THALES
NAVIGATION

Scorpio
6001V
Advanced Vibrator Positioning System

USER'S MANUAL

Documentation Part No. :
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Rev B
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1. Equipment description

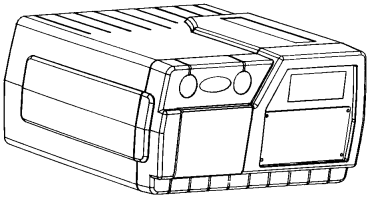
Preamble

The Scorpio 6001V receiver is a DGPS sensor intended for vibro-seismic operations. Basically, the 6001V is used to generate NMEA0183 messages ($GPGGA) to be returned to the central acquisition system via the local vibrator control unit.

The 6001V receives differential data from a base station through a UHF radio link. The base station may be of the Scorpio 6001/2 SK type or of the NDS100 MKII type.

Once the 6001V has been properly set up and installed in the cabin, getting it started is as simple as switching on a bulb.

The 6001 V is of the "black box" type and so, if changes have to be made to its configuration, this should be done from a peripheral (a palmtop or PC computer).



Items supplied

The list below is just informative. The detail of the equipment delivered is accurately described in the accompanying "List of items" document.

We reserve the right to make changes to the list below without prior notice.

- 1 × 6001V unit
- 1 × Scorpio Vibro Software (VIV20000) supplied on 3½ diskette
- 1 × Vibrator kit (receiver holder, shock absorbers, screws and washers)
- 1 × Power cable
- 2 × RS232 cables
- 1 × Power filter (two capacitors, 2.2 to 3.3 µF/100 V)
- 1 × AEROANTENNA GPS antenna
- 1 × GPS antenna mounting kit (cylindrical hollow mast+ clamp and small items)
- 1 × 50-Ω coaxial cable for GPS antenna (10 m long)
- 1 × UHF antenna (half-wave Procom FSP70, with FME/TNC adaptor at antenna base). The model delivered depends on the working frequency range:
    - 415-435 MHz: FSP70/425 (Part No. 3310190)
    - 430-450 MHz: FSP70/440 (Part No. 3310196)
    - 450-470 MHz: FSP70/460 (Part No. 3310188)
- 1 × cylindrical hollow mast for UHF antenna (Part No.26E1076531A), fitted with TNC male connector and coaxial cable (6 m long) + FMP40 clamp

Specifications

❑ GNSS receiver

- 16-channel L1 receiver
- WAAS/EGNOS compatible
- Multi-path mitigation techniques and low-noise observables

Built-in UHF receiver

- Frequency band: 410-470 MHz
- Channeling: 12.5 kHz
- Modulation type: GMSK @ 4800 Bd or DPSK @ 1200 Bd

❑ Performance characteristics

- EDGPS accuracy: better than 50 cm
- UHF coverage: up to 40 km, depending on antenna heights (at base station and on trucks) and care taken in installing the equipment

Physical characteristics

- Case dimensions (H×W×D): 130×260×220 mm
- Weight: less than 4 kg

Electrical characteristics

- Consumption: 15 W
- Input power voltage: 10 to 36 V DC, floating

Temperature ranges

- Receiver:
  - Operating: –10°C to +55°C
  - Storage: –40°C to +70°C
- UHF and GPS antennas:
  - Operating: –40°C to +70°C

Interfacing Capability

- Standard $GPGGA message (NMEA0183)
- Position expressed on the WGS84.
- Two independent RS232 output ports (default output rates: 0.5 and 5 seconds)
- Compatible with Sercel VE432, Pelton Advance III, etc.

Configuration Capability

- The 6001V can be configured from any computer
- The following parameters are configurable:
  - UHF frequency
  - Modulation type
  - Base station
  - Output rates on both ports
  - Initialization position
  - Antenna offset

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2. Hardware installation

Mounting the 6001V in a vibrator truck

The 6001V is designed to be mounted inside the vibrator truck cabin. Any convenient place may be chosen for that purpose.

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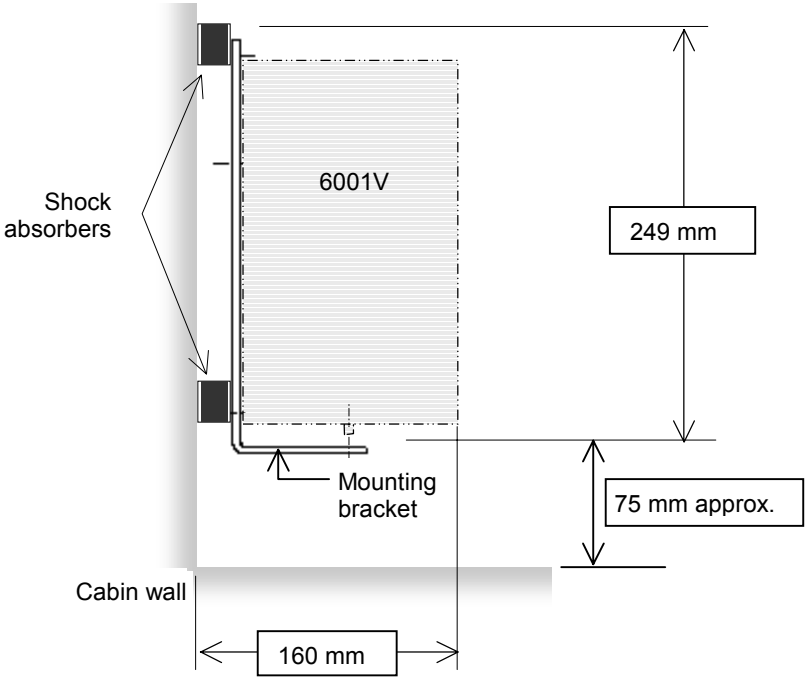
❑ Space required in the cabin

The volume occupied by the 6001V is about 7.5 dm^3 (H×W×D: 130×260×220 mm).

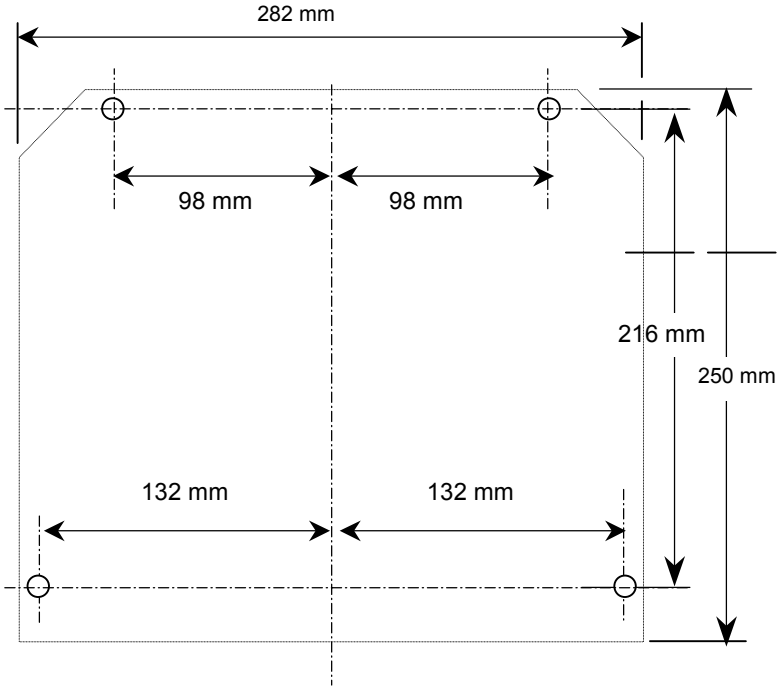
You should allow for additional space under the equipment, to preserve free access to the connectors located on the receiver rear panel, and also between the wall and the mounting bracket, to insert the shock absorbers.



