DEWESoft™
measurement innovation

DS-VGPS-HS

Technical Reference Manual

Version: 1.0.0

Thank you!

Thank you very much for your investment in our unique data acquisition systems. These are top-quality instruments which are designed to provide you years of reliable service. This guide has been prepared to help you get the most from your investment, starting from the day you take it out of the box, and extending for years into the future.

www.dewesoft.com

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1 Notice

The information contained in this document is subject to change without notice.

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Warranty Information:

A copy of the specific warranty terms applicable to your Dewesoft product and replacement parts can be obtained from your local sales and service office.

To find a local dealer for your country, please visit this link: http://www.dewesoft.com/support and select *Find dealers* on the left navigation bar.

Calibration

Every instrument needs to be calibrated at regular intervals. The standard norm across nearly every industry is annual calibration. Before your Dewesoft data acquisition system is delivered, it is calibrated. Detailed calibration reports for your Dewesoft system can be requested. We retain them for at least one year, after system delivery.

Support

Dewesoft has a team of people ready to assist you if you have any questions or any technical difficulties regarding the system. For any support please contact your local distributor first or Dewesoft directly.

Austria	Slovenia
Dewesoft GmbH Grazerstrasse 7 A-8062 Kumberg Austria / Europe Tel.: +43 3132 2252 Fax: +43 3132 2252-2 Web: http://www.dewesoft.com The telephone hotline is available Monday to Thursday between 09:00-12:00 (GMT +1:00) 13:00-17:00 (GMT +1:00) Friday: 09:00-13:00 (GMT +1:00)	Dewesoft d.o.o. Gabrsko 11a 1420 Trbovlje Slovenia / Europe Tel.: +386 356 25 300 Fax: +386 356 25 301 Web: http://www.dewesoft.com The telephone hotline is available Monday to Friday between 08:00 and 16:00 CET (GMT +1:00)

Service/repairs

The team of Dewesoft also performs any kinds of repairs to your system to assure a safe and proper operation in the future. For information regarding service and repairs please contact your local distributor first or Dewesoft directly.

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1.1 Safety instructions

Your safety is our primary concern! Please be safe!

Safety symbols in the manual

WARNING 	Calls attention to a procedure, practice, or condition that could cause body injury or death.

CAUTION 	Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.

General Safety Instructions

WARNING 	The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Dewesoft GmbH assumes no liability for the customer's failure to comply with these requirements.

All accessories shown in this document are available as option and will not be shipped as standard parts.

Environmental Considerations

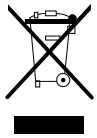
Information about the environmental impact of the product.

Product End-of-Life Handling

Observe the following guidelines when recycling a Dewesoft system:

System and Components Recycling

Production of these components required the extraction and use of natural resources. The substances contained in the system could be harmful to your health and to the environment if the system is improperly handled at it's end of life! Please recycle this product in an appropriate way to avoid an unnecessary pollution of the environment and to keep natural resources.



This symbol indicates that this system complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Please find further information about recycling on the Dewesoft web site www.dewesoft.com

Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive. However we take care about our environment and the product is lead free.

General safety and hazard warnings for all Dewesoft systems

- Safety of the operator and the unit depend on following these rules
- Use this system under the terms of the specifications only to avoid any possible danger.
- Read your manual before operating the system.
- Observe local laws when using the instrument.
- DO NOT touch internal wiring!
- DO NOT use higher supply voltage than specified!
- Use only original plugs and cables for harnessing.
- You may not connect higher voltages than rated to any connectors.
- The power-cable and -connector serve as Power-Breaker. The cable must not exceed 3 meters, disconnect function must be possible without tools.
- Maintenance must be executed by qualified staff only.
- During the use of the system, it might be possible to access other parts of a more comprehensive system. Please read and follow the safety instructions provided in the manuals of all other components regarding warning and security advices for using the system.
- With this product, only use the power cable delivered or defined for the host country.
- DO NOT connect or disconnect sensors, probes or test leads, as these parts are connected to a voltage supply unit.
- Ground the equipment: For Safety Class 1 equipment (equipment having a protective earth terminal), a non interruptible safety earth ground must be provided from the mains power source to the product input wiring terminals.
- Please note the characteristics and indicators on the system to avoid fire or electric shocks. Before connecting the system, please read the corresponding specifications in the product manual carefully.

