as possible to avoid false keel echo.

Do not mount transducers close to the propeller or aft of other hull installations (outlets, vents or other protruding details).
It is of course necessary to select a part of the hull that is submerged under all load and speed conditions, and to avoid positions where air is trapped in heavy weather.

If a flat, horizontal section is not available for transducer fitting, the shipyard must construct a suitable bed.

Protect the active element of the transducer and do not paint the surface.
Transmission in the air must be avoided! This may cause mechanical damage of the element.

Installation Details.

Refer to SKIPPERs standard installation procedures in the appendix regarding tank installation, welding, Cable glands etc.

Cabinet

220VAC/24VDC
2 x 2.5 sq. mm.
Screened
Yard Supply

Superstructure

Transducer
Junction Box

Hull

1 pair each
xducer,
2.5 mm
screened
Yard Supply

Steel
Pipe
(Yard Supply)

Transducer Tank

Standard Supply except Yard Supply cables
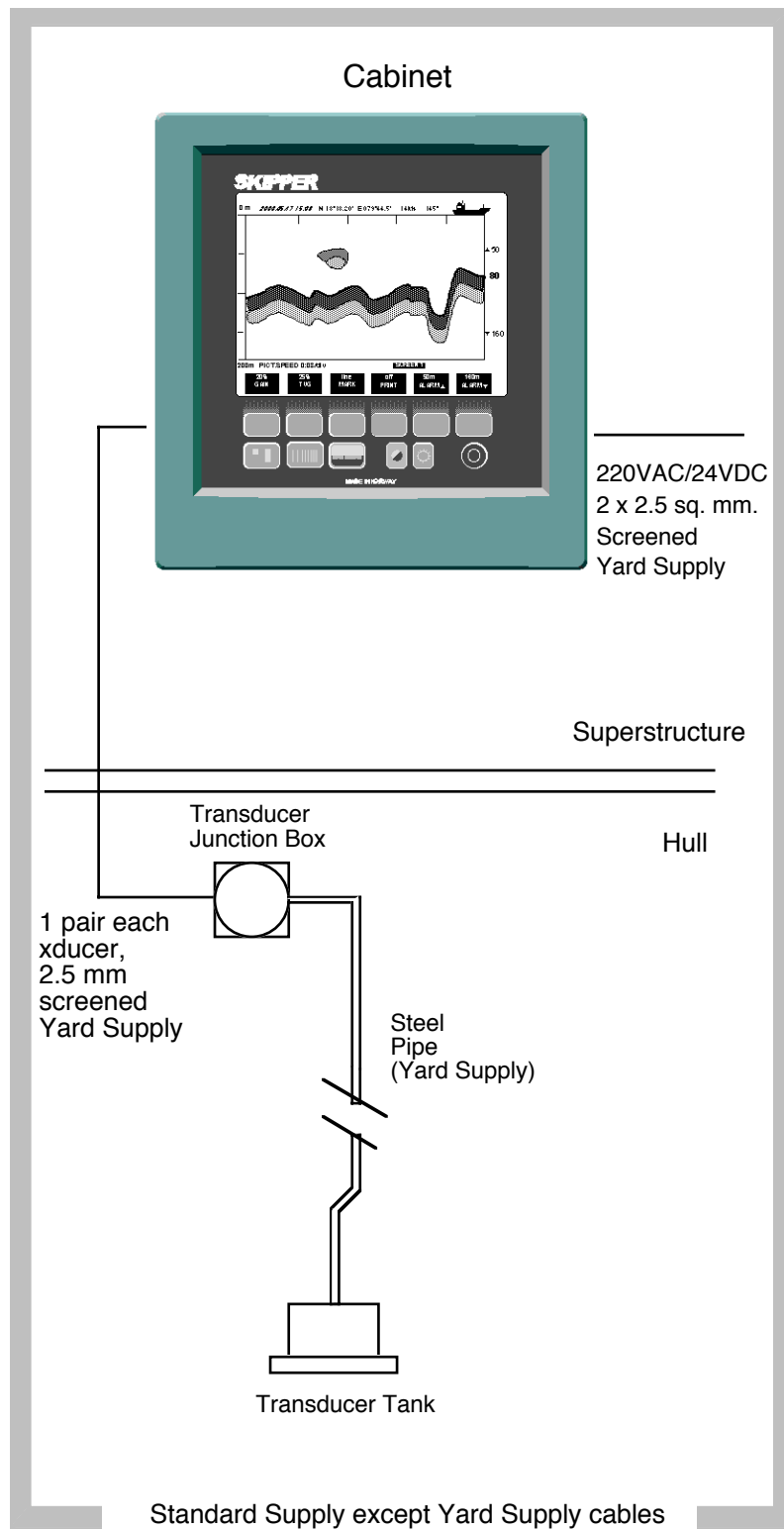
Fig. 4.1   Basic System Configuration.

TRANSDUCER JUNCTION BOX.

The standard cable fitted on the transducer is 25 m and may be shortened or extended. The junction box is used to interconnect the transducers fixed cable to a yard supply extension cable if the total required cable length is longer than the standard cable. It is recommended to run the standard cable in a steel protecting pipe.

Special requirements apply in areas with Ex conditions. The junction box must always be mounted outside such areas.

Interconnect the transducer pair and its screen in the junction box,**but do not ground the screen here.**
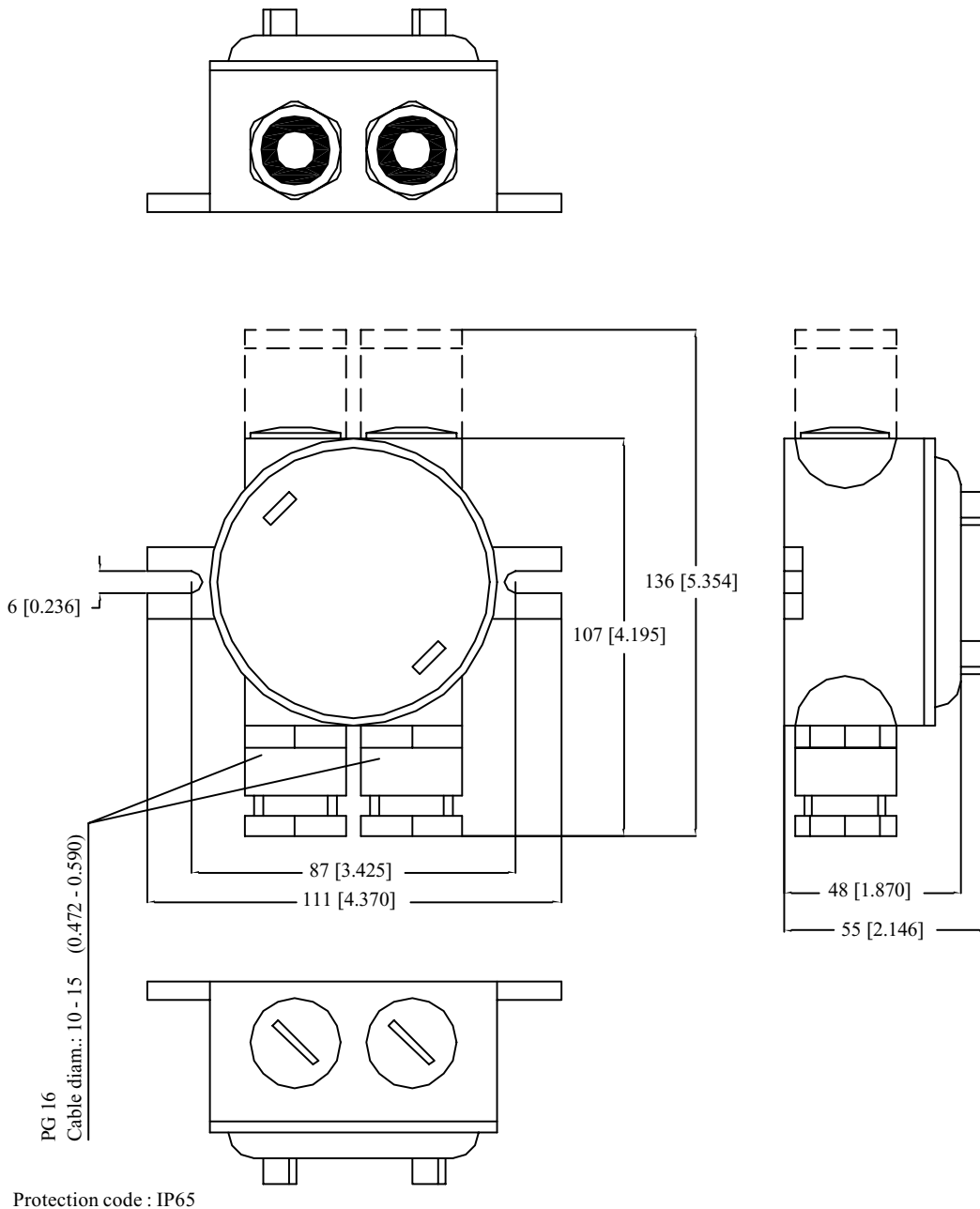
Fig. 4.2   Transducer Junction Box, Dimensions in mm. Weight : 0,6kg

RevNo	Revision note			Date	Signature	Checked

Printer interface
External VGA CRT or LCD interface
External NMEA interface

Console mounting

135 (5.315)   30 (1.181)

4 x PG 13.5 Cable glands
Cable diam. : Min. 10 (0.394)
Max. 12 (0.472)

320 (12.598)

340 (13.386)

21 (0.826)

Press the bracket against the panel when tighten.

Mounting bracket

Panel

Mounting bracket

330 (12.992)

Panel thickness : Min. 1.0 (0.039)
Max. 25.4 (1.000)

347 (13.661)

Bolt holes for bulkhead mounting :
Ø8 (0.315)

59 (2.323)

230 (9.056)

240 (9.449)

320 (12.598)

300 (11.811)
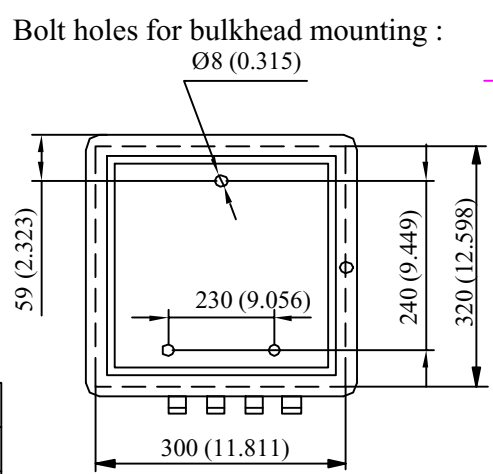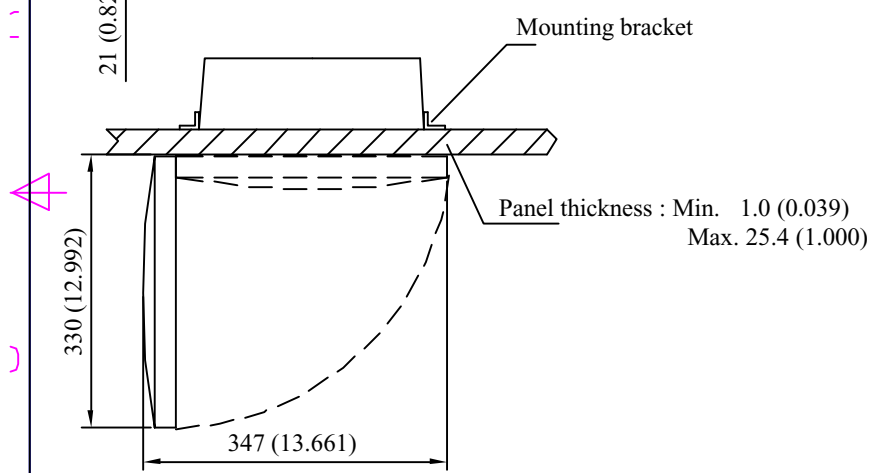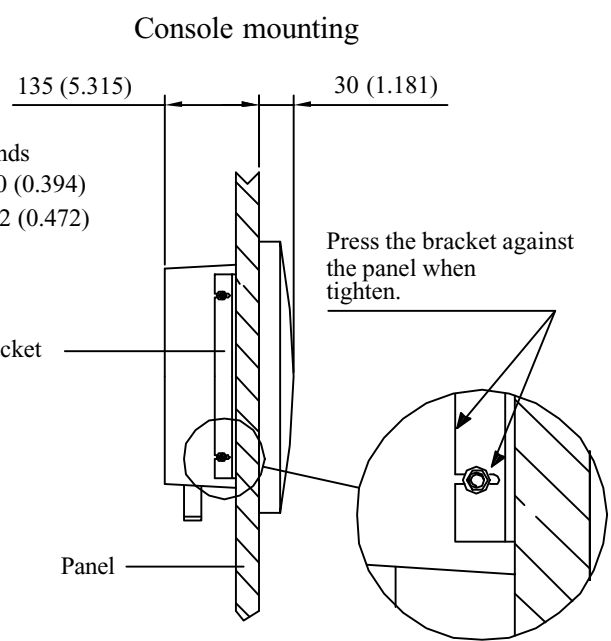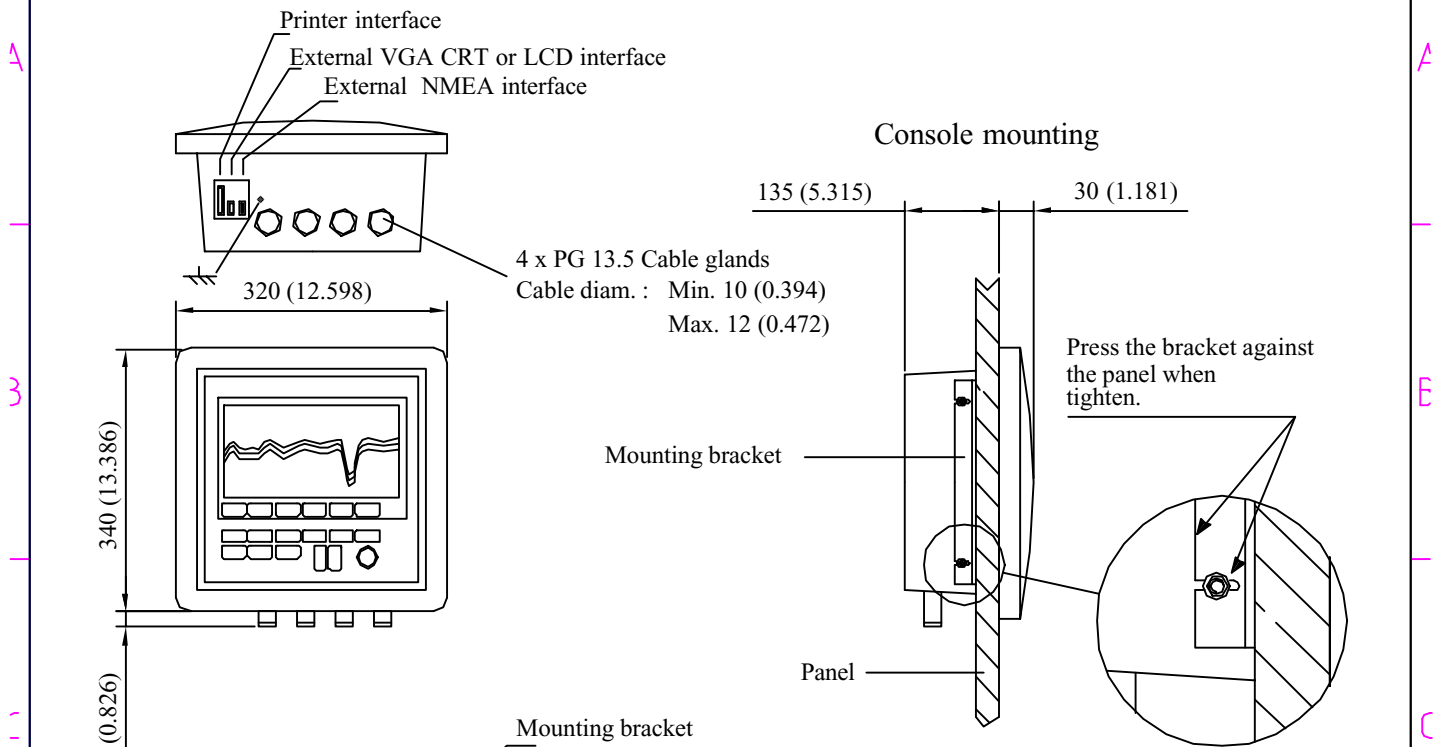
Panel Cut Out for console mounting:
300 wide x 320 high
(11.811) x (12.598)

Supply voltage	115/230VAC or/and 24VDC
Current consumption	115VAC/0.6A;230VAC/0.3A;24VDC/2A
Power consumption	70W/AC, 50W/DC
Operating temperature range	-15° C ....+55° C
Storage temperature range	-20° C ....+70° C
Protection code	IP23
Id.-No.	2808145
Distance from magnetic compass : Standard type : 0,4m	
Steering type : 0,25	

Itemref	Quantity	Title/Name, designation, material, dimension etc		Article No./Reference		
Designed by AM	Checked by TW	Approved by - date VF-02.07.23	File name TB3007	Date 02.07.23		Scale 1:1

Skipper Electronics

Dimentional Drawings GDS101

TB3007

	Edition 1	Sheet 1/1

Fig 4.3   Operator Unit, Dimensions in mm. Weight ca. 10kg.   38

Select a position to provide free view of the panel as well as easy access during operation and service.
The operator unit may be mounted flush in a panel or directly onto a bulkhead. Fig.4.3 shows the operator unit along with the main installation dimensions.
If the unit is to be flush mounted, the shown cut-out and recession depth dimensions must be observed.