When choosing a place inside the cabin, remember the distance to the UHF antenna should remain as short as possible (a 6-m coaxial cable is provided for the connection of this antenna to the 6001V).

❑ Wall drilling diagram

All 4 holes dia. 6 mm. Tapping is recommended (M6) to receive the threaded axes of the shock absorbers as this will prevent you from having to insert screws from behind the wall.

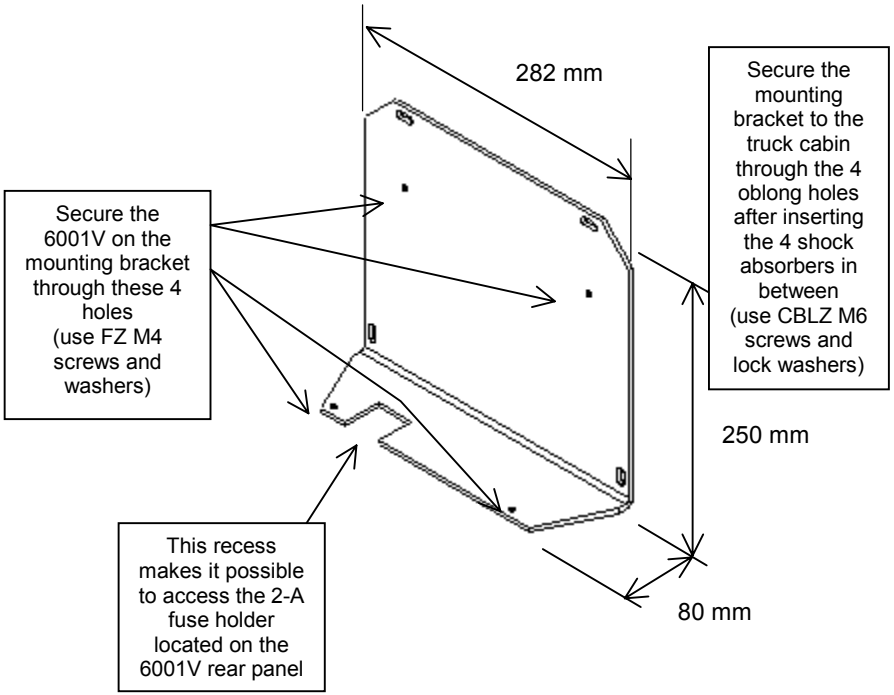


❑ Mounting procedure

- First the 6001V unit should be secured on its mounting bracket:

  Place the 6001V in position on the mounting bracket: front panel upward, bottom side facing the vertical side of the mounting brackets. The rear panel should rest on the horizontal side of the bracket. Make the 4 holes in the bracket coincide with those in the 6001V case. Insert and tighten the M4 screws provided in the kit.

- Then the assembly should be secured to the cabin through shock absorbers. Shock absorbers may be inserted in either direction.



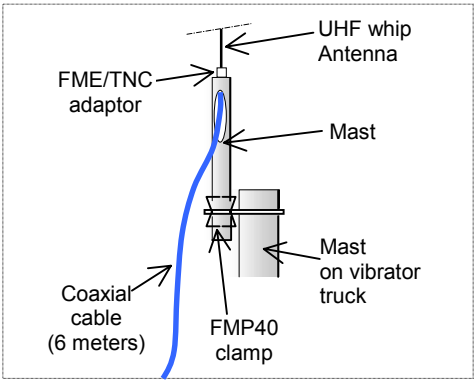
Mounting the UHF antenna

Install the UHF antenna on top of the vibrator truck cabin. This place is recommended for the following reasons:

- It is remote from the alternator, which is an unwanted source of wide-band noise
- It allows for short coaxial link, with as few interference as possible between the antenna and the receiver (no other cables in the vicinity)

The following items are provided to install the UHF antenna:

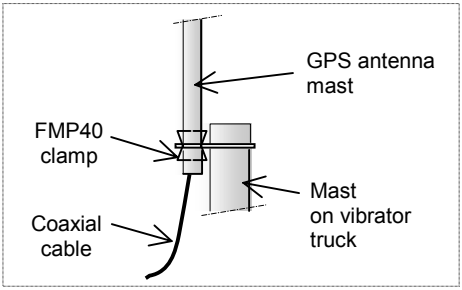
- A hollow cylindrical mast on which to mount the UHF antenna (TNC male connector, at the end of the coaxial cable, secured on top of the mast)
- A stainless clamp (FMP40) to secure the above mast & to another cylindrical mast, dia. 60 to 80 mm, mounted on the truck.



Mounting the GPS antenna

The following items are provided to install the GPS antenna:

- A hollow cylindrical mast, ext. dia. 27 mm, length 20 cm, with a tapped end (NF series, American standard, 14 SELLERS, dia. 1 inch) intended to receive the GPS antenna
- A special stainless clamp (FMP40) to secure the above mast & antenna to another cylindrical mast, dia. 60 to 80 mm, mounted on the truck.

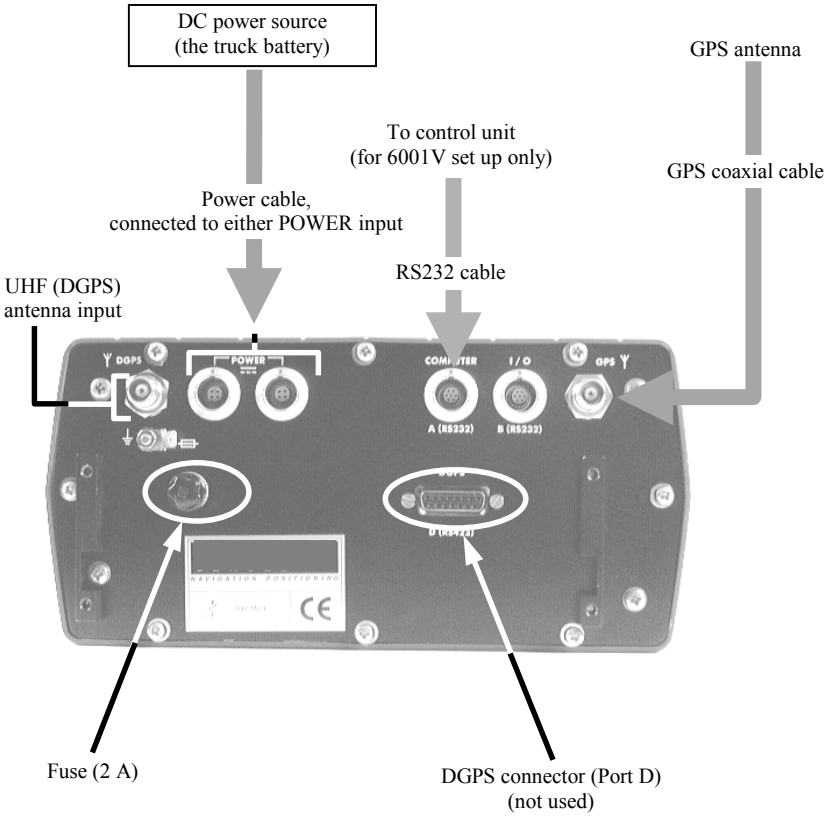


- Install the GPS antenna as close as possible to the vertical to the vibrator base plate. If the surface to which the antenna is mounted is liable to be lifted and lowered, make sure the antenna is not subject to obstructions when placed in the lower position.
- Insert the GPS coaxial cable into the hollow mast and connect the end of this cable to the GPS antenna
- Mount the GPS antenna on top of the mast
- Secure the GPS antenna+ mast to the truck mast using the FMP40 clamp.