- The inputs must not, unless otherwise noted (CATx identification), be connected to the main circuit of category II, III and IV.
- The power cord separates the system from the power supply. Do not block the power cord, since it has to be accessible for the users.
- DO NOT use the system if equipment covers or shields are removed.
- If you assume the system is damaged, get it examined by authorised personnel only.
- Adverse environmental conditions are:
  - Moisture or high humidity
  - Dust, flammable gases, fumes or dissolver
  - Thunderstorm or thunderstorm conditions (except assembly PNA)
  - Electrostatic fields, etcetera.
- The measurement category can be adjusted depending on module configuration.
- Any other use than described above may damage your system and is attended with dangers like short-circuit, fire or electric shocks.
- The whole system must not be changed, rebuilt or opened
- DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to Dewesoft sales and service office for service and repair to ensure that safety features are maintained.
- DO NOT service or adjust alone. Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.
- If you assume a more risk less use is not provided any more, the system has to be rendered inoperative and should be protected against inadvertent operation. It is assumed that a more risk less operation is not possible any more, if
  - the system is damaged obviously or causes strange noises.
  - the system does not work any more.
  - the system has been exposed to long storage in adverse environmental.
  - the system has been exposed to heavy shipment strain.
- DO NOT touch any exposed connectors or components if they are live wired. The use of metal bare wires is not allowed. There is a risk of short cut and fire hazard!
- Warranty void if damages caused by disregarding this manual. For consequential damages NO liability will be assumed!
- Warranty void if damages to property or persons caused by improper use or disregarding the safety instructions.
- Unauthorized changing or rebuilding the system is prohibited due to safety and permission reasons (CE).
- Be careful with voltages >25 VAC or >35 VDC! These voltages are already high enough in order to get a perilous electric shock by touching the wiring.
- The product heats during operation. Make sure there is adequate ventilation. Ventilation slots must not be covered!
- Only fuses of the specified type and nominal current may be used. The use of patched fuses is prohibited.
- Prevent using metal bare wires! Risk of short circuit and fire hazard!
- DO NOT use the system before, during or shortly after a thunderstorm (risk of lightning and high energy over-voltage). An advanced range of application under certain conditions is allowed with therefore designed products only. For details please refer to the specifications.
- Make sure that your hands, shoes, clothes, the floor, the system or measuring leads, integrated circuits and so on, are dry.
- DO NOT use the system in rooms with flammable gases, fumes or dust or in adverse environmental conditions.
- Avoid operation in the immediate vicinity of:
  - high magnetic or electromagnetic fields
  - transmitting antennas or high-frequency generators

- for exact values please refer to enclosed specifications.
- Use measurement leads or measurement accessories aligned to the specification of the system only. Fire hazard in case of overload!
- Do not switch on the system after transporting it from a cold into a warm room and vice versa. The thereby created condensation may damage your system. Acclimatise the system unpowered to room temperature.
- Do not disassemble the system! There is a high risk of getting a perilous electric shock. Capacitors still might be charged, even if the system has been removed from the power supply.
- The electrical installations and equipments in industrial facilities must be observed by the security regulations and insurance institutions.
- The use of the measuring system in schools and other training facilities must be observed by skilled personnel.
- The measuring systems are not designed for use at humans and animals.
- Please contact a professional if you have doubts about the method of operation, safety or the connection of the system.
- Please be careful with the product. Shocks, hits and dropping it from already lower level may damage your system.
- Please also consider the detailed technical reference manual as well as the security advices of the connected systems.

This product has left the factory in safety-related flawless and in proper condition.
In order to maintain this condition and guarantee safety use, the user has to consider the security advices and warnings in this manual.

EN 61326-3-1:2008

IEC 61326-1 applies to this part of IEC 61326 but is limited to systems and equipment for industrial applications intended to perform safety functions as defined in IEC 61508 with SIL 1-3.

The electromagnetic environments encompassed by this product family standard are industrial, both indoor and outdoor, as described for industrial locations in IEC 61000-6-2 or defined in 3.7 of IEC 61326-1.
Equipment and systems intended for use in other electromagnetic environments, for example, in the process industry or in environments with potentially explosive atmospheres, are excluded from the scope of this product family standard, IEC 61326-3-1.

Devices and systems according to IEC 61508 or IEC 61511 which are considered as “operationally well-tried”, are excluded from the scope of IEC 61326-3-1.

Fire-alarm and safety-alarm systems, intended for protection of buildings, are excluded from the scope of IEC 61326-3-1.