Remember to leave room in front of the unit to open the door a full 90 degree.

Do not perform installation work with system power applied!!

Cables are led through the appropriate cable glands as follows:
The cable from the transducer(s) should normally occupy the left gland. The right gland is used for power supply connection whereas the centre ones are used for any interface signals connected.
Power supply may be either 230V/115V AC or 24V DC. Power consumption is appx. 50W at 24V, appx. 70W at 115/230V.
The transducer is always connected with 1 pair plus screen. See Fig 4.7.

If the AC power system is 115V, GDS101 may be prepared for 115V AC by re-connecting the connectors J102, J103 as shown in Fig. 4.4

This diagram also shows position of fuses for 230/150 VAC and 24 V DC. These fuses are normal 5 x 20 mm glass fuses.

AC supply:	FS100, FS101	230V	0.5A	Slow blow
		115V	1A	Slow blow
DC supply:	FS102	24V	3.15A	Slow blow

When the installation is complete, and power is connected to the Operator Unit, the appropriate power switch by the power terminals is switched on. For daily operation, these switches may stay on and the unit is switched off by pressing the "SYSTEM off" button on Screen 2. The unit is switched on by pressing any button.

Both 230/115 VAC and 24V DC power may be connected and switched on at the same time. If one of these supplies shuts down, changeover is automatic.

AC Voltage Selection:

Transformer Primary to:

J102 for 230V
J103 for 115V

Fit dummy plug on
opposite connector

Fuses:

230V AC:
FS100, FS101   0.5A

115V AC:
FS100, FS101   1A

24V DC
FS102   3.15A

J104

J102

J103

FS101

FS100

FS102

SW101

ON

OFF

SW100

ON

OFF

+24VDC
Power

115/230VAC
Power
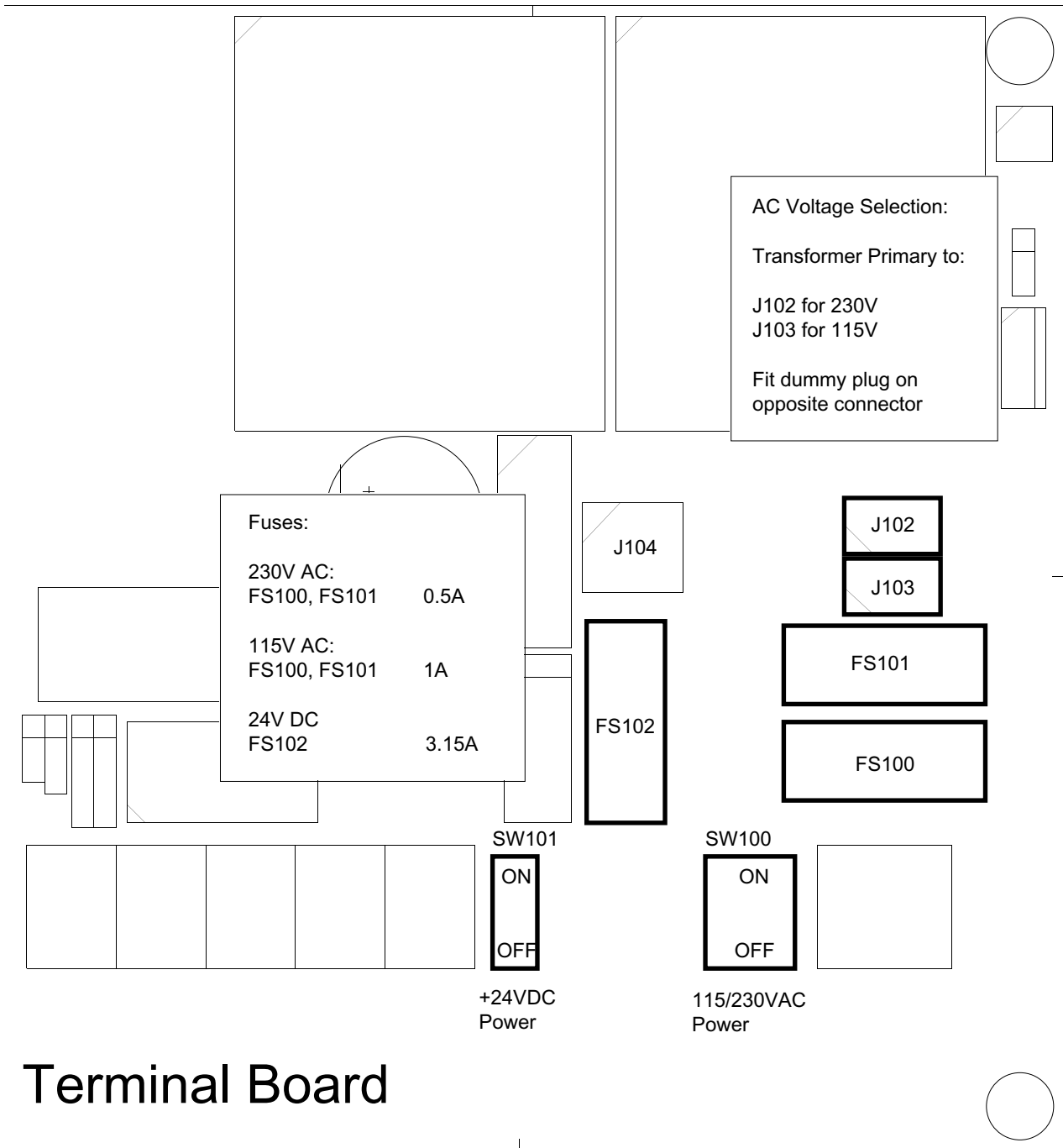
Terminal Board

Fig. 4.4   Voltage selection connectors and fuses, Terminal Board.
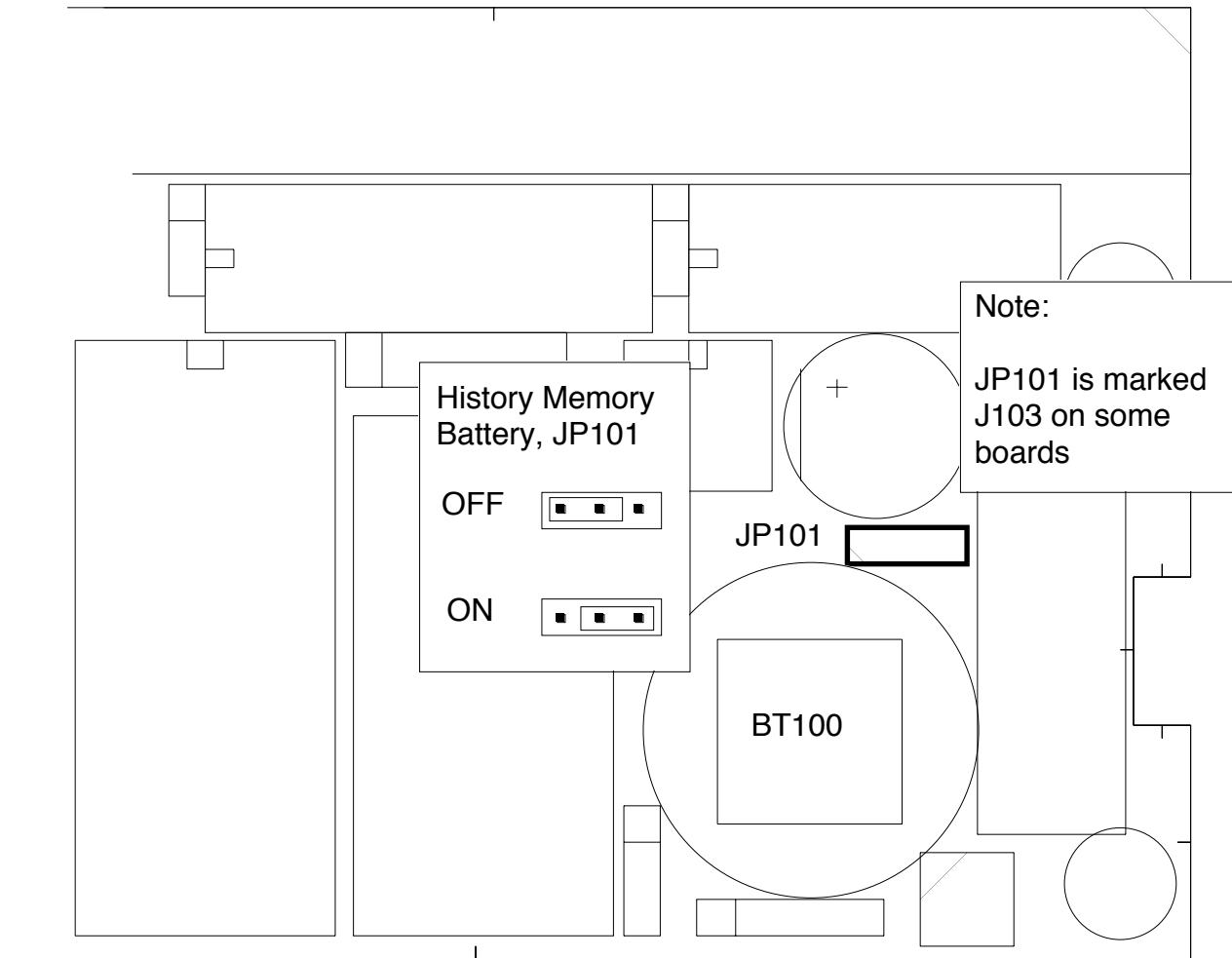
Fig. 4.5   History Memory Battery Jumper, I/O Board.

Back-up Battery Jumper

After installation is complete and system power is applied, it is necessary to connect the history memory battery to provide power to the History Memory during system power failure. Refer to Fig. 4.5 for the correct setting of the History Memory battery jumper "ON" position. This jumper should be set to the "OFF" position only during extended unit storage periods. The onboard battery is loaded only when no power is applied to the power terminals.
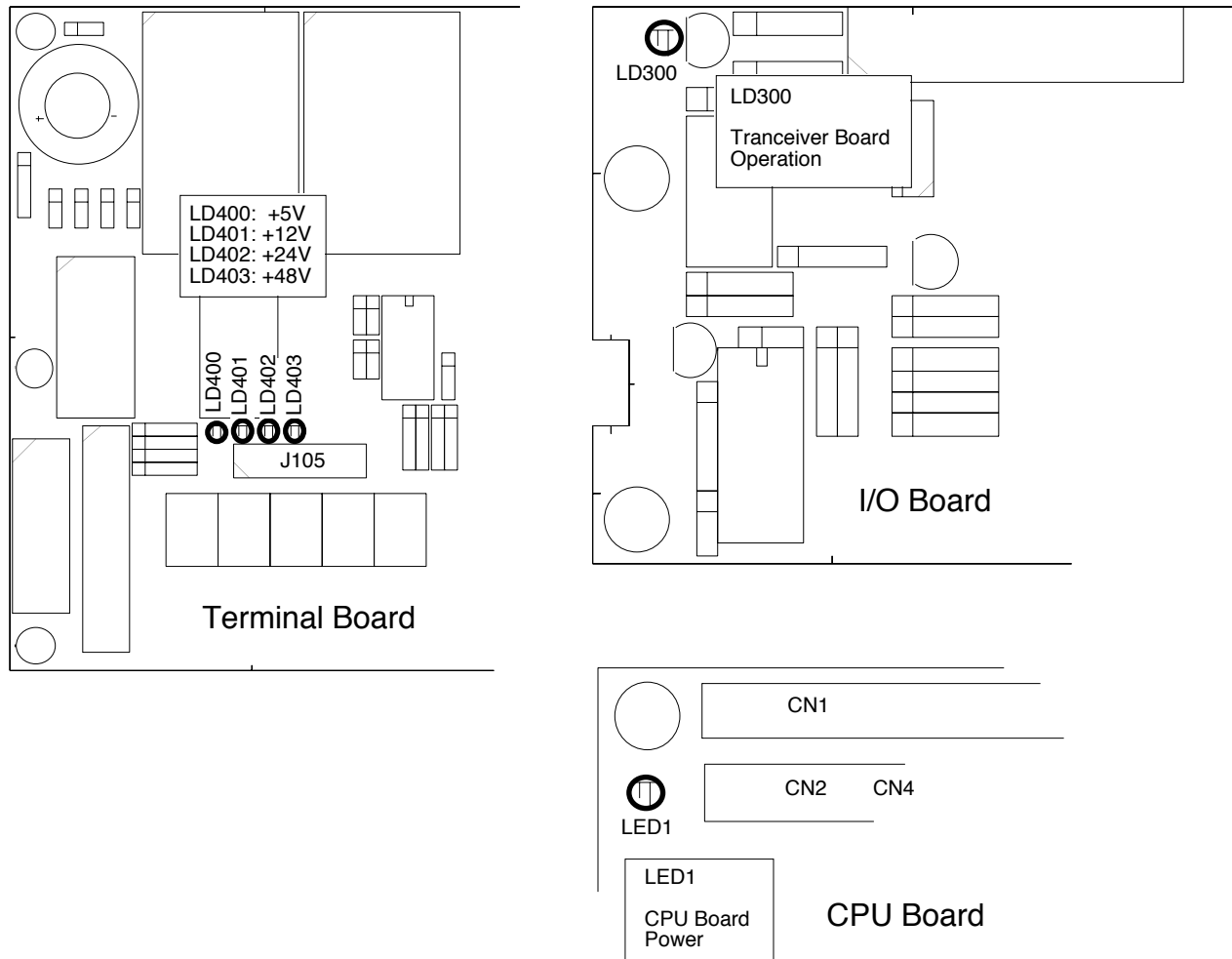
Fig. 4.6   Function LEDs, Terminal, I/O and CPU Boards.

Power Indication and function LEDs.