Connections

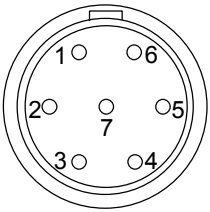
(See also illustration on the next page).

- Connect the coaxial cable from the UHF antenna to the DGPS input
- Connect the coaxial cable from the GPS antenna to the GPS input
- Connect the power cable from the truck battery to either power input. To protect the 6001V from possible interference, on power source side, connect the power filter provided (case screwed on truck chassis, cable end connected to the positive terminal of the battery).


DC power source
(the truck battery)
GPS antenna
To control unit
(for 6001V set up only)
GPS coaxial cable
Power cable,
connected to either POWER input
RS232 cable
UHF (DGPS)
antenna input
DGPS
POWER
COMPUTER
I / O
GPS
A (RS232)
B (RS232)
D (RS422)
NAVIGATION POSITIONING
Fuse (2 A)
DGPS connector (Port D)
(not used)

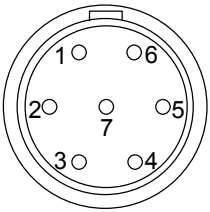
Pin out Information

COMPUTER connector,
(RS232 Port A),
type: JKX FD1G 07 MSSDSM
(plug: JBX1 MPN), manufacturer: FCI,
pin view

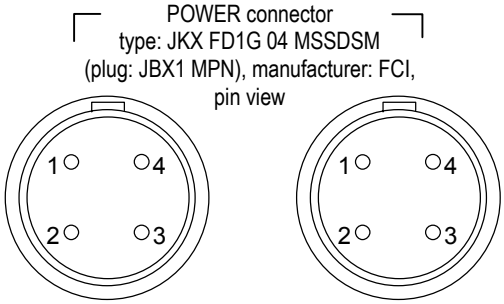


Pin	Signal	
1	+12 V	output
2	TXD	output
3	RXD	input
4	REMOTE ON	input
5	GND	
6	CTS	output
7	RTS	input

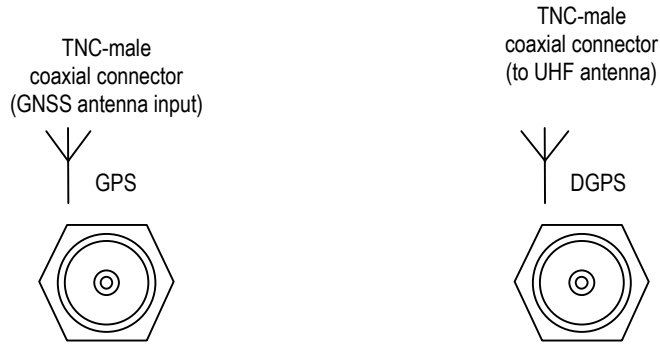
I/O connector,
(RS232 Port B),
type: JKX FD1G 07 MSSDSM
(plug: JBX1 MPN), manufacturer: FCI,
pin view



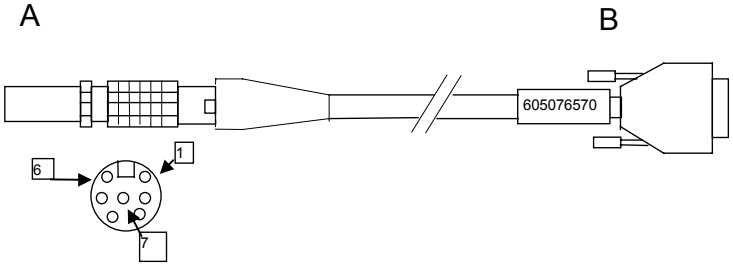
Pin	Signal	
1	+12 V	output
2	TXD	output
3	RXD	input
4	Not used	
5	GND	
6	CTS	output
7	RTS	input



Pin	Signal
1	+ Power input
2	+ Power input
3	- Power input
4	- Power input



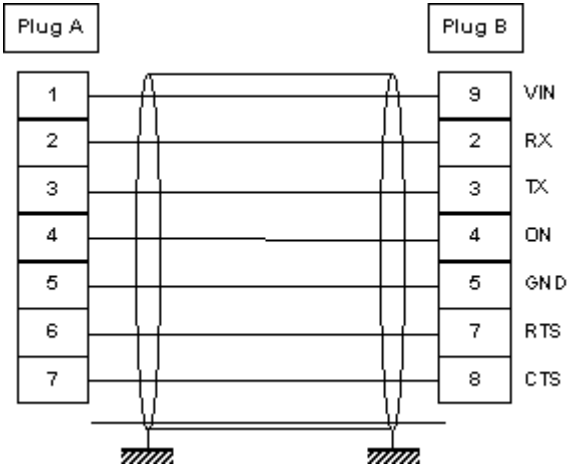
❑ RS232 cable



A is a 7-contact JKX FD 1G 07 MSSDSM (5011253) plug with JBX1 MPN (5080359) sleeve. Manufacturer: FCI.

B is a 9-contact female subD DE-9S (5030357) connector with metal cover 8655MH09-11 (5080357). Manufacturer: FCI.

Shielded cable, 4-pair, FMA2R (6030097). Overall length 2 m.



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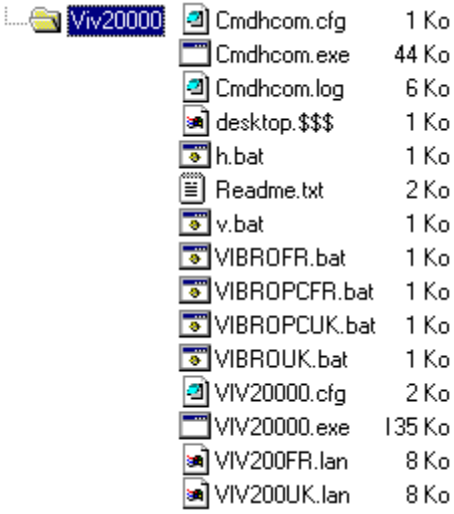
3. Software installation

Diskette content

The diskette provided (*GPS Scorpio Vibro Software*) contains a folder named *Viv20000* in which you should find the following files:



Installation procedures

❑ Loading the vibro software on FSGS (Husky palmtop)

- Connect the palmtop to a PC-type computer
- Insert the *Viv20000* diskette into the PC computer drive
- On the palmtop, run HCOM by typing "hcom /c2"
- On the PC-type computer, from the diskette, run the batch file VIBROFR.BAT (for French language), or VIBROUK.BAT (for English language)
- On the palmtop, press ESC key once the "Reception Complete" message appears on the palmtop screen, denoting successful upgrading of the resident program.
- Remove the diskette from the drive and put it in a safe place.

NOTE: The vibro software may be installed on the same FSGS as the one used with your Scorpio 6001/2 MK & SK equipment.

❑ Loading the vibro software on a PC-type computer

- Insert the *Viv20000* diskette into the PC computer drive
- From the diskette drive, run the batch file VIBROPCFR.BAT (for French language) or VIBROPCUK.BAT (for English language)
- You can then move the program file c:\vibro.exe wherever you want.
- Remove the diskette from the drive and put it in a safe place.

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4. Setting up the equipment before starting a vibro-seismic survey

Setting up the base station

Refer to the *Scorpio 6001 MK & SK User's Manual*, documentation Part No. 0311375 or to the *NDS100MkII installation & Operating Instructions Manual*, Part No. 0311320.