2 About this document

This is the Technical Reference Manual for DS-VGPS-HS Version 1.0.0.

The manual is divided into several chapters. You will find:

- A description of the system and the main combination and expansion options
- The description of the connection variants and the pin assignments on the inputs and outputs
- A comprehensive introduction to the configuration of the modules using DEWESoft™
- Technical data

The software that has been used must be:

- DEWESoft™ Version X7.1-b108 or higher
- Firmware of the VGPS-HS system/s must be: version 4.12.6.16. or higher

2.1 Legend

The following symbols and formats will be used throughout the document.

IMPORTANT 	Gives you an important information about a subject. Please read carefully!

HINT 	Gives you a hint or provides additional information about a subject.

EXAMPLE 	Gives you an example to a specific subject.

Example	Meaning	Description
Cancel	Clickable GUI element	e.g. a button, a menu item, a radio button, etc.
Times New Roman	GUI element	an GUI element: e.g. a Text-Label
`C:\Program Files\OpenOffice.org 3\readme.txt`	File Path and Name	a file name or path
Windows Key	A term	any kind of term (maybe also compound)
SNR: 85dB	Preliminary info	Preliminary information: e.g. specifications that are not confirmed yet
Highlight	Highlighted Text	To highlight parts of the text: e.g. special features
Isolated	Galvanic Isolation	To emphasis items that are galvanically isolated

Table 1: Layout formats used in the documentation

2.2 Online versions

2.2.1 DS-VGPS-HS technical reference manual

The most recent version of this manual can be downloaded from our homepage:

http://www.dewesoft.com/download

In the *HW Manuals* section click the download link for the DS-VGPS-HS users manual.

2.2.2 DEWESoft™ tutorials

The DEWESoft™ tutorials document, provides basics and additional information and examples for working with DEWESoft™ and certain parts of the program.

The latest version of the DEWESoft™ tutorials can be found here:
http://www.dewesoft.com/download

In the the *SW Manuals* section click the download link of the *DEWESoft 7 tutorials* entry.

3 GPS based system for position, speed and displacement measurement

3.1 Features

- **Real 100 Hz GPS engine**
- Portable and rugged construction
- Insensitivity to road surface (can be used on mud off-road, water, snow, ice,..)
- No calibration required
- Easy-to-install, easy-to-use
- Supports differential GPS (SBAS) as standard function
- Mark input for brake trigger switch
- Data over USB or COM with zero latency PPS sync

3.2 Options

- Brake trigger switch
- High bright display
- RTK-2 with 20 Hz or 100 Hz with L1/L2 and Glonass (all Rover and Base modes)

3.3 Specifications

Measurement Specifications			
Speed		**Absolute position**	
Accuracy	0.1 km/h ±0.05 % of range [1]	**Accuracy**	< 2 cm CEP [3]
Min to Max	0.1 km/h to 500 km/h	**Refresh rate**	5 to 100 Hz
Resolution	0.01 km/h	**Resolution**	< 10 cm
Refresh rate	5 to 100 Hz		
Displacement		**Latency time**	**< 13 ms using Dewesoft**
Accuracy	< 20 cm/km [2]		
Refresh rate	5 to 100 Hz		

System specifications			
Input	SMA connector for GPS antenna, Lemo for event input and power supply		
Output	DSUB-9 for RS-232, USB (ext. converter), Lemo for VGPS display		
Power Supply	6 to 36 V_{DC}		
Dimensions	115 x 93 x 35 mm (4.5 x 3.6 x 1.4 in.)	Display	131 x 64 x 27 mm (5.2 x 2.5 x 1.1 in)
Weight	740 g (1.63 lbs)	Display	265 g (0.58 lbs)
Operating temperature	0°C to 60°C (standard)		
Storage temperature	-20°C to +70°C		
Operating humidity	10 % to 80 % non condensing 5 % to 95 % rel. humidity		
Vibration	MIL-STD 810 F 514.5 procedure operating test procedure frequency range: 5 to 200 to 5 Hz; 5 x 12 min each direction displacement amplitude ±3.5 mm (5 to 8.45 Hz) acceleration amplitude 1 g (8.45 to 92 Hz) displacement amplitude 92 to 113 Hz ±0.029 mm acceleration amplitude 1.5 g (113 to 200 Hz)		
Shock	MIL-STD 810 F 516.5 procedure non operating test procedure ½ sinus 11 ms 10g, 3 shocks positive, 3 shocks negative		