The following LEDs are located on the Terminal Board:

LD400	+5V
LD401	+12V
LD402	+24V
LD403	+48V

The following function LED is located on the I/O Board:

LD300   Transceiver board operation

There is one function LED on the CPU board

LED1   CPU board power

Fig. 4.6 indicates position of these LEDs.

Fig. 4.7   Main Wiring Diagram.

Connect transformer primary
to J102 for 230V AC or
to J103 for 115V AC

Fit protection plug on unused connector

AC Mains Power Supply
230V 0.4A 60-80W
115V 0.8A 60-80W

DC Power Supply
24V 2A 40-50W

If 24V DC Supply is not used, GDS101 may source
up to 200 mA to loads connected to the 24V DC Terminals

Use Marine Twisted Pair Installation
Cable for all Signal cabling

Analogue Current Output
ANA DEPTH 4-20" must
e terminated by max
70R for proper operation
f the analogue depth outputs

Alarm Relay
COM: Common
NO: Normally Open
NC: Normally Closed

Log Signal 100 or 200 pulses per nM

Remote printer start

Remote Inhibit/Syncronisation

External Alarm Reset

Xmitter Pulse emitter(E) collector(C)

Bottom Pulse emitter(E) collector(C)

Receiver Video emitter(E) collector(C)

Analogue Depth 0 - 10V

Analogue Depth 4 - 20mA

PT200 Temperature Sensor

Remote Keyboard +24V is
connected to INHIB+.
R218 = 0R on Terminal Board
Version D.
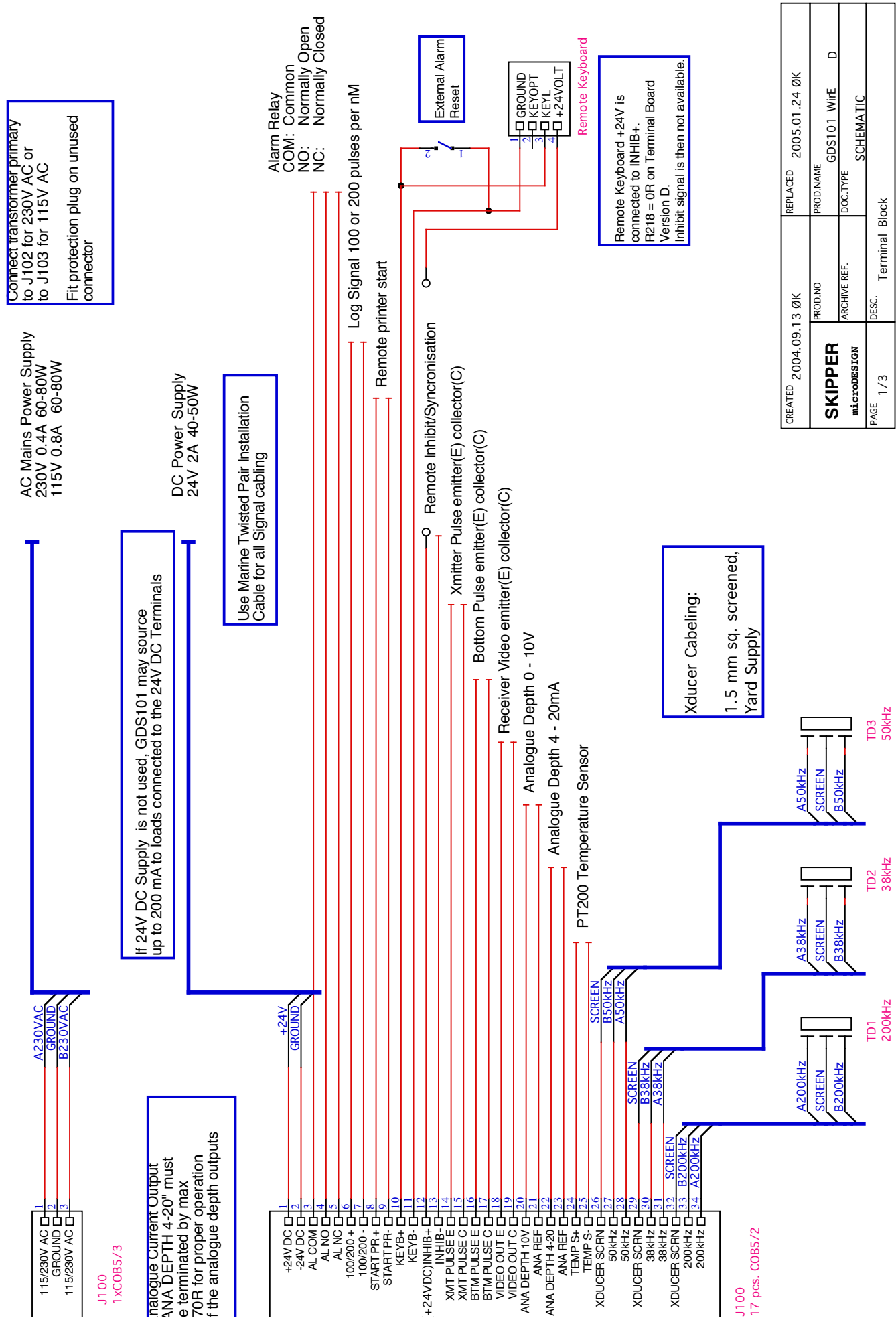Inhibit signal is then not available.

Remote Keyboard
1 GROUND
2 KEYOPT
3 KEYL
4 +24VOLT

Xducer Cabeling:
1.5 mm sq. screened,
Yard Supply

TD3 50kHz
A50kHz
SCREEN
B50kHz

TD2 38kHz
A38kHz
SCREEN
B38kHz

TD1 200kHz
A200kHz
SCREEN
B200kHz

J100
1xCOB5/3

1 115/230V AC   A230VAC
2 GROUND   GROUND
3 115/230V AC   B230VAC

+24V
GROUND

J100
17 pcs. COB5/2

1   +24V DC
2   -24V DC
3   AL COM
4   AL NO
5   AL NC
6   100/200 +
7   100/200 -
8   START PR +
9   START PR-
10 KEYB+
11 KEYB-
12 +24VDC)INHIB+
13 INHIB-
14 XMT PULSE E
15 XMT PULSE C
16 BTM PULSE E
17 BTM PULSE C
18 VIDEO OUT E
19 VIDEO OUT C
20 ANA DEPTH 10V
21 ANA REF
22 ANA DEPTH 4-20
23 ANA REF
24 TEMP S+
25 TEMP S-
26 XDUCER SCRN
27 50kHz
28 50kHz
29 XDUCER SCRN
30 38kHz
31 38kHz
32 XDUCER SCRN
33 200kHz
34 200kHz

SCREEN B50kHz A50kHz
SCREEN B38kHz A38kHz
SCREEN B200kHz A200kHz

SKIPPER
microDESIGN
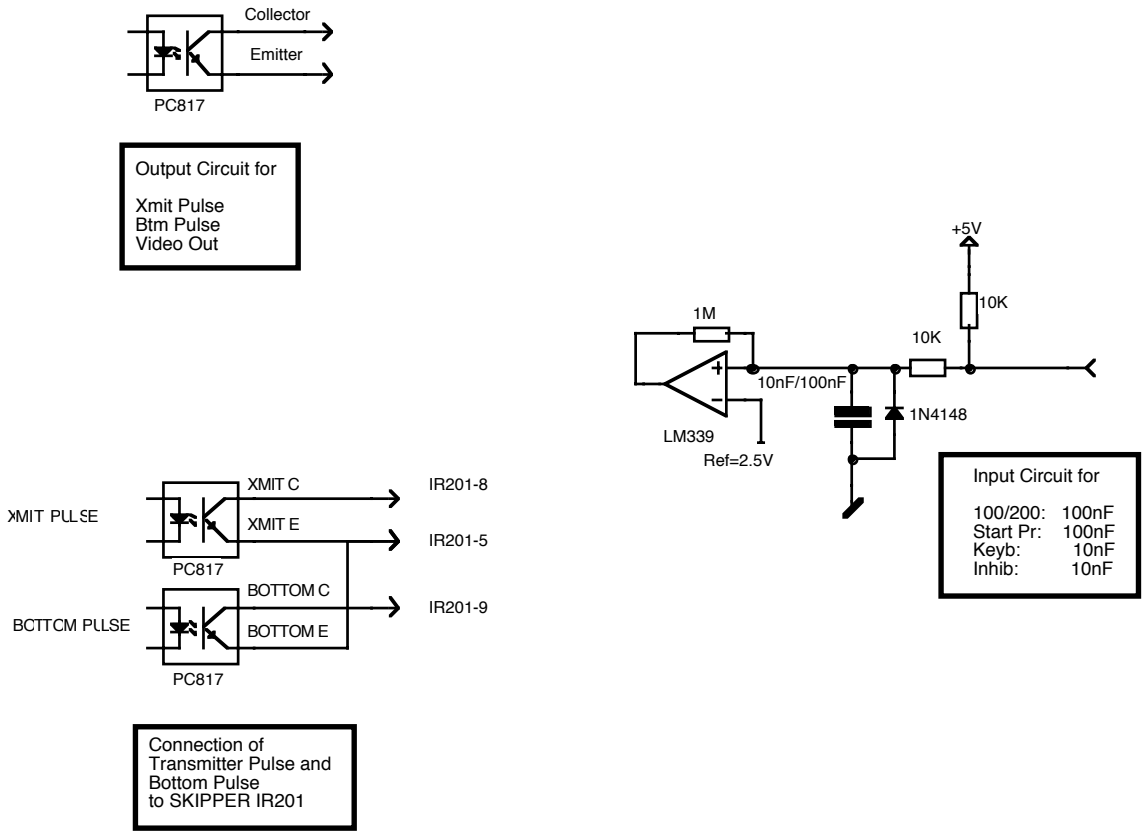
CREATED 2004.09.13 ØK   REPLACED   2005.01.24 ØK
PROD.NO   PROD.NAME   GDS101 WirE   D
ARCHIVE REF.   DOC.TYPE   SCHEMATIC
PAGE 1/3   DESC.   Terminal Block

43

Fig. 4.8   Input/Output Circuitry.

INTERFACING.

Alarm relay

An alarm relay is provided for interconnection to external alarm systems. This relay is normally energised, and is released by alarm conditions or power failure/power off. See Fig. 4.7.

The terminals have the following significance:

ALCOM   Common Terminal.
ALNC   Normally closed Contact (Normal = "No alarm" condition)
ALNO   Normally open Contact

To comply with MED rules, it is mandatory to connect this output to an audible alarm system.

External alarm reset function

External alarm reset function.
Can be connected at Key+/Key-, possibly in parallel with external keyboard.
External reset will disengage alarm relay and reset audio alarm (if enabled).
Visual alarm (blinking digital depth indication) is not affected and must be reset locally,
by pressing any key on the panel.

External alarm reset terminals are as follows:

KEYB+   External alarm reset Control Input +.
KEYB-   External alarm reset Control Input -.

Log Pulse input
See Fig. 4.7 and 4.8.

Pulse input terminals are as follows:

100/200 +	Log Pulse Input +.
100/200 -	Log Pulse Input -.

Refer to Screen 6 for selection of the log pulse rate.

Remote Transducer Selector FEEDB (Feedback)
See Fig. 4.7 and drawing ENS518 in Appenndix

Transducer Selector control input terminals are as follows:

STPRINT +	Transducer Control Input +.
STPRINT -	Transducer Control Input -.

Transducer selector FORWARD position : (open - FORWARD/PORT   transducer selected)
Transducer selector AFT   position : (closed - AFT/STARBOARD transducer selected)

Transmitter and Bottom Pulse outputs
See Fig. 4.7 and 4.8.

Pulse output terminals are as follows:

XMIT C	Collector of Output Opto Coupler, Transmitter Pulse.
XMIT E	Emitter of Output Opto Coupler, Transmitter Pulse..
BOTTOM C	Collector of Output Opto coupler, Bottom Pulse.
BOTTOM E	Emitter of Output Opto coupler, Bottom Pulse.

Analogue interfaces

GDS101 is equipped with analogue outputs to supply analogue repeaters or other equipment with analogue inputs. The signals are galvanically connected to the GDS101. Standard range is 0 - 10V or 4 - 20mA corresponding to Shallow Max, Deep Max Settings. These settings may be accessed on Screen 5. See Fig. 4.7.

Analogue outputs from the GDS101 have the following significance:

ANA 10V	Positive analogue voltage output
ANA REF	Negative analogue reference
ANA 20MA	Positive analogue current output
ANA REF	Negative analogue reference

NMEA interface

The NMEA outputs provides NMEA0183 format depth information for other equipment with NMEA0183 inputs. Baud rate is 4800 or 9600, 8 bit, No parity. Several messages may be selected on Screen 7 and the enabled messages are transmitted every second.

The NMEA inputs accept position, speed, heading and UTC time messages from various navigators, compasses or speed logs.

The two inputs provided may be connected to different talkers, and both data streams will be received. There are two outputs that will drive each minimum of 10 standard NMEA0183 inputs

The NMEA0183 outputs and inputs are available on the J303 9-pin connector according to the diagram in fig. 4.9.

See Section **5, Start-up and system adaptation,** for a complete list of transmitted and received messages.