Setting up the 6001V

❑ Connecting the external control unit

Connect the external control unit (a PC or a palmtop) to port A on the 6001V. At first delivery, the default configuration of this port is the following:

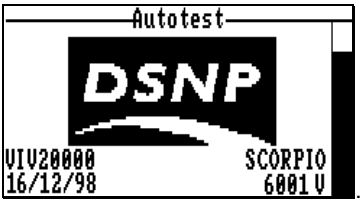
- Baud rate: 9600
- Data bits: 8
- Stop bits: 2
- Parity: None

❑ Running the vibro program

- On FSGS, from the DOS prompt, type in "V" and press "Yes"

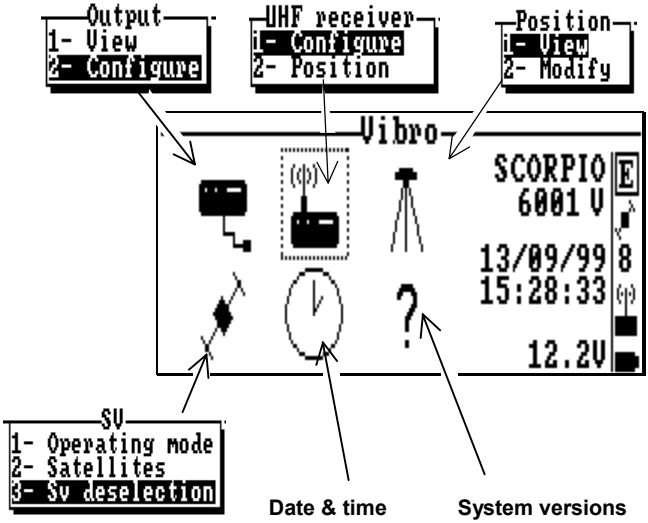
  or
- On a PC-type computer Run the program file "vibro.exe 1" (for port 1) or "vibro.exe 2" (for port 2).

  In both cases, the following screen will appear denoting auto-tests in progress:



Then the main menu will appear from which you can run any function you like.

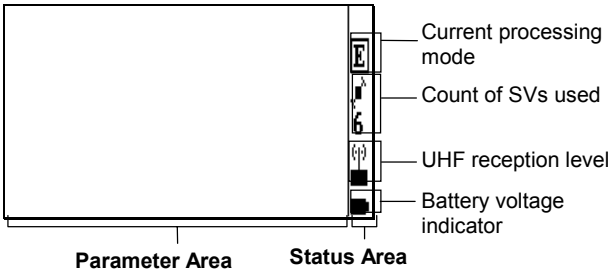
The diagram below reviews all the possible functions accessible from the 6 icons of the main menu.



- Use the vertical- or horizontal-arrow keys (↑, ↓, →, ←) to select an icon. The selected icon is surrounded by dotted lines.
- Press ↵ to validate your selection (or press the corresponding numeral shortcut key).

❑ Introduction to the user interface

All user-interface screens are divided into two distinct areas as shown below. The status area is permanently shown.



Current processing mode:

H : Hold (no position solution)
G : GPS
E : EDGPS (metric accuracy)

Count of SVs used:

will blink if the count of SVs drops and remains below 4

UHF reception level icon:

: Minimum level required (blinking)
: 1 to 3 dB above minimum level
: 4 to 8 dB above minimum level
: 9 dB or more above minimum level

Battery voltage indicator:

Below 9-volt threshold (blinking)
Above threshold (increment: about 0.1 V)
About 1 V above threshold

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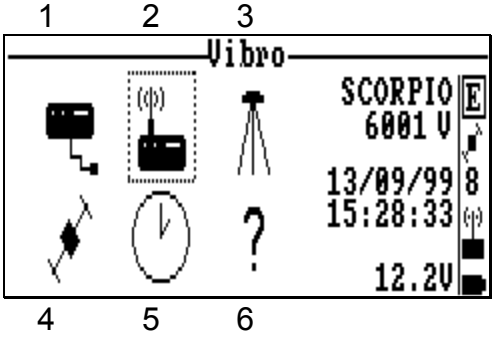
- **Main menu screen**

  The main menu shows the 6 groups of functions available in the form of icons (see below).



  Use the vertical- or horizontal-arrow keys (↑, ↓, →, ←) to select an icon. The selected icon is surrounded by dotted lines. Then press ↵ to enter the corresponding function. Alternately, you can directly enter a function by pressing the corresponding numeral key (see figures 1 to 6 in the screen example above)

- **Function menus**

  They are displayed after selecting an icon in the main menu and pressing ↵. Function menu example:

  - Using the vertical-arrow keys, select a function in the menu and then press ↵ again to run this function
  - Alternately, you can directly run a function by pressing the corresponding numeral key (se figures in the screen example above).

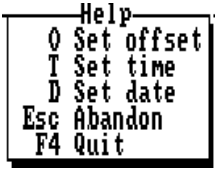
- **Help menus**

  There is a **Help** menu specific to almost each function, listing all the commands available in the context of this function.

  To display the **Help** menu, press the **F1** key. This causes the **Help** menu to be superimposed on the screen. Then do the following:

  - Press the key-letter to run the desired command.
  - or simply press the **Esc** key if you do not want to run any command. Incidentally, this will remove the Help menu from the screen

  For example, from the **Help** menu below, pressing the “D” key will directly display the screen allowing you to set the date.



  NOTE: You cannot view any **Help** menu while editing a parameter.

- **Other important keys**

  Esc

  - Pressing the **Esc** key will take you back to the preceding screen, or will remove the **Help** menu from the screen, or will cancel the change you make to a parameter. Repeated presses on this key will take you back to the main menu

F2

- From anywhere in the program, pressing the **F2** key will allow you to display the last solution computed for your current position (see screen example in page *4-13*).

F4

- Pressing the **F4** key will allow you to quit the program. Confirm this choice by pressing ↵ (or press **Del** to cancel the request). Then a message is displayed asking you whether, in the same time, the receiver should be turned off (press the **Del** key) or not (press ↵).

- **Making changes to parameters**

  Depending on the size and type of the parameters that can be changed, the program will use different scenarios to let you make that change:

  - If the screen contains numerical or alpha-numerical parameters, a cursor (inverse video) will appear on the first of them.

    To change this parameter, simply type in the new value. Note that the position of the field on the screen will be shifted to the left while you edit it. If the size of the parameter is relatively long, an edit box will appear on top of the screen to show the entire field while you edit it.

    In both cases, the new value will be validated after you press ↵. Use ↓ or ↑ to access the next or previous field (respectively).

  - If a parameter can only be set to some specific software-set values, then this field will be marked with a "▶". To know the possible values and choose one of them, use ↓ or ↑ to access this field and then press →. A select box appears showing these values. Use ↓ or ↑ to choose the desired value and press ↵ to validate your choice (the select box is removed from the screen at the same time). Alternately, you can directly type the numeral key corresponding to the row in which the desired value is shown (same as function menus, see page *4-4*).

- **Messages and alarms**

  - The buzzer will beep in the following cases:
    - At the end of every auto-test
    - In case of invalid data entry or display request or other errors
  - Low battery alarm:
    - A beep will be heard and the "Battery is low" message will appear
    - Battery icon in the status area will blink until you change the battery
  - Satellite alarm:
    - Satellite icon in the status area will blink until 4 SVs or more can be received
  - Low UHF level alarm:
    - A beep will be heard when the reserve of UHF reception level drops below 3 dB
    - UHF reception icon in the status area will blink until reception conditions come back to normal
  - Communications problem with receiver:
    - A beep will be heard and the "Receiver not responding" message will appear

❑ Output

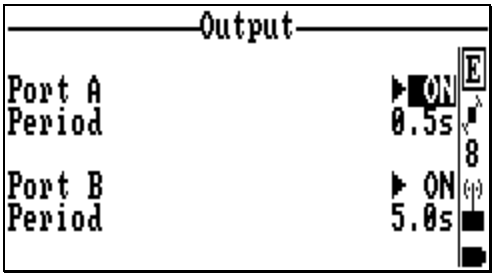
The 6001V delivers $GPGGA sentences on its two RS232 ports (A and B). Using the **Output** function, you can set each of the receiver ports and view the $GPGGA sentences generated by the 6001V as they are made available on the ports.