1) Acquiring more than 5 satellites, averaged over 3 values

2) Acquiring more than 6 satellites, driving at constant speed

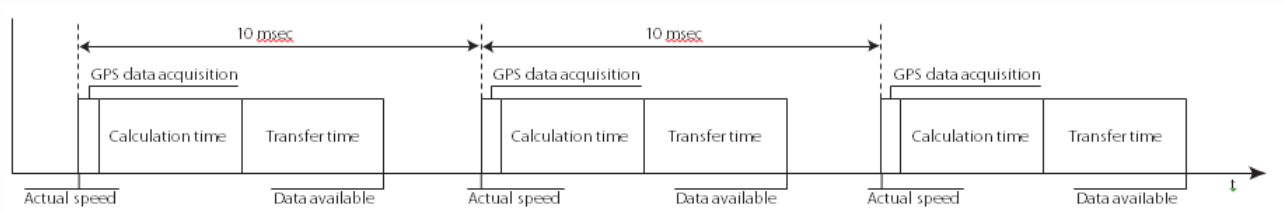
3) Circular Error Probable
- 2 cm RTK option
- 1.8 m differential operation using SBAS
- 3m autonomous operation

3.4 Device overview

With the DS-VGPS-HS DEWESoft offers latest 100 Hz technology of GPS based speed and displacement sensors. The result of this highest dynamic GPS receiver is the most easy to use speed/distance sensor with that bandwidth. In addition to this no calibration drives for different road conditions (ice, water, snow, off road) are needed.

Using the unique PPS sync technology of DEWESoft the latency time of the digital interface (RS-232) is corrected online.

Beside the filter characteristic of the internal algorithm, the latency time on the serial interface is related to the basic structure of any GPS-based sensor. After acquiring the GPS raw data, the time consuming calculation to get the position and speed and the data transfer time will delay the data from the DS-VGPS-HS.



Inside the data stream also the time information is included. By comparing the latency free PPS pulse on the RS232 interface with the time information inside the data stream, the latency time is completely eliminated.

3.5 Mounting the aerial

The aerial supplied with the VGPS is designed to be mounted magnetically on top of the vehicle in a horizontal plane. If the surface is not metallic, the aerial may be fixed by placing a piece of strong tape over the top of the aerial. The positioning of the aerial is critical to the correct operation of the VGPS.

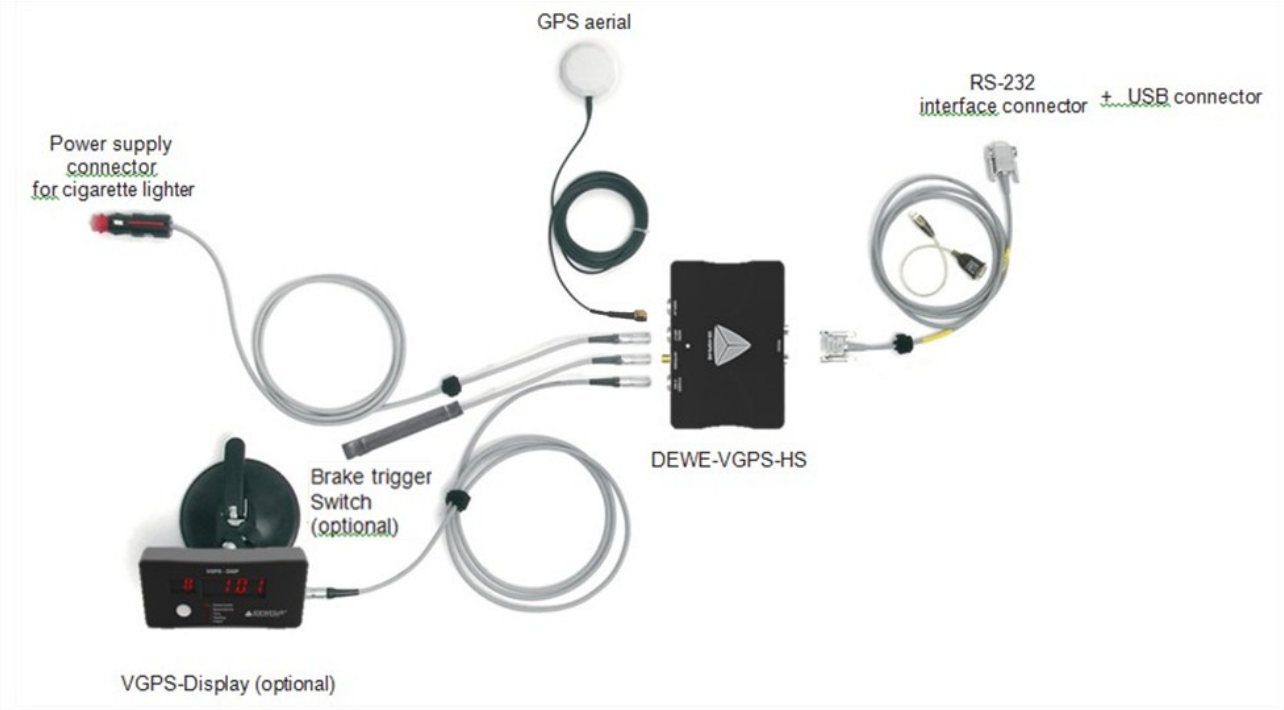
Note: For correct working, the aerial requires a metallic subsurface with a minimal diameter of 15 cm. This surface doesn't has to be ferromagnetic.