Fig. 4.9   **Data Communication Interfaces.**

47
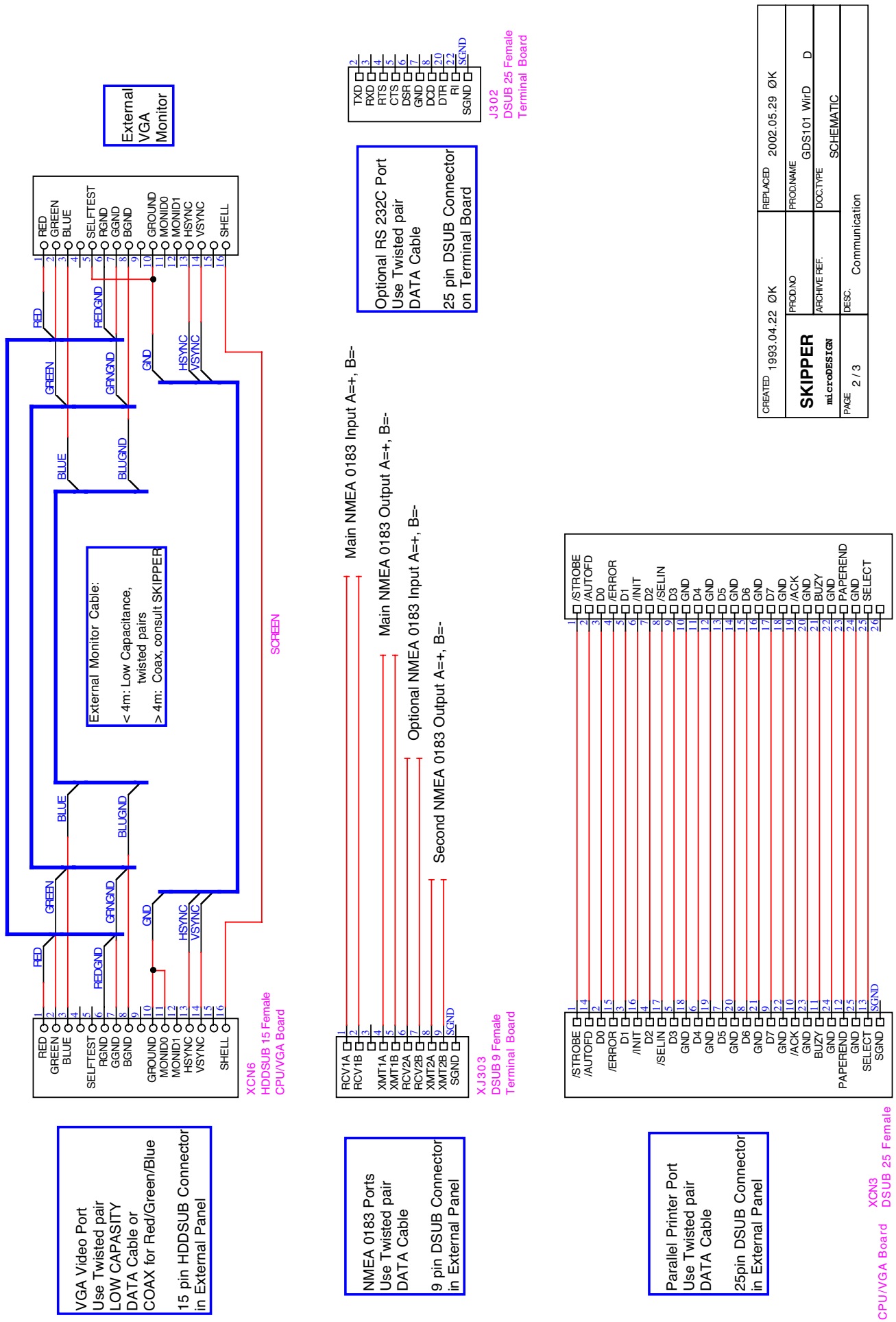
External Interface Ports

Ground Stud   4 x PG 13,5 cable entry 10-12mm

XJ303 :	NMEA ports	DSUB	9 pin female
XCN6 :	VGA terminal	HDDSUB	15 pin female
XCN3 :	Printer port	DSUB	25 pin female
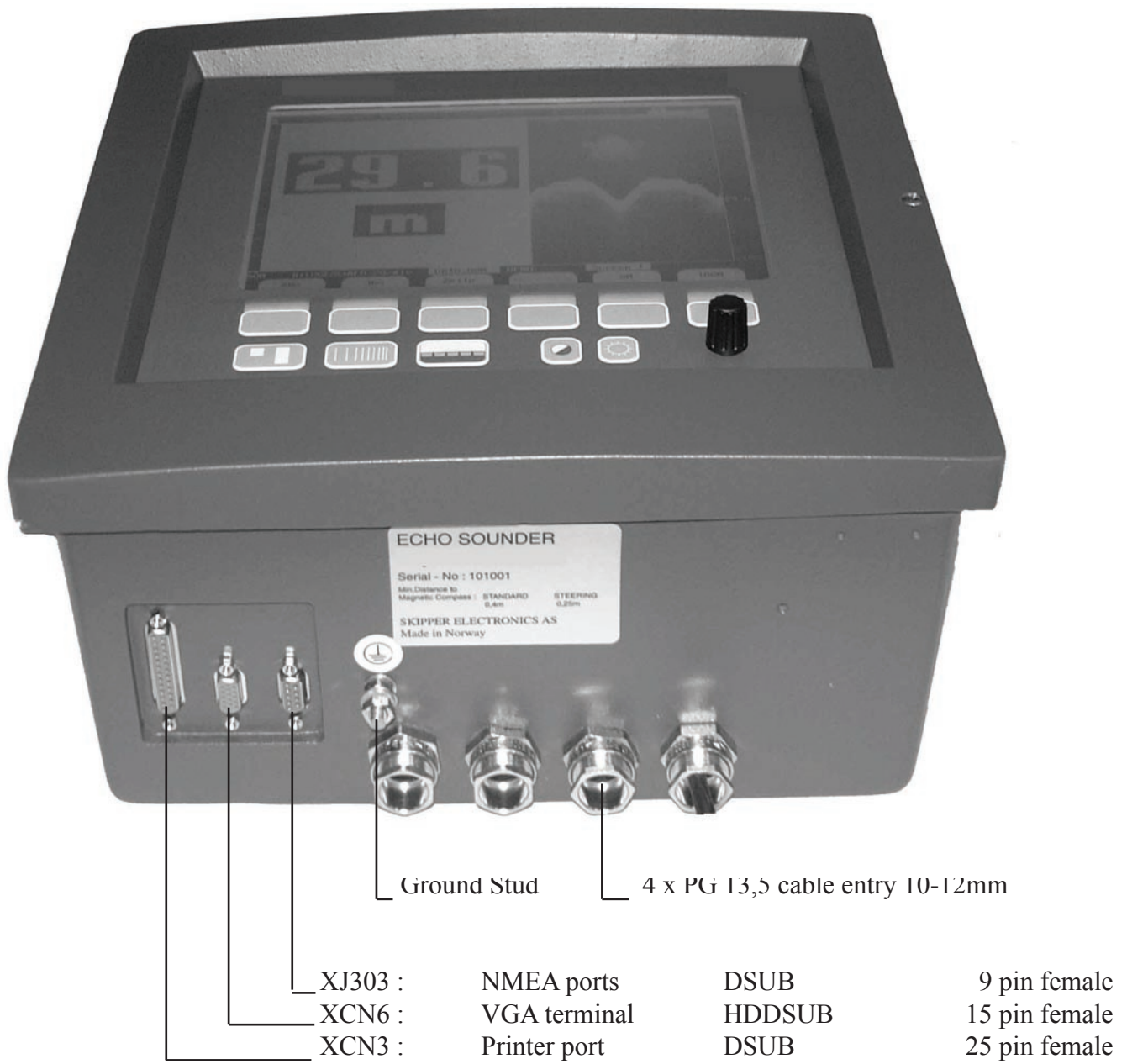
SEE FIG. 4.9 Data Communication Interfaces.

OPTIONS.

Repeaters/Slaves

Graphic CRT(VGA) or LCD displays or digital depth slave repeaters may be connected to the system.
Along with the graphic display repeaters there may also be installed remote keyboards.
The graphic repeaters require the installation of line driver units dependant on the distance between the main system and the repeater.
 See Fig. 4.7 and 4.9.

Remote Keyboard

The unit may optionally be operated from a remote keyboard.

KEYB-   Keyboard reference.
KEYB+   Keyboard signal.

See fig. 4.7 and 4.8

Remote Sounding Control.

This option lets the GDS101 being controlled remotely in synchronised, burst or single ping modes. If installed, these options are accessible on Screen 3.
See Fig. 4.7 and 4.8.

Sounder remote control terminals are as follows:

INHIB +   Control Signal Input +.
INHIB -   Control Signal Input -.

Refer to Screen 6 for selection of the control signal polarity.

5. START-UP AND SYSTEM ADAPTATION

SYSTEM ADAPTATION

Analogue Output And Log Pulse Input Range Selection.

From Screen 6 it is possible to set number of pulses per nautical mile (100or200or400) for the log pulse input.
Shallow and deep range limits for the analogue output may also be set, e.g.

50 m corresponding to 10V or 20 mA and
0 m corresponding to 0V or 4 mA.

Language and Units of Measure

From Screen 5 it is possible to select different languages and units of measure for the screen and printer character strings.
The available languages are: English, French, Spanish, Russian, German and Norwegian.

Units of measure may be selected for:

Depth: meters, feet, fathoms, braccias.
Picture Speed: min:sec, nm/div, km/div, miles/div.
Vessel Speed: knots, km/h, miles/h.
Sound Speed: m/s, feet/s.

Remote Transducer Selector

See Fig. 4.7 and 4.8.

Transducer Selector control input terminals are as follows:

STPRINT +   Transducer Control Input +.
STPRINT -   Transducer Control Input -.

STPRINT-/STPRINT+ input is processed as transducer selector input (open - FORWARD/PORT transducer selected, closed - AFT/STARBOARD)

Low frequency indication

When the 38 KHz transceiver channel has been modified to a different frequency, it is possible from screen 5 to adjust indicated value. Softkey SET LOW has five preset values (24/28/30/33/38 KHz) and encoder must be used to set any other value in the range of 10-200 KHz, when desired. Note that the 38KHz channel must be activated first (Screen 2, button "FREQUENCY").

Also, note that after Master Reset procedure the value is reset to factory default, and should be re-entered, if the actual value is different.

NMEA Setup

Screen 8 is used for verification of received NMEA messages and control of transmitted NMEA depth messages. Two digital communication channels are provided: primary NMEA 0183 (J303, RCV1A/B-XMT1A/B) and secondary RS232C/NMEA 0183, available on J303 (NMEA: RCV2A/B-XMT2A/B) and J303 (RS232C). Each channel can be programmed individually with respect to the baud rate and scope of transmitted messages. Before configuring of the required channel, it must be selected by the mean of softkey IN/OUT. Primary channel is called NMEA, while secondary - RS232. Note, that text window will represent information, which corresponds to the currently selected channel. The type of displayed messages - received from external talker (if connected) or transmitted by the sounder is selectable by the mean of softkey DISPLAY. For more easy analysis of the window contents, display can be prevented from continuous update, if "DISPLAY off" is selected. The baud rate may be set to 4800 or 9600, 4800 being the more common.
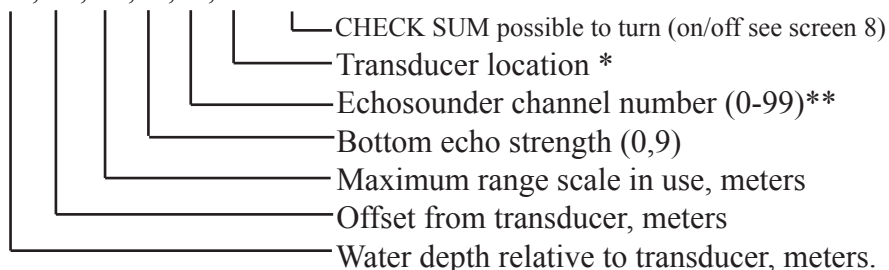
Transmitted messages are enabled individually by the mean of pair of softkeys MESSAGE and STATUS. To enable/disable particular message, select it from the list by pressing MESSAGE button until required message is appeared on the same button and then select the status of this message (on/off) by pressing STATUS button. It is advisable at this stage to set display in "output" mode, to be able to observe current scope of transmitted messages.

Transmitted talker identifier is SD, Sounder Depth. The following NMEA 0183, v3.0 messages may be transmitted:

Depth & Draught	$SDDPT,xxxx.x,xxxx.x,xxxx.x*hh<CR><LF>
Depth below surface	$SD**DBS**,xxxx.x,f,xxxx.x,M,xxx.x,F*hh<CR><LF>
Depth below transducer	$SD**DBT**,xxxx.x,f,xxxx.x,M,xxx.x,F*hh<CR><LF>
Depth below keel	$SD**DBK**,xxxx.x,f,xxxx.x,M,xxx.x,F*hh<CR><LF>
[Fore/Aft] transducer	$SDXDR,D,x,x,M,c-c,<Cr><Lf>

In case of multiple transducers installation the following SKIPPER proprietary sentence must be selected:

$PSKPDPT,x.x,x.x,x.x,xx,xx,c-c*hh<CR><LF>

CHECK SUM possible to turn (on/off see screen 8)
Transducer location *
Echosounder channel number (0-99)**
Bottom echo strength (0,9)
Maximum range scale in use, meters
Offset from transducer, meters
Water depth relative to transducer, meters.

* Text string, indicating transducer position : FWD/AFT/PORT/STB. If position is not preset by operator, empty field is provided.

** = 1 - 38KHz
= 2 - 50KHz
= 3 - 200KHz

The following messages are accepted for input to GDS101 and interpreted by the program. The talker identifier is ignored:

Time

Universal Time	ZZU,xxxxxx
Universal Time & Local	ZLZ,xxxxxx,xxxxxx,-xx
Day, Month, Year	ZDA,xxxxxx,xx,xx,xxxx,-xx

Position

Geographical Lat/Lon	GLL,xxxx.xx,N,xxxxx.xx,W

Geographical Fix, present	GXP,xxxxxx,xxxx.xx,N,xxxx.xx,W,cccc,x
Loran C Fix, present	GLP,xxxxxx,xxxx.xx,N,xxxx.xx,W,cccc
GPS Position	GGA,xxxxxx,xxxx.xxx,N,xxxxx.xxx,W,x

Heading

Heading, true, present	HDT,xxx.,T
Heading, magnetic, present	HDM,xxx.,M
Heading, compass	HCC,xxx.

Speed

Dual Doppler Vector	VBW,uxx.xx,uxx.xx,a,uxx.xx,uxx.xx,a

Composite

Loran C specific	RMA,a,xxxx.xx,N,xxxxx.xx,W,,,xx.x,xxx.,,*xx
GPS, Transit specific	RMC,xxxxxx,a,xxxx.xx,N,xxxxx.xx,W,xx.x,xxx., xxxxxx,,*xx
Track & Ground speed	VTG,xxx.,T,xxx.,M,xx.x,N,xx.x,K
Heading & Water speed	VHW,xxx.,T,xxx.,M,xx.x,N,xx.x,K

The following messages may be transmitted (Selected from Screen 7 and dependant on the DRAUGHT setting). The messages are enabled individually. Transmitted talker identifier is SD, **S**ounder **D**epth:

OPTIONS

Calibration, Sound Speed.

The only calibration activity necessary is when the Sound Speed option is installed. In this case, set the required sound Speed value in Screen 3.

External Ping Control.

When this option is installed, transmitter operation may be controlled by the external INHIBIT signal. The active polarity of this signal may be set on Screen 6. The following function options are available on Screen 3:

PING	continuous	Transmitter operation is continuous and not affected by the external signal.
	edge	The transmitter is activated <u>once</u> by an active signal edge.
	level	The transmitter is controlled by the external signal level. An active level keeps the transmitter running, a passive level stops the transmitter.
	single	The transmitter is activated ping by ping by pressing the PICTURE SPEED button on the Operator panel. The external INHIBIT signal is disabled.

6. SPECIFICATIONS DIMENSIONS

Transducer, 38 kHz	H * W * L	101 * 206 * 255 mm
	Mounting	Tank
	Cable length	40m
	Weight	appx. 20 kg
	Protection	IP 68

Transducer, 50 kHz	Diameter	90 mm
	Mounting	**Tank and Gate Valve**
	Cable length	25m or 40m
	Weight	appx. 7 kg
	Protection	IP 68

Transducer, 200 kHz	Diameter	140 mm
	Mounting	**Tank**
	Cable length	25 or 40m
	Weight	appx. 8 kg
	Protection	IP 68

Transducer, 200 kHz	Diameter	90 mm
	Mounting	**Gate Valve**
	Cable length	25m
	Weight	appx. 7 kg
	Protection	IP 68

Transducer Junction Box	Size incl. glands	132 * 111 mm
	Depth	55 mm
	Weight	0.6 kg
	Protection	IP 56

Operator unit cabinet	Height, front	340 mm
	Width	320 mm
	Depth	170 mm
	Weight	appx.10 kg
	Protection	IP 23

FUNCTIONAL PROPERTIES

Display:	10,4" 158 x 211 mm graphic Dot-Matrix super twist color LCD Screen with adjustable day/night vision and Backlight. 640 x 480 pixels.
Printer:	Optional External Printer: Raytheon 104-033 HP600 or 900serie.(ask for type) All Information is printed.
Depth Alarms	Deep and shallow Limits.
Calendar/Clock	Year-Month-Day / Hours-Minutes-Seconds (24 hour system).
Interface Outputs	Trigger- and Bottom-Pulses. Analogue 4-20mA and 0-10V for Depth. Detected Video. NMEA 0183 for Depth. Alarm Relay. Output for VGA Repeater. RS-232 C. PC Parallel Printer Port

Interface Inputs	100/200 Pulses for Speed.
	NMEA0183 for Speed, Position, Heading and Time.
	Temp. Sensor Input.
	Remote Transducer Selector
Languages	English, French, Spanish, Russian, German and Norwegian.
Options	UDR or IR301 digital remote depth Indicator.
	LCD Repeater.
	Remote Keyboard.
	Remote Sounding Control.
	Auto Range
	Sound speed calibration

Performance

Depth Range:		0 - 1600 m
Graphic resolution:		0.5% of Range
Digital resolution:		<10 m: 0.1 m
		10 m: 1 m
Transducer, 38 kHz	Beam Angle	18° * 9°
	Max. Power	1kW
	Effective Range	1600m
Transducer, 50 kHz	Beam Angle	33° conical
	Max. Power	1kW
	Effective Range	1000m
Transducer, 200 kHz	Beam Angle	6° conical
	Max. Power	1kW
	Effective Range	500m

Environmental according to IEC60945 :

Transducer and Junction Box

Operating temperature	-15 - 55 degree C IEC60945
Storage temperature:	-20 - 70 degree C
Protection, Transducer:	6 bar
Protection, parts inside hull:	IP66

Operator Unit Cabinet

Supply voltage:	230V(195-253VAC) or 115V(96-125VAC)
	24V DC (20-32V)
Power consumption:	50W at 24V, 70W at 230V or 115V
Alarm relay:	Change-over contact, max. 24V 300 mA
RS232 port:	Standard 25 pin D-Sub Connector.
NMEA port:	9 pin D-Sub. 2 Inputs, 2 Outputs.
Operating temperature:	-15- +55 degree C according to IEC60945
	To increase serviceability and life-time, we suggest the working temperature to be held at 0- +40 degrees C.
Storage temperature:	-20 - +70 degree C
Humidity:	10 - 90% relative, no condensation.
Protection	IP 23

7. SERVICE

All service requests should be made to the local SKIPPER representative.