- **Setting the output ports**

  - From the main menu, select  , then **Configure** (2). A new screen appears allowing you to set the output ports. You can do the following on each port:

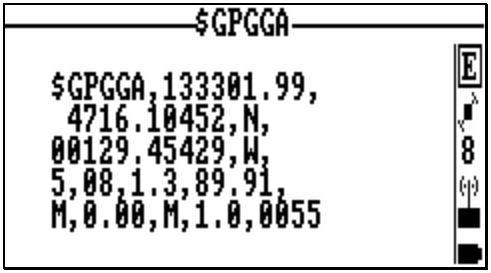
    - enable or disable the output of the $GPGGA data (ON/OFF)
    - set the interval of time between any two consecutive $GPGGA sentences (**Period** in seconds)

  Screen example:



- **Viewing the generated $GPGGA sentences**

  - From the main menu, select  , then **View** (1). A new screen appears showing the content of the latest $GPGGA sentence available. The screen is updated every time a new sentence is output on port A. Screen example:



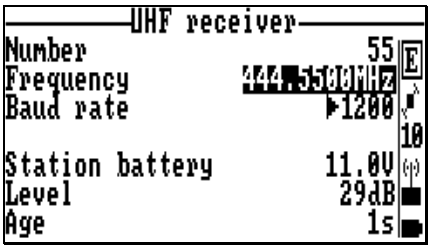
Data in the above example:	Data format:	Definition:
	$GPGGA	: NMEA183 message identifier
133301.99	: **hhmmss.ss**	: UTC time of position computation
4716.10452,N	: **llll.lllll,a**	: Latitude in degrees (2 char.), minutes (2 char.), 1/100 000 min., N/S indicator
00129.45429,W	: **yyyyy.yyyyy,a**	: Longitude in degrees (3 char.), minutes (2 char.), 1/100 000 min., E/W indicator

Data in the above example:	Data format:	Definition:
5	: **x**	: GPS quality figure : 0 : fix not available, or invalid 1 : straight GPS fix 2 : Differential GPS fix 5 : EDGPS mode (float RTK) 6 : Estimated (dead reckoning) mode
08	: **xx**	: Number of SVs used to compute the fix
1.3	: **x.x**	: Horizontal Dilution of Precision (-1 if not computed)
89.91,M	: **x.xx,M**	: Antenna altitude above MSL, in meters (if MSL ≠ 0). If MSL = 0, ZP is the altitude above the WGS84
0.00,M	: **x.xx,M**	: Geoidal separation (between ellipsoid and Mean Sea Level)
1.0	: **x.x**	: Age of Differential corrections, on average (null field if DGPS not used)
0055	: **xxxx**	: Identification of reference station used (null field if not used).

❑ UHF receiver setting & base station identification

• Configuring the UHF receiver

- From the main menu, select  , then **Configure** (1). A new screen appears allowing you to configure the built-in UHF receiver (used for the data link with the base station). Example:



The following parameters should be entered on this screen (in order of appearance):

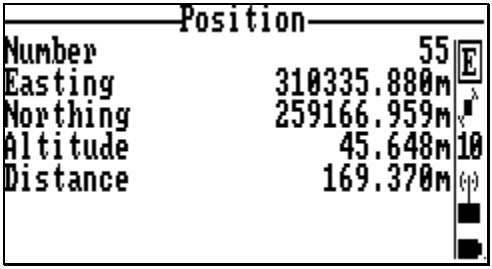
- Identification number of the base station you want to work with
- Transmission frequency of the base station
- Data baud rate used at the base station (1200 Bd if DSNP code or code/phase format, or 4800 Bd if LRK format) (Ask the person in charge of the base station if you don't know which baud rate to use)

  Once the above 3 parameters are correct, the lower part of the same screen is updated to provide the following status information (in order of appearance):

  - Current value of battery voltage at the base station
  - UHF reception reserve, in dB, above minimum level required
  - Age of the correction data received through the UHF data link

- **Viewing the characteristics of the selected base station**

  - From the main menu, select  , then **Position** (2). A new screen appears providing the identification and location of the selected base station, as well as the **distance separating your current location from the base station**. Screen example:

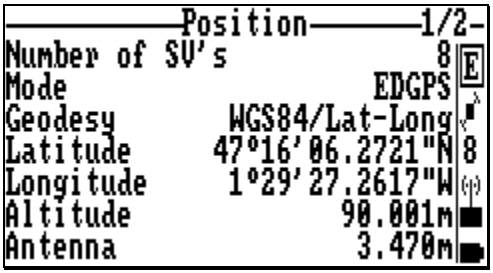


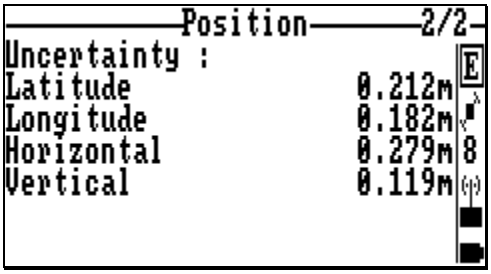
❑ Position

• Viewing the solution of your current position

- From the main menu, select  , then **View** (1). A new screen appears providing the solution of your current position. The information is presented on two screens. Use the **PgUp** and **PgDn** keys to change screen.

  Screen examples:





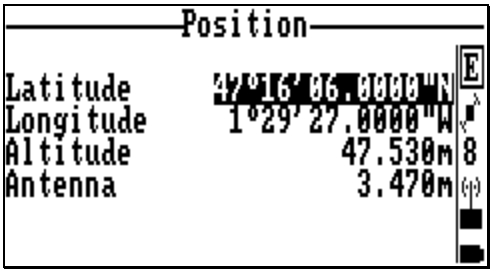
  This function is accessible from anywhere in the program by pressing the **F2** key.

- **Initializing the position processing; Entering the GPS antenna height above the ground**

  Should the location of the truck at the beginning of the survey be at a very remote distance from the position displayed on the screen below, you may help the 6001V initialize the position processing by entering, on this screen, an estimate of the truck's current position.

  This function is also used to enter the height of the GPS antenna above the ground (**Antenna** field).

  - From the main menu, select  , then **Modify** (2). On the screen which then appears, enter the approximate coordinates of the truck location (see example below). The coordinates should be expressed in the current geodesy.

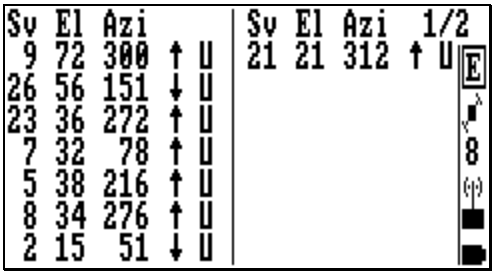


NOTE: Modifying any of these coordinates will cause the position processing in the 6001V to be re-initialized

❑ SV

• Viewing the status of the GPS constellation

- From the main menu, select  , then **Satellites** (2). A new screen appears providing information about the GPS constellation visible from your current position. The information is arranged in two screens. Use the **PgUp** and **PgDn** keys to change screen. Screen examples:



SV PRN No.