The aerial picks up the signals from up to 12 satellites which are all in different places in the sky. These satellites are not necessarily directly overhead, and can often be close to the horizon. Therefore it is best to mount the aerial in a way, that the least amount of metal obscures the view of the sky. On a domed roof, place the aerial on the top of the dome. On an open car with a roll-over bar, place the aerial horizontally on the highest point of the roll-over hoop and tape the wire securely to the frame. Although the VGPS can work with at least three satellites, it's precision increases the more satellites it finds. If one satellite disappears over the horizon, or behind an object, there are other satellites still in view.

3.6 Warm-Up time

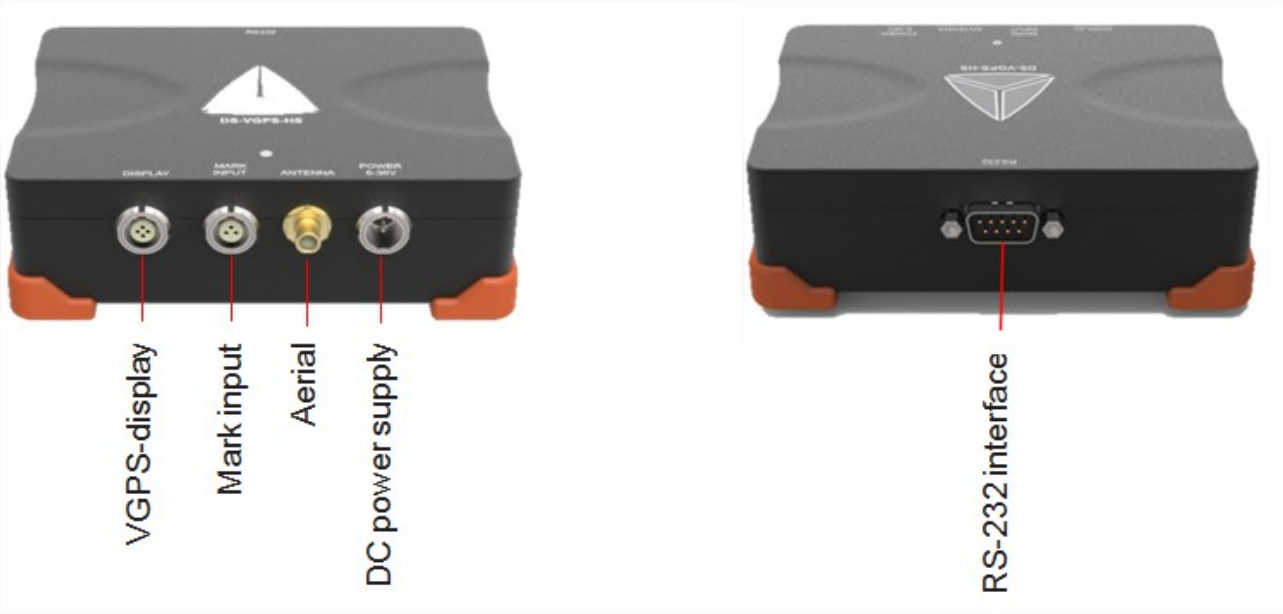
When the VGPS is used for the first time, has been moved more than 200 km or not used for 10 hours (since last usage), it is recommended to perform a 'cold start'. To get the best performance from your VGPS in the future, perform this cold start in an open place with a good all round view to the sky. Allow the VGPS to map the satellites for at least 20 to 30 minutes. The VGPS builds up the 'Ephemeris' data on each satellite which is stored in a non-volatile memory, and means future satellite tracking is swift and stable. Once the VGPS has carried out a successful cold start, future satellite lock from power up will take between 15 seconds and 1 minute. Before going to test in a shady environment with tall objects or near to trees, allow the VGPS to settle in an open space for 5 to 10 minutes.