Adjustments and repairs should only be performed by qualified service engineers, and
Unqualified repair attempts will void the warranty.

CPU Board Setup Procedure.

(Valid for GDS 101u with connection for external printer and PCA-6135 type CPU
  with Flash RAM installed.)

1. Hardware.

   Jumpers on the CPU board must be set as follows: JP1: 1-2, JP 4: 1-2, JP 9: 2-3,
   JP14: 1-2, JP15: 2-3.
   Remaining jumpers JP 2, JP 3, JP 5, JP 6, JP 7 are not applicable.
   Jumpers JP 8, JP 10, JP 12, JP 13 are connectors.
   Check that 1 SIMM board (4M RAM) has been properly inserted in the "SIMM 1"
   bank, and locked.

2: Software.

A. Connect a PC Keyboard to the CPU board.
B. Connect a VGA Screen to the CPU board.
C. Switch the GDS 101 Power "ON" while pressing ''DELETE'' key.
D. Do not release ''DEL'' key until several click's , beep's and signals have been
    heard, and picture is present on VGA screen.. Then release key.
    If the CPU has been set up before, clicking sound may not be present.
E. VGA screen will show ''AMBIOS Hiflex Setup Utility.''
F. Select in menu "Standard CMOS Setup", using UP/DOWN arrows.
G. Press "Enter" once.
H. Using keys "Arrow UP", "Arrow DOWN", will move pointer in menu.
I. To modify parameters use keys "Page UP", "Page DOWN".
J. In Standard CMOS Setup, set parameters as follows.
   - Date: Weekday-Month-Date-Year.
   - Time: Hours - minutes - seconds.

   - Floppy drive A: Not installed.
   - Floppy drive B: Not installed.

   - Pri Master: Not installed
   - Pri Slave: Not installed.

   - Boot Sector Virus Protection: Disabled

To exit " Standard CMOS Setup ", press key "ESC".

K. Select in menu "Advanced CMOS Setup".

L. Press "Enter" once.

M. Use same method as "H" and "I" to modify parameters.

N. Set "Advanced CMOS Setup" parameters as follows.

  - 1st Boot Device: Disabled.
  - 2nd Boot Device: Disabled.
  - 3rd Boot Device: Disabled.
  - 4th Boot Device: Disabled.
  - Boot from Card BIOS: No.
  - Try other Boot Devices: Yes.
  - S.M.A.R.T. for Hard Disks: Disabled.
  - Boot Up Num Lock: On.
  - Floppy Drive Swap: Disabled.
  - Floppy Drive Seek: Disabled.
  - Floppy Access Control: Normal.
  - HDD Access Control: Normal.
  - System Keyboard: Absent.
  - Primary Display: VGA/EGA.
  - Password Check: Setup.
  - System BIOS Cacheable: Enabled.
  - C000,32K Shadow: Disabled.
  - C800,32K Shadow: Disabled.
  - D000,32K Shadow: Disabled.
  - D800,32K Shadow: Disabled.
  - E000,32K Shadow: Disabled.
  - E800,32K Shadow: Disabled.

To exit "Advanced CMOS Setup" use key "ESC".

O. Select in menu "Advanced Chipset Setup".

P. Press "Enter" once.

Q. Set "Advanced Chipset Setup" parameters as follows.

  - AT Bus Clock: 14.318/2.
  - Slow Refresh: 120 us.
  - Memory Hole At 15-16M: Enabled.
  - RAS Precharge Time: 3.5T.
  - RAS Active Time Insert Wait: Disabled.
  - CAS Precharge Time Insert Wait: Disabled.
  - Memory Write Insert Wait: Disabled.
  - Memory Miss Read Insert Wait: Disabled.
  - ISA Write Cycle End Insert Wait: Enabled.

  - I/O Recovery: Enabled.
  - I/O Recovery Period: 0.75us.
  - On-Chip I/O Recovery: Disabled.
  - 16Bit ISA Insert Wait: Enabled.

To Exit "Advanced Chipset Setup", press key "ESC".

R. Select in menu "Power Management Setup".

S. Press "Enter" once.

T. Set parameters as follows:
  - Power Management Mode: Disabled.

All other options will be disabled automatically.

To exit "Power Management Setup", press key "ESC".

U. Select in menu "Peripheral Setup".
V. Press "Enter" once.
W. Set parameters as follows.
  - Onboard SSD: Disabled.
  - Harddisk Delay: Disabled.
  - Onboard IDE: Disabled.
  - Onboard FDC: Disabled.
  - Floppy Drive Swap: Disabled.
  - Onboard Serial Port 1:   3F8h/COM1.
  - Onboard Serial Port 2:   2F8h/COM2.
  - Onboard Parallell Port: 378h.
  - Parallell Port Mode: Normal.
  - EPP Version: N/A.
  - Parallell Port IRQ: 7.
  - Parallell Port DMA Channel: N/A.

To exit "Peripheral Setup", use key "ESC".

X. Select in menu:"Save Settings and Exit", and "Enter".
Y. Confirm "Y", and "Enter".

Wait until ''Hit Alt-S'' appears on screen.
Press key ''Alt'' and hold it down, then you press key ''S''.
A small blue menu should now appear on the screen.

Set the parameters:
SSD IC TYPE: FLASH 512k.
MEMORY SEGMENT WINDOW: E 000-E1FF.
SSD DRIVER EMULATED: 2 ND.
WRITE TO SSD EPROM AND EXIT: Press ''Enter.''

VGA Screen will now show normal echogram in colours.

GDS 101u LCD Screen will show normal echogram.

Disconnect external keyboard and VGA Monitor.

MASTER RESET PROCEDURE.

After completed Set-up Procedure you should always do a ''MASTER RESET'':

Switch off the GDS 101u, using the internal toggle switch and wait for 20 seconds.
Then press down and keep pressed the softkey to the far right and far left (No. 1 and 6.) in the upper row on the GDS101u keyboard.

Turn the GDS101u ''on'' and keep the two softkeys pressed down until the screen shows the normal picture.
This may take as long as approx. 30 seconds.
You should normally hear 4 ''beeps'' at the end of the procedure.
Check screen 9. IC 1, 2 and 3 should now indicate OK.
Check screen 7. HISTORY should now start counting from Zero.

8. APPENDIX Miscellaneous Installation Drawings

ITEM	QTY.	DESCRIPTION	MATERIAL
23	1	Transducer Element	St. steel
22	2	Screw M10 x 60mm. DIN 933	
21	1	Gasket for CableGland Dwg.SB3023.B	Neoprene
20	2	Flat Washer Dwg. SB3023.B	A4 St.steel
19	1	Nut for Cable Gland Dwg. SB3023.B	Brass
18	4	Flat Washer M16 DIN125	A4 St.steel(Econosto only)
17	4	Locking Nut M16 DIN985	A4 St.steel(Econosto only)
16	2	Bolt M16 x 300	Galvanized steel
15	1	Gasket 3mm Ø140/100mm Dwg.SB4014	Nitril
14	2	Gasket 1,5mm Ø115/162mm Dwg.SB4014	Klingersil, DN100
13	1	O-ring 139,29 x 3,53 □RAR00254	Nitril
12	2	O-ring 97,79 x 5,33 □RAR00344	Nitril
11	2	Screw M16 x 40 DIN933	A4 St.steel
10	4	Spring Washer M10 DIN127B	A4 St.steel
9	4	Screw M10 x 35 DIN933	A4 St.steel
8	24	Spring Washer M16 DIN127B	A4 St.steel
7	22	Nut M16 DIN934	A4 St.steel
6	1	Top Flange Dwg. SB3023	
5	1	Pressure Tube Dwg. SB3023.A	
4	1	Sensor Housing Dwg. SB3022	
3	1	Intermediate element Dwg. SB3021	St. steel (NAF)
2	1	Gate Valve element	Bronze (Econosto)
1	1	Bottom Flange Dwg. SB3024	

Designed by TKN	Checked by VF	Approved by – date SG-23.08.01	Title/Name, designation, material, dimension etc
File name Gate Valve Echo		Date 04.01.99	Article No./Reference
			Scale

SKIPPER Electronics A/S

GATE VALVE ARRANGEMENT
For 50KHZ AND 200KHZ TRANSDUCERS

SB 3020

Edition II

Sheet 1/1

RevNo Revision note Date Signature Checked

SAFETY BOLTS FOR DISMANTLING PURPOSES

EXTRACTION SCREWS FOR SENSOR HOUSING (POS. 4)

BOTTOM PLATE

WEIGTH COMPLETE GATE VALVE CA. 65 KG

ASSEMBLY FOR SHIPMENT, DOCUMENT NO. :
PROCEDURE FOR PRESSURE TEST, DOCUMENT NO. :

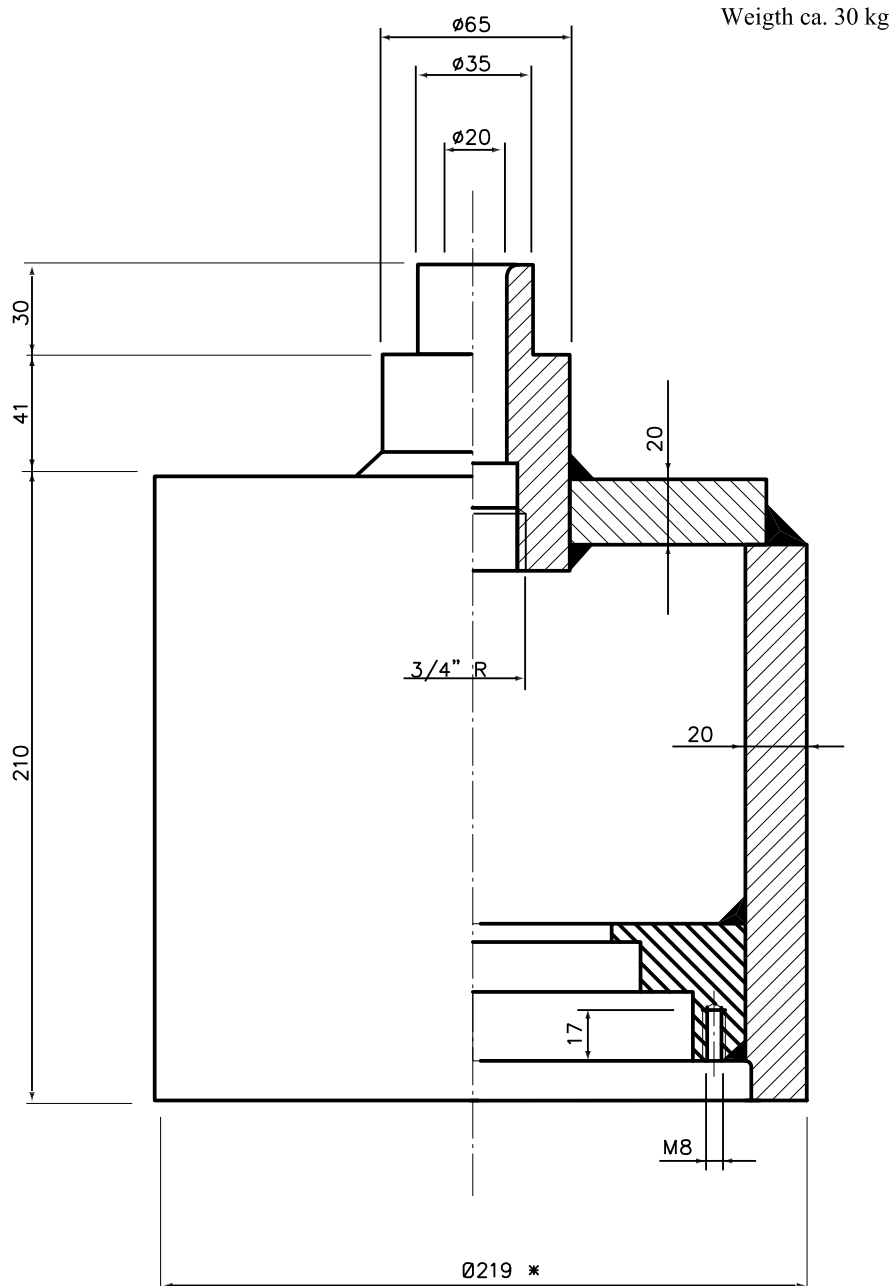| RevNo	Revision note				Date	Signature	Checked