Elevation angle in degrees

Azimuth angle in degrees

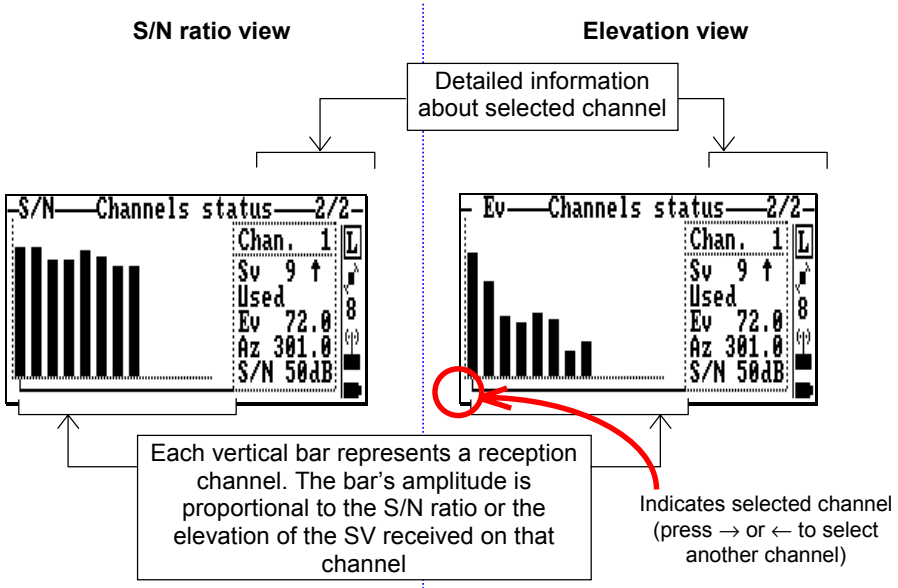
SV orbit: ascending (↑) or descending (↓)

S: Searching
U: Used
R: Received but not used
D: Deselected

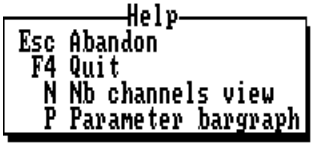
(Same as opposite)

4

Screen 2/2 contains graphical and alpha-numerical information about the constellation.



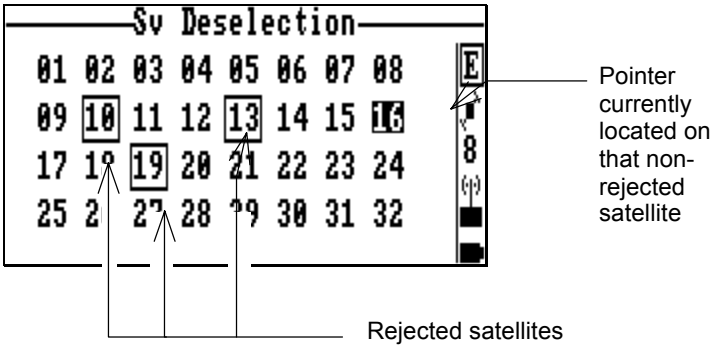
Help menu associated with screen 2/2:



- Press the **N** key to define the number of channels represented on the bar graph (typically 16 or 12)
- Press the **P** key to select which bar graph to show on the screen (either S/N Ratio or Elevation view)
- Use the horizontal-arrow keys to display complete information for the desired channel.

- **Rejecting satellites**

  - From the main menu, select  , then **SV deselection** (4). A new screen appears allowing you to reject one or more GPS satellites from the position processing.



Associated **Help** menu:

According to context:

- Use the arrow keys to select the PRN of the SV you want to reject or re-select
- Press the **Del** key to reject or re-select the highlighted SV
- Press the **Yes** key to validate all the changes made to the PRN table

- **Operating mode**

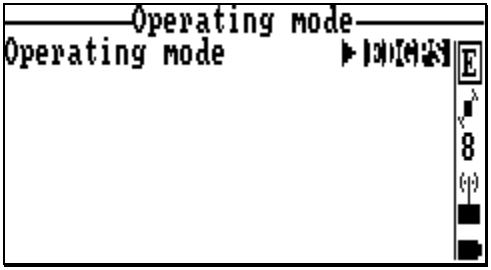
  The 6001V can operate in one of the following operating modes:

  1. *EDGPS* (enhanced DGPS), achieving meter accuracies
  2. *GPS*, less accurate than EDGPS

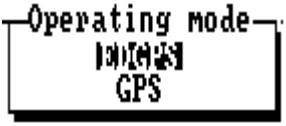
  The default processing mode is **EDGPS**.

  Follow the instructions below if you want to change the default setting:

  1. From the main menu, select  , then **Operating mode** (1).



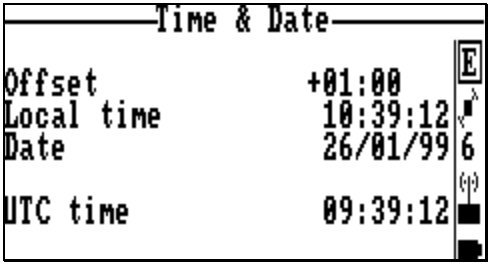
  2. Select the **Operating mode** field and then press the → key. A new dialog box appears asking you to choose a mode:



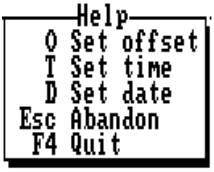
  2. Choose an option and then let the 6001V complete the initialization phase.

❑ Date & time

- From the main menu, select  . The screen which then appears allows you to read or change the local time.



Associated **Help** menu:



4

❑ System versions

- From the main menu, select  . The information is presented on a single read-only screen. ♣

5. Field operations with the 6001V

Getting the 6001V started

At the beginning of the vibro-seismic survey, provided the 6001V has been properly installed, connected and configured, the only thing the truck driver has to do is to depress the ON/OFF push-button on the 6001V front panel (the leftmost button).

The 6001V will then operate according to its configuration.

At the end of the survey, to switch off the 6001V, hold the ON/OFF push-button depressed for about two seconds until the status display turns blank.

Monitoring performance from the front panel

The 6001V can be considered as a receiver of the "black box"-type, which means that the truck driver is not supposed to monitor anything.

However, the 6001V is fitted with a 2-line×16-character status display providing real-time status information. The information reported on the status display is detailed in the present chapter.

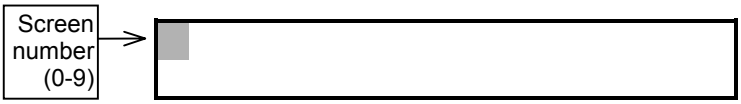
The **Scroll** push-button on the front panel provides access to the different data available from this display.

When you turn on the 6001V, the following message appears on the status display until the self-tests are complete:

```
          DSNP
*GNSS RECEIVER  *
```

Then the status display changes as the receiver status changes. Ten different screens have been designed to describe the receiver's internal data (status, configuration, software versions). You only need to use the **Scroll** push-button located on the front panel to access each of these screens. A long press on this button will unconditionally take you back to screen No. 0 (the most important one at receiver start up).

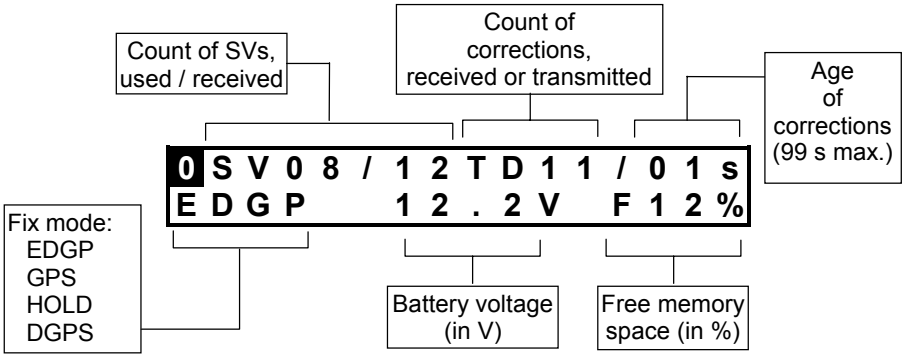
Each screen is identified by a number to help you navigate through the set of screens. The screen number is located at the beginning of the upper line:



When the amount of data is too large to fit on a single screen, several "subscreens" are created for this screen. In this case, the screen number is recalled at the beginning of each subscreen. Use the same button (the **Scroll** push-button) to access the different subscreens (and then to access the next screen).