ø65

ø35

ø20

Weigth ca. 30 kg
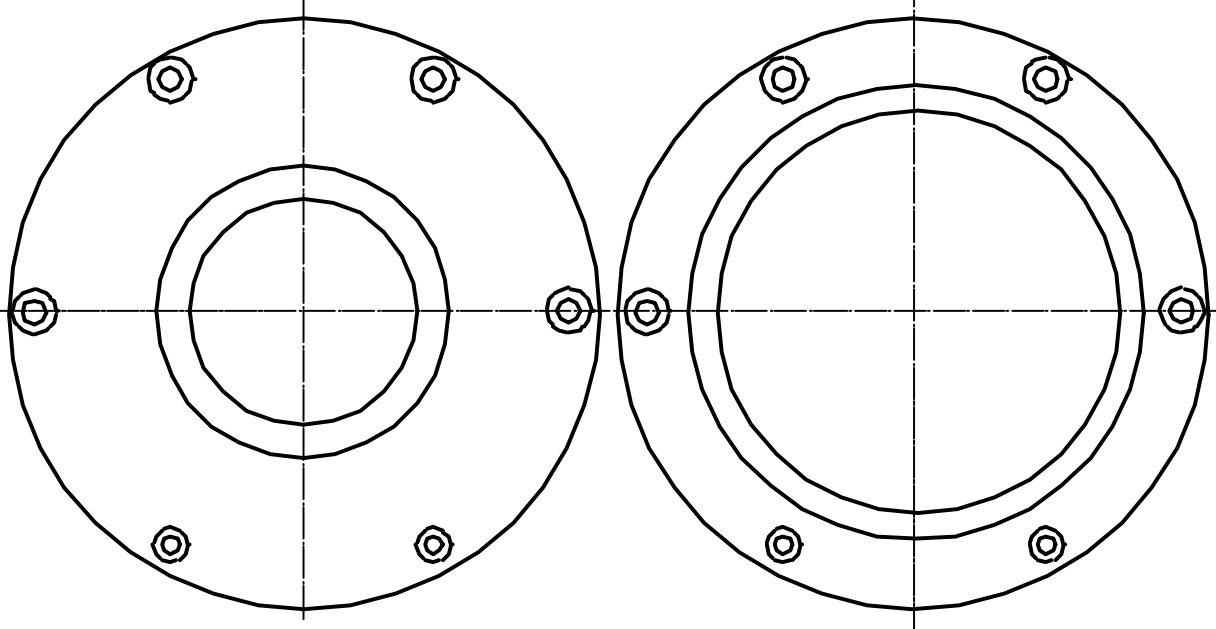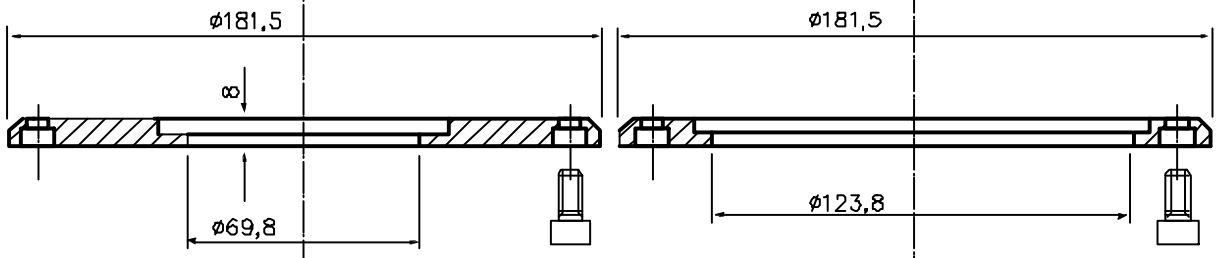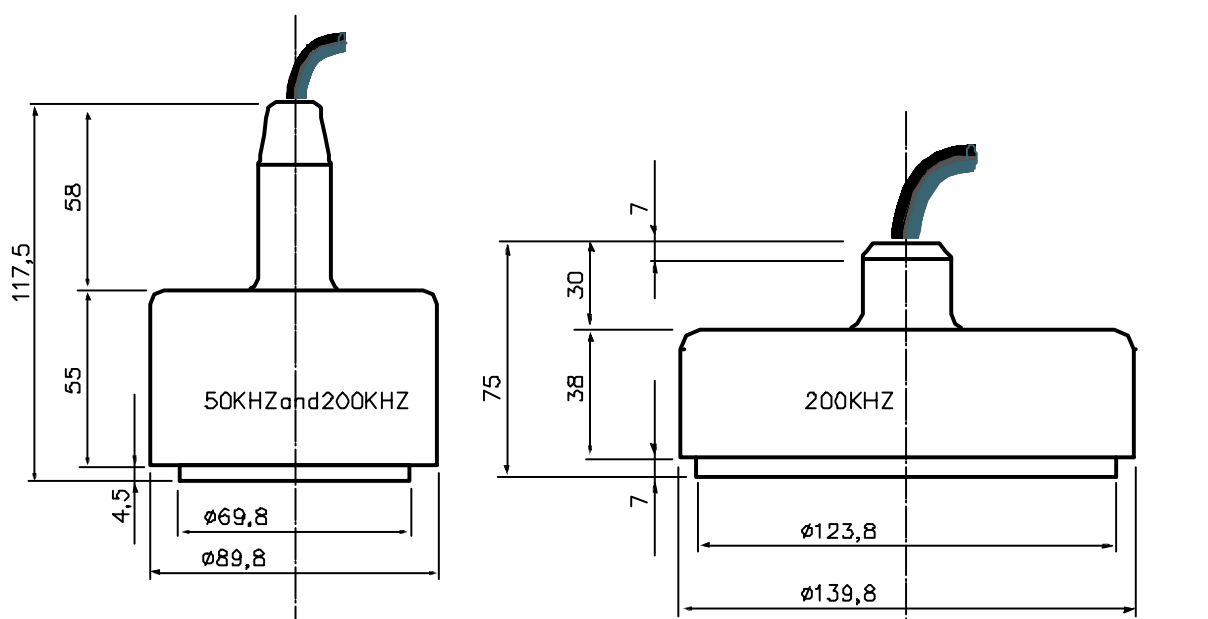
30

41

210

20

20

3/4" R

17

M8

Ø219 ✳

* NOTE: DUE TO SURFACE MACHINING, THE DIAMETER MAY VARY
BETWEEN 217 AND 219MM

Itemref	Quantity	Title/Name, designation, material, dimension etc			Article No./Reference		
Designed by AM		Checked by VF	Approved by – date	File name TB2002	Date 00/00/00		Scale 1:1

Skipper Electronics AS

Transducer Tank

TB 2002

| | Edition 0 | Sheet 1/1 |

50KHZ and 200KHZ

117,5
58
55
4,5
Ø69,8
Ø89,8

200KHZ

75
7
30
38
7
Ø123,8
Ø139,8

Ø181,5
8
Ø69,8

M8X16 ALLEN SCREW X 6

Ø181,5
Ø123,8

M8X16 ALLEN SCREW X 6

Itemref	Quantity	Title/Name, designation, material, dimension etc		Article No./Reference	
Designed by AM	Checked by VF	Approved by – date	File name TB2001	Date	Scale 1:1

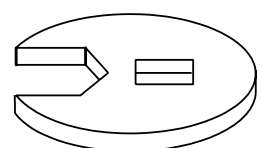Skipper Electronics AS

Transducer and Mounting ring

TB 2001

Edition 0	Sheet 1/1

PROVIDE APPROX. 3/4 M OF CAbLE BETWEEN CABLE GLAND
AND THE TRANSDUCER ELEMENT

SØRG FOR AT KABELLENGDEN MELLOM KABELGJENNOMFØRING
OG SVINGERELEMENT ER CA. 3/4 M.

TUBE
REF. TA 3004

RØR
REF. TA 3004

TRANSDUCER ELEMENT
WITH 25 or 40M. CABLE
SVINGERELEMENT
25 eller 40M. KABEL
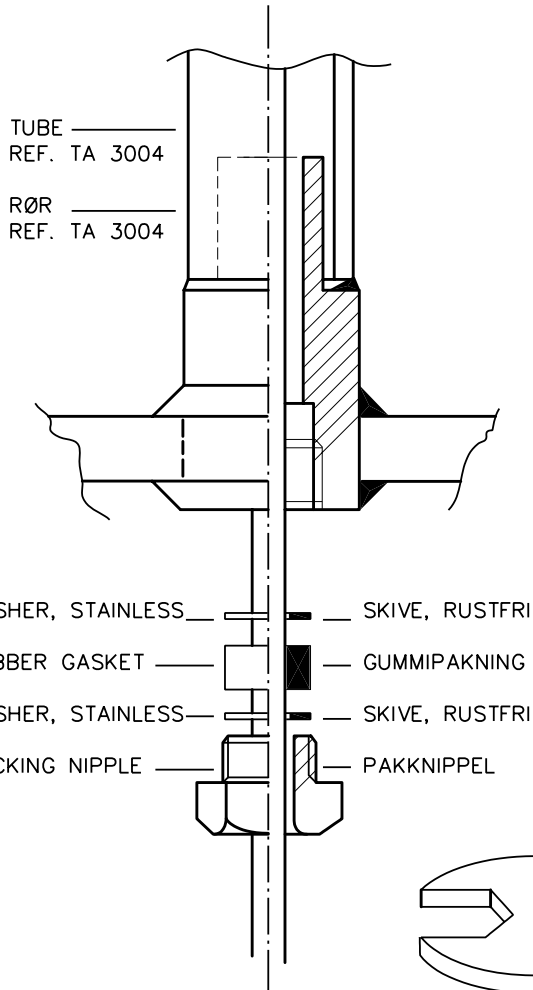
WASHER, STAINLESS — SKIVE, RUSTFRI

RUBBER GASKET — GUMMIPAKNING

WASHER, STAINLESS — SKIVE, RUSTFRI

PACKING NIPPLE — PAKKNIPPEL

MOUNTING RING
MONTASJERING

ALLEN SCREW M8X16
APPLY LEAD OR SIM.
ON THREADS

SYL.HODE SKRUE M8X16
PÅFØR BLYHVITT EL.LIGN.
PÅ GJENGER

SPECIAL WRENCH/TOOL FOR
TIGHTENING OF PACKING NIPPLE

SPESIALVERKTØY FOR STRAMMING
AV PAKKNIPPEL

ALLEN KEY, 6MM
NØKKEL, 6MM

Itemref	Quantity	Title/Name, designation, material, dimension etc			Article No./Reference	
Designed by AM	Checked by VF	Approved by – date		File name TB3003	Date	Scale 1:1

Skipper Electronics AS

Mounting of Transducer

TB 3003 — Edition 0 — Sheet 1/1

63

WATERTIGHT JUNCTION BOX MUST BE SITED FOR EASY
ACCESS IN AN EXPLOSION—SAFE PLACE, OVER MAX. WATHER LINE.

VANNTETT KOPLINGSBOKS PLASSERES PÅ IKKE
EKSPLOSJONSFARLIG, LETT TILGJENGELIG STED, OVER MAX. VANNLINJE.

STEEL PIPE, MIN. 35MM DIAM. INSIDE.
WALL THICKNESS:
— GALVANIZED PIPE: MINIMUM 6 MM
— BLACK PIPE: MINIMUM 10 MM
QUALITY OF MATERIAL:
— STATED IN VERITAS CAP. X. PARA. 7A, TYPE III
THE PIPE TO BE WELDED BEFORE PULLING THE CABLE.
EXPANDING POSSIBILITIES MUST BE ARRANGED.
MAXIMUM DISTANCE BETWEEN PIPE CLAMPS, 25 X PIPE DIAM.
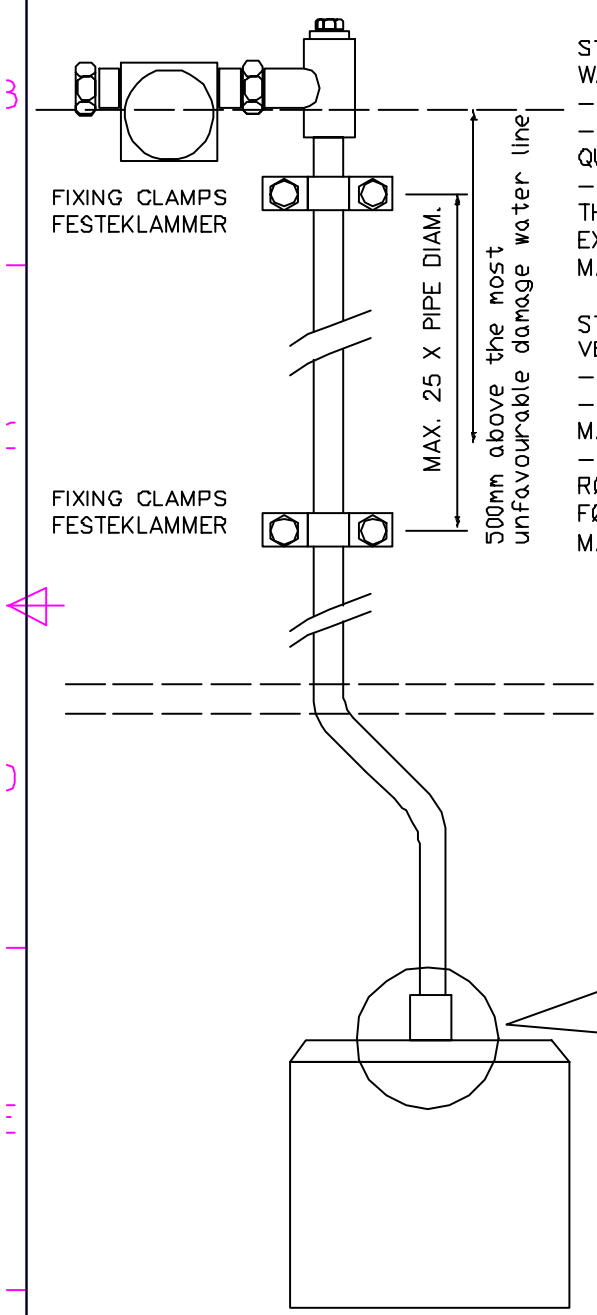
STÅLRØR, INNV. DIAM. MIN. 35 MM
VEGGTYKKELSE:
— GALVANISERTE RØR: MIN. 6 MM
— SVARTE RØR: MIN. 10 MM
MATERIALKVALITET:
— SE VERITAS REGLER KAP. X. PARA 7A, TYPE III
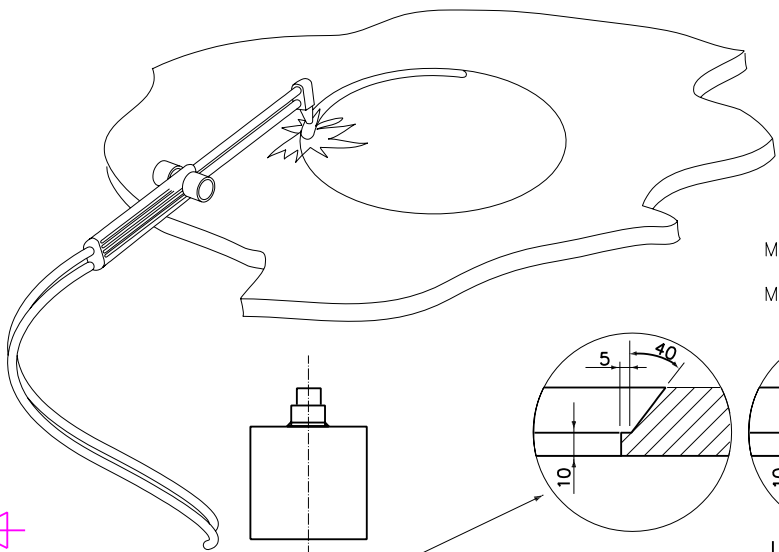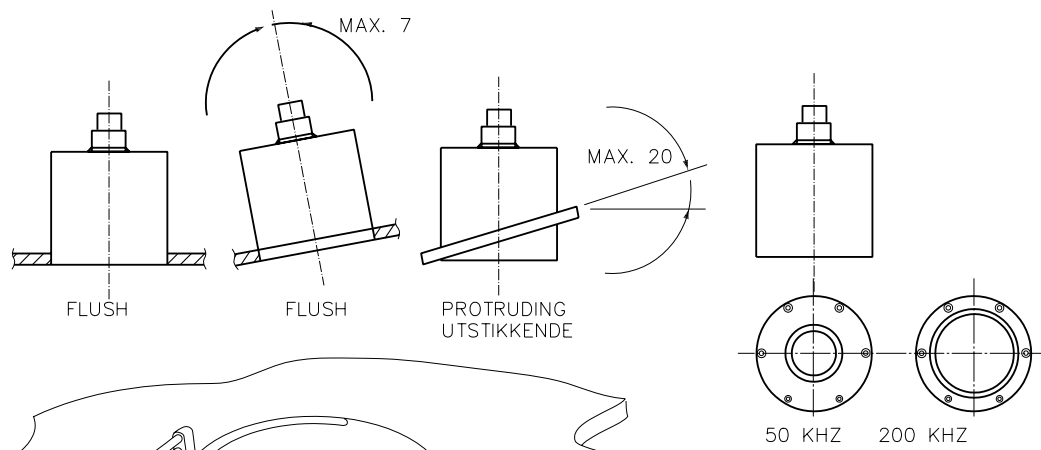RØRET SVEISES INN MED TILSTREKKELIG EKSPANSJONSMULIGHET,
FØR KABELEN TREKKES.
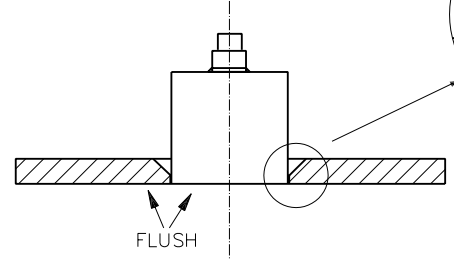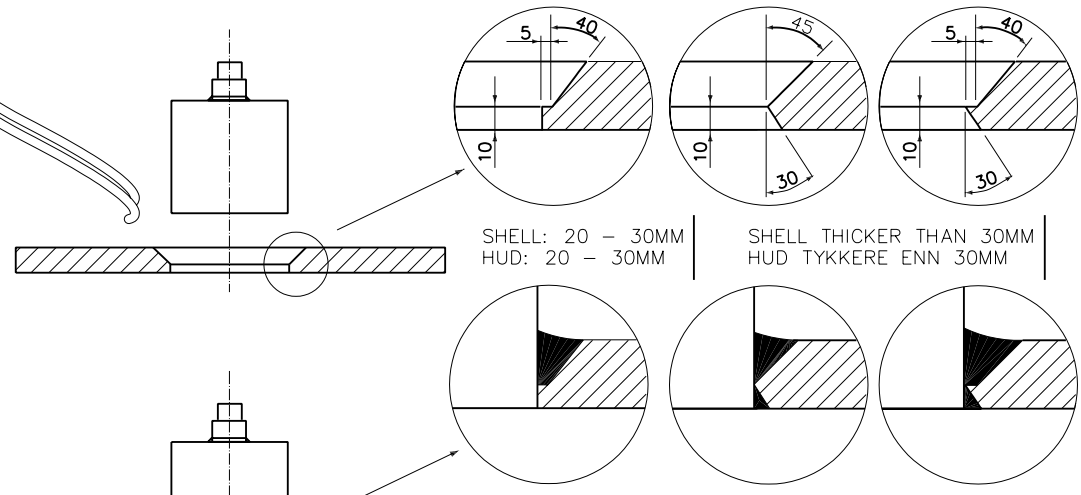MAKS. KLAMMERAVSTAND PÅ RØRET, 25 X RØRDIAM.
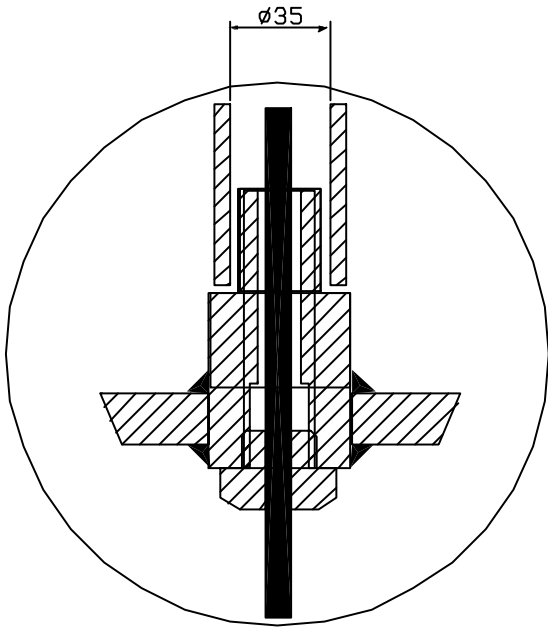
FIXING CLAMPS
FESTEKLAMMER

FIXING CLAMPS
FESTEKLAMMER

MAX. 25 X PIPE DIAM.

500mm above the most
unfavourable damage water line

ø35

Itemref	Quantity	Title/Name, designation, material, dimension etc		Article No./Reference		
Designed by AM	Checked by VF	Approved by - date XXX – 10/00/00	File name TA3004	Date 00/10/00		Scale 1:1

Skipper Electronics AS

Cable pipe for Transducertank

TA 3004

| Edition 0 | Sheet 1/1 |

MAX. 7

MAX. 20

FLUSH   FLUSH   PROTRUDING
UTSTIKKENDE

50 KHZ   200 KHZ

MATERIAL THICKNESS TOP AND SIDES: 20MM

MATERIAL TYKKELSE TOPP OG SIDER: 20MM

5 40   45   5 40

10   10   30   10   30

SHELL: 20 – 30MM	SHELL THICKER THAN 30MM
HUD: 20 – 30MM	HUD TYKKERE ENN 30MM

FLUSH

WELD THE TANK ACCORDING TO PROCEDURE AS SHOWN.
USE LOW–HYDROGEN ELECTRODES, E.G. OK 4800
IN ORDER TO AVOID CONTRACTION STRAIN, HAMMER EACH
WELDING SEAM BEFORE APPLYING NEXT. ALLOW THE TANK TO COOL
DOWN DURING WELDING.
DO NOT HAMMER THE LAST WELDING SEAM!
GRIND FLUSH ALL WELDINGS WITHIN 5 M IN FRONT OF, AND 3 M TO THE
SIDE OF THE TRANSDUCER. FINALLY, PAINT THE TRANSDUCER TANK INSIDE
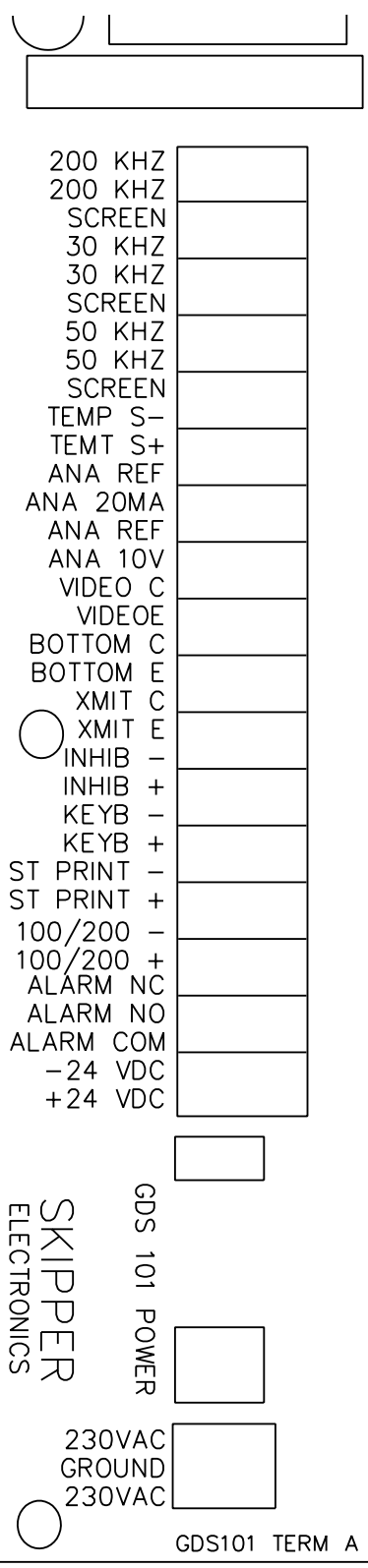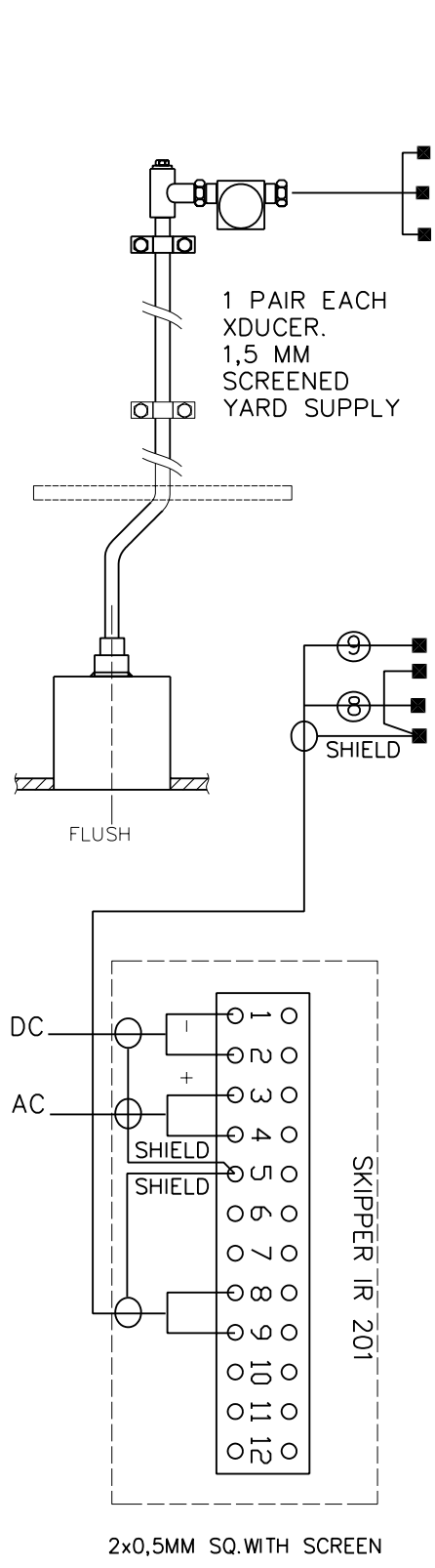AND OUTSIDE WITH A NON–CORROSIVE COATING.
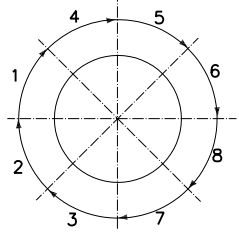
SVEIS TANKEN I HENHOLD TIL VISTE PROSEDYRE.
BRUK LAVHYDROGEN–ELEKTRODE, F.EKS. OK 4800.
FOR Å UNNGÅ KRYMPESPENNINGER MEST MULIG, HAMRES HVER
SVEISESTRENG FØR NESTE LEGGES, OG TANKEN HOLDES SÅ KALD SOM
MULIG UNDER SVEISINGEN.
SISTE SVEISESTRENG MÅ IKKE HAMRES!
PLANSLIP ALLE SVEISESØMMER INNENFOR ET AREALE AV 5M I FRONT OG
3 M TIL HVER SIDE FOR SVINGEREN. TIL SLUTT MALES SVINGERTANKEN
UTVENDIG OG INNVENDIG MED KORROSJONSHINDRENDE MALING.

Itemref	Quantity	Title/Name, designation, material, dimension etc			Article No./Reference		
Designed by AM		Checked by VF	Approved by – date	File name	Date 04.11.15		Scale 1:1

Skipper Electronics AS

INSTALLATION AND WELDING
GUIDANCE FOR TRANSDUCER TANK

TB 3001   Edition 0   Sheet 1/1

1 PAIR EACH
XDUCER.
1,5 MM
SCREENED
YARD SUPPLY

200 KHZ
200 KHZ
SCREEN
30 KHZ
30 KHZ
SCREEN
50 KHZ
50 KHZ
SCREEN
TEMP S−
TEMT S+
ANA REF
ANA 20MA
ANA REF
ANA 10V
VIDEO C
VIDEOE
BOTTOM C
BOTTOM E
XMIT C
XMIT E
INHIB −
INHIB +
KEYB −
KEYB +
ST PRINT −
ST PRINT +
100/200 −
100/200 +
ALARM NC
ALARM NO
ALARM COM
−24 VDC
+24 VDC

⑨

⑧

SHIELD

FLUSH

DC

AC

SHIELD

SHIELD

1
2
3
4
5
6
7
8
9
10
11
12

SKIPPER IR 201

SKIPPER
ELECTRONICS

GDS 101 POWER

230VAC
GROUND
230VAC

GDS101 TERM A

2x0,5MM SQ.WITH SCREEN

Itemref	Quantity	Title/Name, designation, material, dimension etc		Article No./Reference	
Designed by AM	Checked by VF	Approved by − date XXX − 00/00/00	File name TB3006	Date 00/00/00	Scale 1:1

SKIPPER Electronics AS

TB3006

Edition 0

Sheet 1/1

TRANSDUCER
CONNECTION TERMINALS

200 KHZ
200 KHZ
SCREEN
38 KHZ
38 KHZ
SCREEN
50 KHZ
50 KHZ
SCREEN
TEMP S−
TEMT S+
ANA REF
ANA 20MA
ANA REF
ANA 10V
VIDEO C
VIDEOE
BOTTOM C
BOTTOM E
XMIT C
XMIT E
INHIB −
INHIB +
KEYB −
KEYB +
ST PRINT −
ST PRINT +
100/200 −
100/200 +
ALARM NC
ALARM NO
ALARM COM

DC MAINS CONNECTION
TERMINALS

−24 VDC
+24 VDC

24 VDC
MAINS SWITCH

SKIPPER
ELECTRONICS

GDS 101 POWER

115/230 VAC
MAINS SWITCH

AC MAINS CONNECTION
TERMINALS

230VAC
GROUND
230VAC

GDS101 TERM A

Itemref	Quantity	Title/Name, designation, material, dimension etc		Article No./Reference		
Designed by AM		Checked by VF	Approved by - date XXX − 10/00/00	File name TB3005	Date 00/10/00	Scale 1:1