❑ Screen No.0: Operating Status

At the end of the self-tests, status screen No. **0** appears. Display example:



- **Fix mode**

EDGP (EDGPS) : Enhanced DGPS
GPS : "pure" or "straight" GPS
HOLD : No position solution available
DGPS : Differential GPS

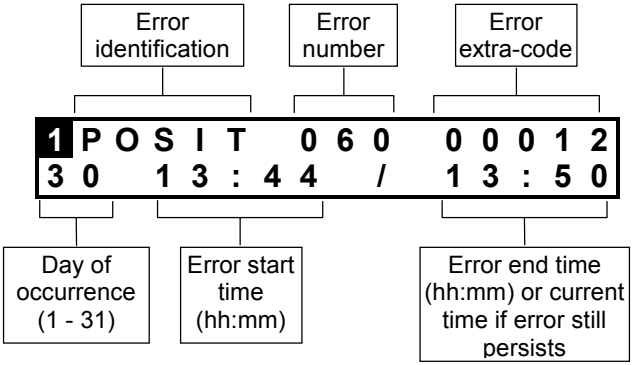
Screen No. **0** (refresh rate: 1.0 second) will be maintained on the status display until you depress the Scroll button.

If an error is detected in the receiver (anomaly, etc.), the screen number will start blinking, prompting you to have a look at screen No.1 to know more about the detected error(s). Unless the detected error still persists, it is simply acknowledged when quitting the screen reporting that error.

With screen No. 0 currently displayed, depressing the **Scroll** push-button repeatedly will cause new screens to appear in the order given below.

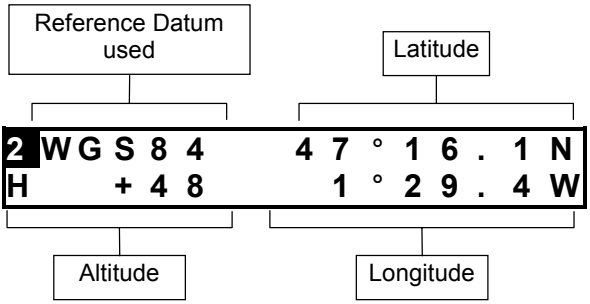
❑ Screen No. 1: Error report

Depending on the number of errors detected (none, one or more), several subscreens for screen No. 1 may exist. Display example:



The list of all the possible errors is given in page *5-10*.

❑ Screen No. 2: Position solution

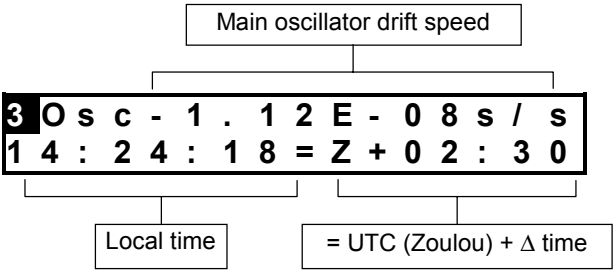


If no solution is available ("HOLD" displayed on screen No.0), this screen will display the "initial position", as defined by the configuration, or the latest position computed in case of lasting solution unavailability, due to reception loss for example.

The position displayed is only a coarse indication of the current position, and so does not reflect the real degree of accuracy achieved by the position solution.

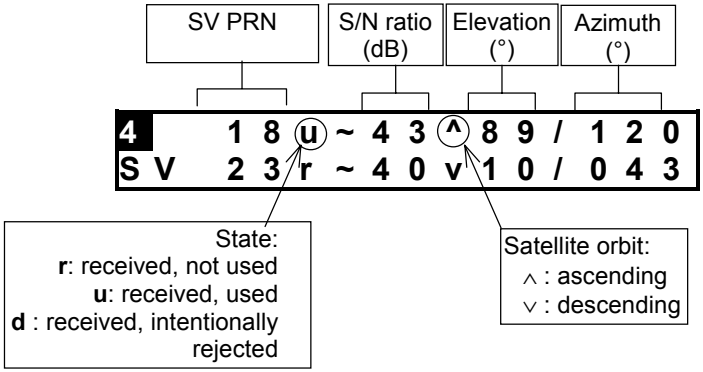
❑ Screen No. 3: Time information

Display example:



❑ Screen No. 4: GNSS reception status

Each line describes the reception of a satellite. Hence, two satellites are shown on a subscreen and *n* subscreens will exist if *2n (*or *2n-1)* satellites are received. Display example:



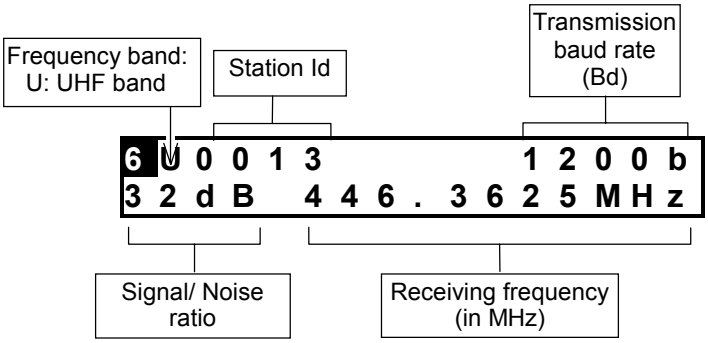
❑ Screen No. 5: Information about sessions

Irrelevant to the 6001V.

5

❑ Screen No. 6: Information about corrections

Display example:



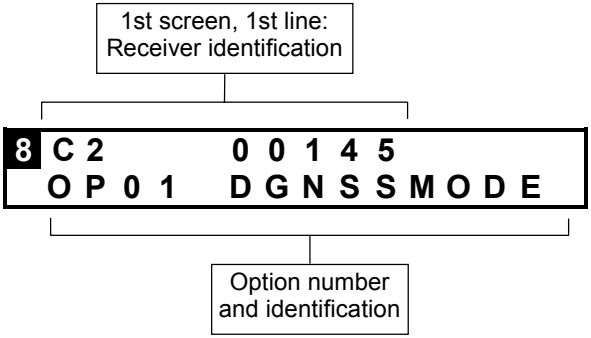
❑ Screen No. 7: Differential corrections

Irrelevant to the EDGPS mode.

❑ Screen No. 8: Firmware installed

The first line indicates the serial number of the receiver. Each of the next lines identifies a firmware option installed in the receiver. The number of subscreens for screen No. 8 will depend on the number of options installed.

Display example:



OP08 : EDGPS

5

❑ Screen No. 9: Hardware and Software identification

Each subassembly in the receiver is described on a subscreen. Display examples:

Data Link:

```
9TD00   RUHFV10300
```

GNSS Engine:

```
9CM08   CMBLV00109
 CM08   CMPYV00204
```

UC (CPU) board:

```
9UC01   UCBSV20000
 UC01   UCBLV20000
```

```
9UC01   UCBNV20204
```

Hardware identification

Software identification

❑ Front Panel Indicators

ON/OFF indicator	**Scroll** indicator	**Meaning**
OFF	OFF	Receiver not powered. If this status is obtained after pressing the ON/OFF push-button, check power supply connection (cable, connectors), power source, power voltage, rear panel fuse.
Flashing	OFF	Self-tests in progress (initialization phase)
ON	OFF	Operating receiver.