Skipper Electronics AS

TB 3005

Edition 0

Sheet 1/1
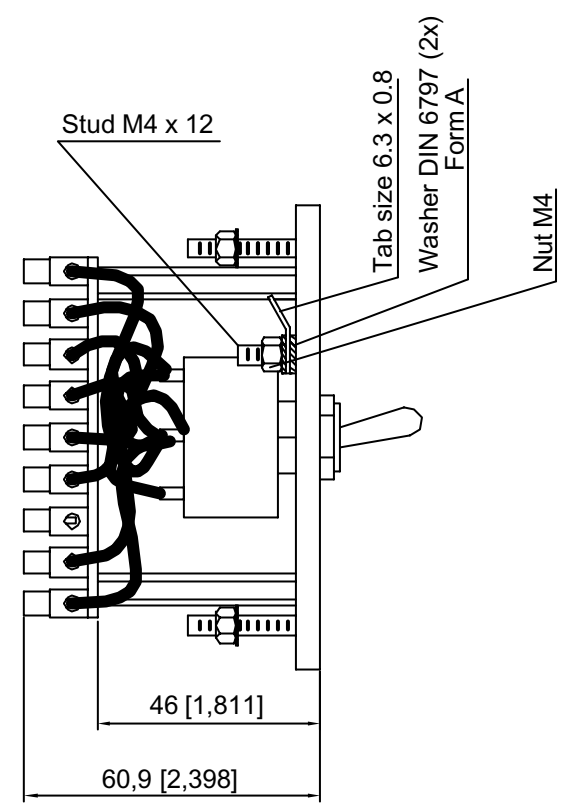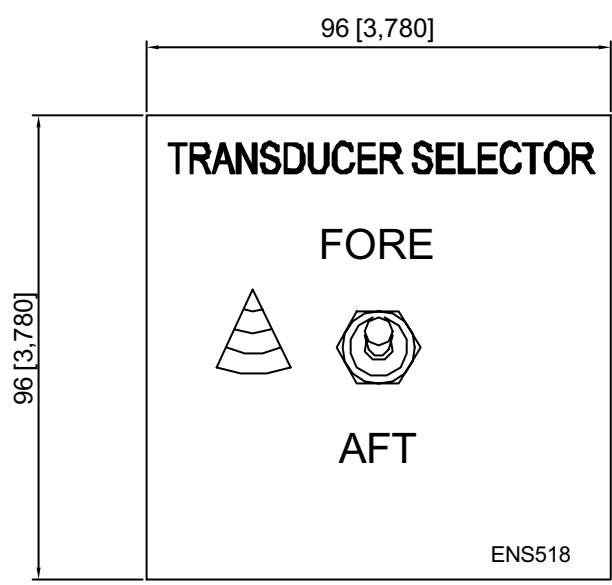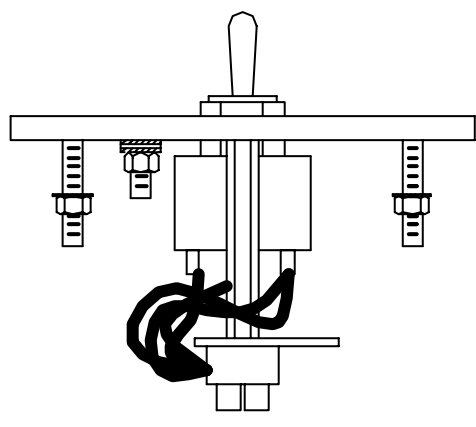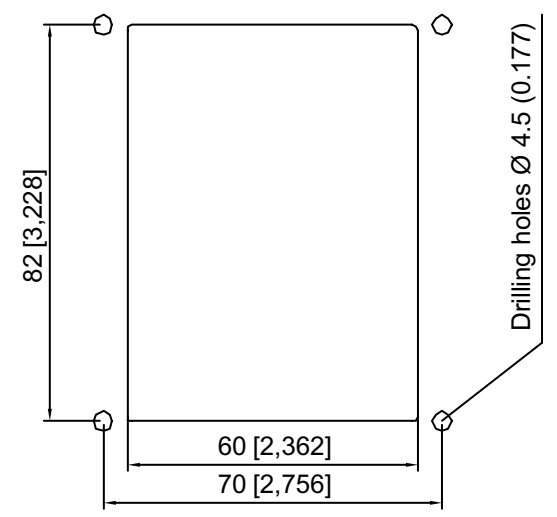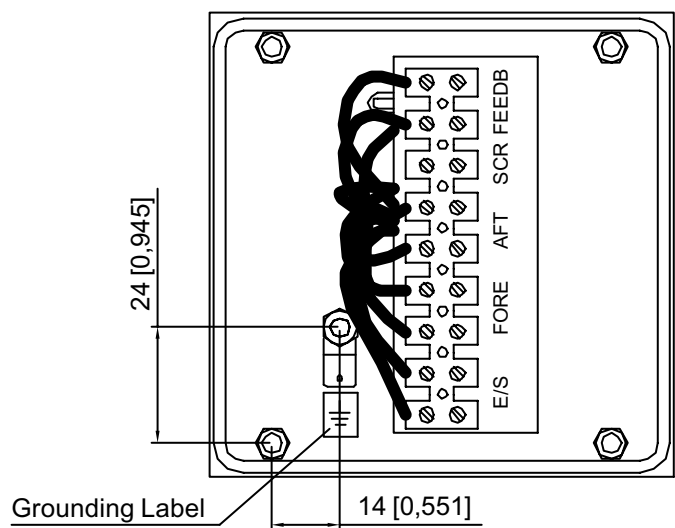
TRANSDUCER SELECTOR

FORE

AFT

ENS518

96 [3,780]

96 [3,780]

Turned 180°

Stud M4 x 12

Tab size 6.3 x 0.8

Washer DIN 6797 (2x) Form A

Nut M4

46 [1,811]

60,9 [2,398]

SCR FEEDB

AFT

FORE

E/S

24 [0,945]

Grounding Label

14 [0,551]

82 [3,228]

Drilling holes Ø 4.5 (0.177)

60 [2,362]

70 [2,756]

Itemref	Quantity	Title/Name, designation, material, dimension etc		Article No./Reference		
Designed by AM		Checked by VF	Approved by - date VF–020815	File name ENS518	Date 020815	Scale 1:1

SKIPPER Electronics AS

TRANSDUCER SELECTOR

ENS518

| | Edition 0 | Sheet 1/1 |

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RevNo	Revision note	Date	Signature	Checked

62(2.441)
13(0.492)

Washer DIN 6797 (2x)
Nut M4
Ground stud 4M x 12
Tab size 6.3 x 0.8

70(2.736)
Cable length: 1.5m. (4.9 ft.)

144 [5,669]
144 [5,669]

3
ft
M
F

SKIPPER   IR301 DEPTH

S

2
100(3.937)

The drilling holes diam. depends on thickness and material in the Console.

1
50(1.968)
70(2.736)

Hole diam. Ø4.0 (0.157)

4
ft
M
F

SKIPPER   IR301 DEPTH

S

132,5 [5,217]
125 [4,921]

Cut out

96 [3,780]
125 [4,921]
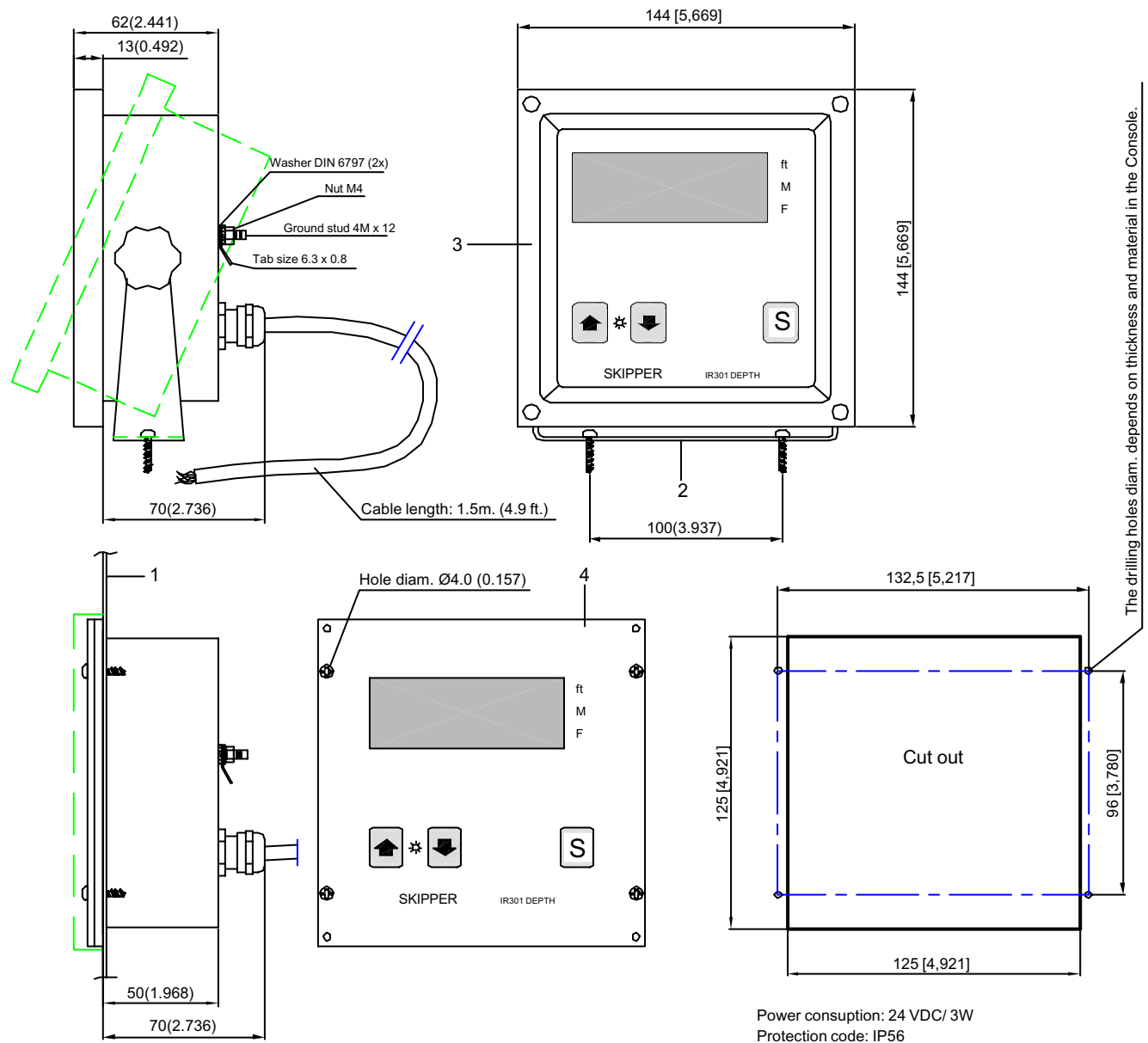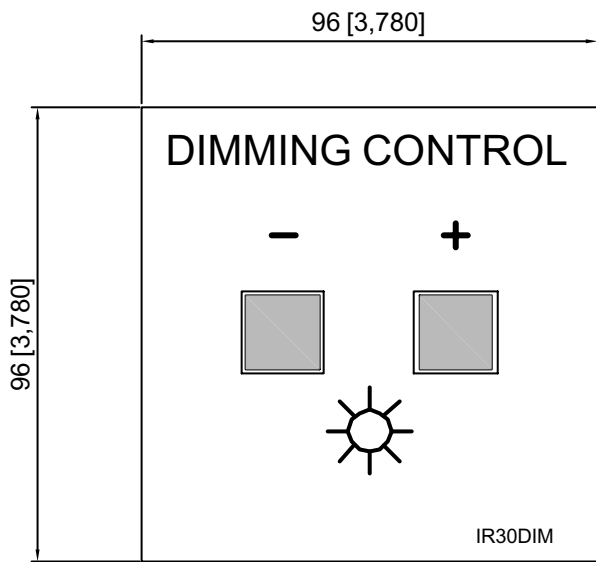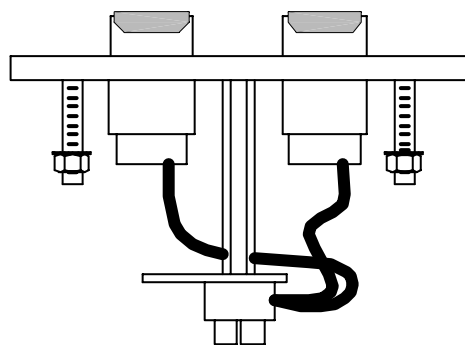
Power consuption: 24 VDC/ 3W
Protection code: IP56

Console mounting order:

A. Make a cut out in the Console (1) 125 x 125 (4.921 x 4.921)

B. Remove the mountingbracket (2)

C. Unscrew the 4 screws in the frame (3) (one in each corner) and remove the frame.

D. Put the Monitor(4) in the cut out and mark the 4 centerpoints for the Drill in the Console(1)
   (The drilling holes diam. depends on thickness and material in the Console.)

E. Use Panh. screws DIN 7981 Diam. 2.9 (0.114). Length depends on the Console thickness.

F. Finally put on the frame (3). Make sure that the screwheads correspond with the cut outs in the frame.
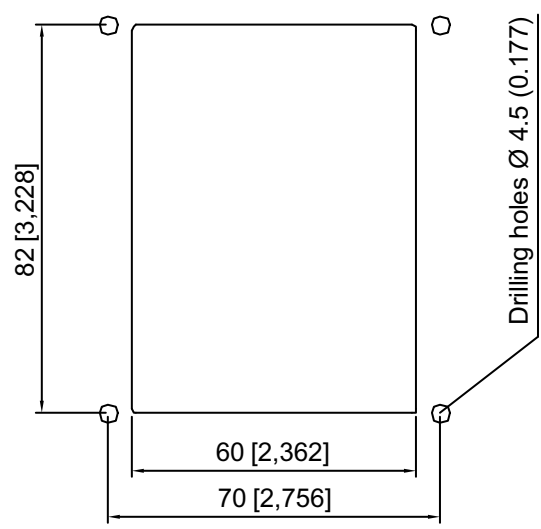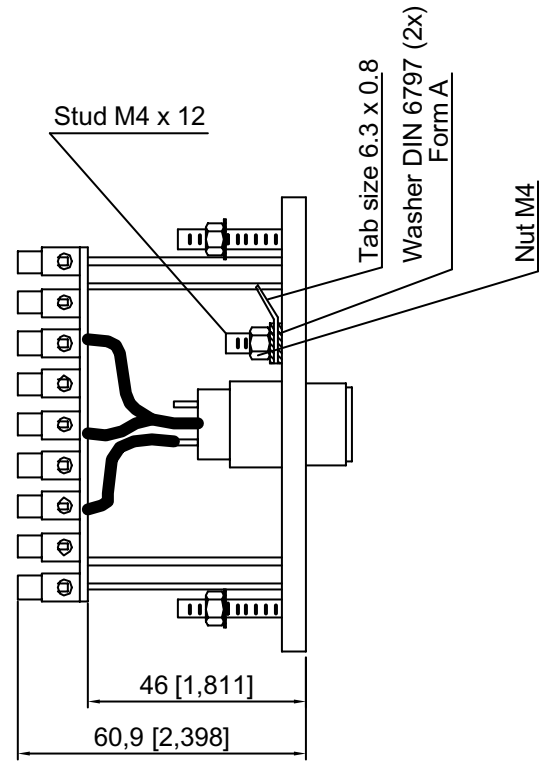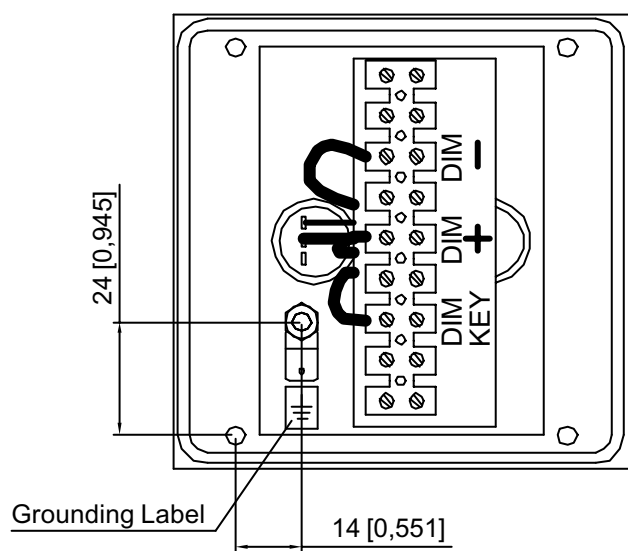

   Console mounting, IP56 protection.

1. Before fixing the monitor (4) in the cut out area in console (1), apply sufficient amount of water sealant
   compound between the monitor (4) and console (1).

2. Before the frame (3) is remounted, apply sufficient amount of amount of water sealant compound in the
   inner area of frame and on the edges of the monitor (4), to ensure that water can not penetrate into the
   monitor (4).

   The front panel of the monitor is waterproof.

WIRING CONNECTING

COLOUR	SIGNAL	COLOUR	SIGNAL
RED	+ 24V	GREEN	DIM+
BLACK	- 24V	YELLOW	DIM-
BLUE	NMEA IN+	GREY	DIMKEY
WHITE	NMEA IN/OUT-	DIM+	REMOTE
ORANGE	NMEA OUT+	DIM-	DIMMER
		DIMKEY	

GROUND WITH GROUND STUD

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference		
Designed by AM	Checked by VF	Approved by - date VF-020815	File name TB3009W	Date 020815	Scale 1:1

SKIPPER Electronics AS

IR301 DEPTH INDICATOR

TB3009W

| Edition ☐ | Sheet 1/1 |

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DIMMING CONTROL

96 [3,780]

96 [3,780]

− +

☀

IR30DIM

Turned 180°

Stud M4 x 12

Tab size 6.3 x 0.8

Washer DIN 6797 (2x) Form A

Nut M4

46 [1,811]

60,9 [2,398]

24 [0,945]

DIM KEY   DIM +   DIM −

Grounding Label

14 [0,551]

82 [3,228]

Drilling holes Ø 4.5 (0.177)

60 [2,362]

70 [2,756]

Itemref	Quantity	Title/Name, designation, material, dimension etc		Article No./Reference		
Designed by AM		Checked by VF	Approved by – date VF–020815	File name TB3010	Date 020815	Scale 1:1

SKIPPER Electronics AS

IR30DIM

TB3010

Edition □   Sheet 1/1

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