❑ Error report

Errors are reported on the status display, on Screen No.1. Each error occupies a "subscreen" (see *Screen No. 1: Error report* chapter, page *5-3*).

• Error families

Errors are classified into families, depending on the probable origin of error. The table below summarizes the 11 different error families

Family number	**Origin**	**Error label**
00	No errors	NONE
01	Core Module	CM
02	Application Configuration	CONFG
03	DGPS	DGPS
04	Coordinate system	GEODY
05	Input/Output	I/O
06	User Interface	IHM
07	Power supply/interface	INTRF
08	Navigation	NAVIG
09	Fix processing	POSIT
10	System	SYSTM
11	Data link	TD

- ## Error classification

  Errors are classified into four categories depending on gravity:

  - Simple information reported to user (code 1)
  - Warnings (code 2). The receiver operates correctly but might be disturbed by the reported error.
  - Serious errors (code 3). The receiver operates but delivers erroneous results.
  - Fatal errors (code 4). The receiver can no longer operate correctly. You should re-initialize the receiver.

- ## Error list

  Note that some of the errors listed below are irrelevant to the 6001V.

No.	Family	Gra-vity	Meaning	Error label
01	1 - CM	4	GPS not ready	GPS not ready
02	1 - CM	4	RAM error	RAM anomaly
03	1 - CM	3	Processor error	Processor anomaly
04	1 - CM	3	Timing error	Timing anomaly
05	1 - CM	3	Program memory error	Program memory anomaly
06	1 - CM	3	Data memory error	Data memory anomaly
07	1 - CM	3	Reception circuit error	Reception circuit anomaly
08	1 - CM	3	Correlation circuit error	Correlation circuit anom
09	1 - CM	4	C/A-P/YCommunication error	Communication C/A - P/Y
10	1 - CM	2	Non-used output data	Unread output datas
11	1 - CM	2	Non-identified input data	Unknown input datas
12	1 - CM	2	Non-complying input data	Bad input datas
13	1 - CM	1	GPS data error	GPS data anomaly
14	1 - CM	1	DPRAM error	DPRAM anomaly
15	1 - CM	1	Erroneous message length	Bad message length
16	1 - CM	1	EEPROM error	EEPROM anomaly
17	1 - CM	3	Trigger time-tag errorError	Datation Trigger Error
18	2 - CONFG	4	Conf integrity altered	Bad config integrity
19	2 - CONFG	3	Config parameter error	Config parameter error
20	3 - DGPS	3	No transmitting station	No sending dtation
21	3 - DGPS	3	CPU-DIFF overflow	CPU-DIFF overflow
22	4 - GEODY	3	Coordinate system error	Geodesy error
23	5 - I/O	2	Unknown remote command	Unknown telecommand
24	5 - I/O	2	Non-complying param. format	Bad parameter format
25	5 - I/O	2	Non-complying format block	Bad block format

26	5 - I/O	3	Command checksum error	Bad telecommand checksum
27	5 - I/O	3	DPR1 Input error	Input error on DPR1
30	5 - I/O	3	Non-complying LRK block	Bad LRK block on port D
31	5 - I/O	3	Port A Overflow	Overflow PortA
32	5 - I/O	3	Port B Overflow	Overflow PortB
33	5 - I/O	3	Port C Overflow	Overflow PortC
34	5 - I/O	3	Port D Overflow	Overflow PortD
35	5 - I/O	2	Format interpretation error	Format interpretation
36	5 - I/O	3	Port A Input error	Input error PortA
37	5 - I/O	3	Port B Input error	Input error PortB
38	5 - I/O	3	Port C Input error	Input error PortC
39	5 - I/O	3	Port D Input error	Input error PortD
40	6 - IHM	2	User Interface error	IHM error
41	7 - INTRF	4	Xilinx Load	Xilinx Load
42	7 - INTRF	4	Low Power Command	Low Power Command
43	7 - INTRF	3	PCMCIA overflow	PCMCIA overflow
44	7 - INTRF	3	File system full	File system full
45	7 - INTRF	2	PC board not recognized	Unknown PC card
46	7 - INTRF	4	Battery voltage too low	Battery voltage
47	7 - INTRF	3	Corrupted file system	Corrupted file system
48	7 - INTRF	4	First antenna error	First antenna error
52	7 - INTRF	3	Error on opening file	File open error
53	7 - INTRF	3	Error on closing file	File close error
54	7 - INTRF	3	Error on writing file	File write error
55	7 - INTRF	3	Error on reading file	File read error
56	8 - NAVIG	3	Navigation error	Navigation error
57	9 - POSIT	1	No differential reception	No differential reception
58	9 - POSIT	1	Too few Svs	Too few Svs
59	9 - POSIT	1	GDOP too high	GDOP too high
60	9 - POSIT	3	LPME too high	LPME too high
61	9 - POSIT	1	No fix computation	No fix computation
62	10 - SYSTM	2	Frozen display	Frozen display
63	10 - SYSTM	2	Unknown option code	Unknown option code
64	10 - SYSTM	4	C3 codes checksum error	Bad checksum codes C3
65	10 - SYSTM	2	Log checksum error	Bad log checksum
66	10 - SYSTM	4	Real-time clock	Real Time Clock
67	10 - SYSTM	4	Dual-port RAM	Dual port RAM
68	11 - SYSTM	4	Core module not ready	Core module not ready
69	10 - SYSTM	4	Program checksum error	Bad program checksum
70	10 - SYSTM	4	Data memory test	Data memory test
71	10 - SYSTM	4	Coprocessor test	Coprocessor test
72	10 - SYSTM	4	Serial port error	Error on serial port
73	10 - SYSTM	3	IDE file system mounting error	File system IDE mount err
74	10 - SYSTM	1	Option lending period has now	Option no more

			elapsed	available
75	10 - SYSTM	4	Nb d'essai options depasse	Max option tries reached
76	10 - SYSTM	1	Journal full	Full anomalies journal
77	10 - SYSTM	3	CMOS date failed	CMOS date Failed
78	11 - TD	4	Selftest error	Autotest error
79	11 - TD	3	Erroneous blocks	Bad blocks
80	11 - TD	1	Count of restarts since selftest	Nb restart since autotest
81	10 - SYSTM	3	Mailbox overflow	Mailbox overflow
82	10 - SYSTM	3	PCMCIA removed	PCMCIA removed
83	5 - I/O	3	DPR1 Overflow	Overflow DPR1
87	10 - SYSTM	3	Line in CM file too long	Line file CM too long
88	10 - SYSTM	3	CM identification error	Identification CM error
89	10 - SYSTM	3	CM card file inconsistency	Incoherence file card CM
90	10 - SYSTM	3	Flash CM clear error	Clear flash CM error
91	10 - SYSTM	3	CM program loading error	CM program file load error
92	6 - IHM	3	Kinematic mode change	Kinematic mode change
93	6 - IHM	3	No position computed	No computed position
94	7 - INTRF	4	Binary file inconsistency	Binary file incoherent
95	10 - SYSTM		RTC send error	RTC send error
96	4 - GEODY		Altimetry error	Altimetry error
97	10 - SYSTM		Applic software Re-load error	Appli soft reload error
98	10 - SYSTM	4	Protected memory error	Back memory failure
99	10 - SYSTM	4	Stack overflow	Stack overflow
100	5 - I/O	2	Error on port A in reception	Receiving error on port A
101	5 - I/O	2	Error on port B in reception	Receiving error on port B
102	5 - I/O	2	Error on port C in reception	Receiving error on port C
103	5 - I/O	2	Error on port D in reception	Receiving error on port D
104	10 - SYSTM	1	Unexpected software error	Software error

♣

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