4 Scope of supply

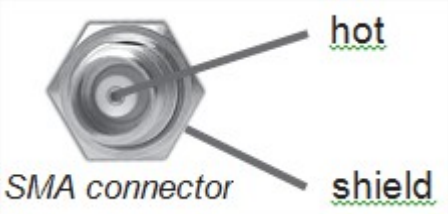


5 Connection

5.1 Connector overview



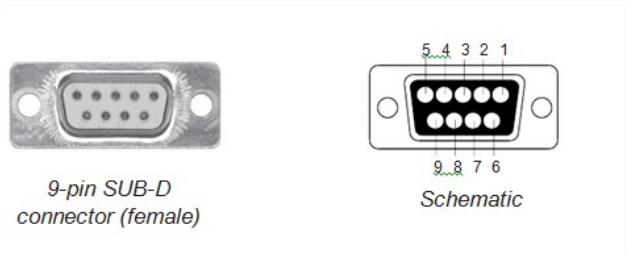
5.1.1 Aerial connector



Connect the GPS aerial to the SMA connector.

5.1.2 RS-232 interface

The RS-232 interface connector (female) is configured as standard RS-232 interface.



Pin assignment
1: Free run operation
2: TXD (Transmitted Data)
3: RXD (Received Data)
4: Not connected
5: GND (Ground)
6: PPS (pulse per second)
7: Not connected
8: n.c.
9: n.c.

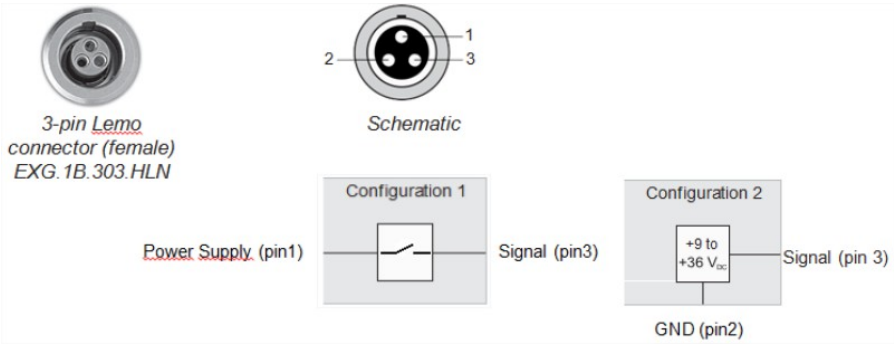
5.1.3 VGPS – Display connector

To connect the external display to the DS-VGPS-HS system.

Pin assignment
1: +5 V
2: GND
3: TXD
4: RXD

5.1.4 Mark input connector

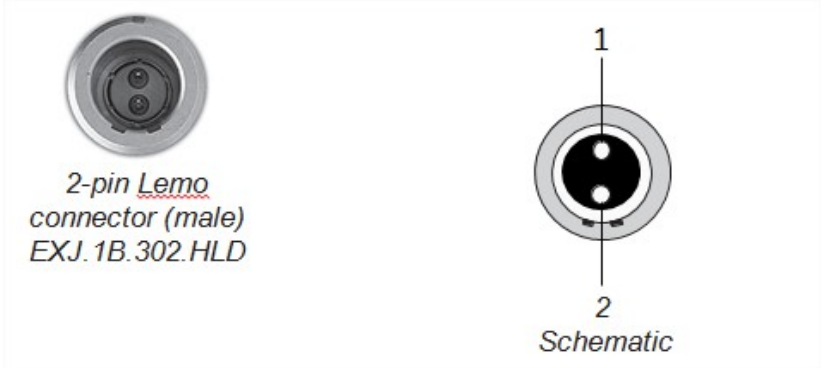
Connects an external trigger source to the DS-VGPS-HS system.



Pin assignment
1: +9 to +36 V_{DC} power supply
2: GND power supply
3: Signal

5.1.5 Power supply connector

Connects the DS-VGPS-HS system to an external DC power supply.

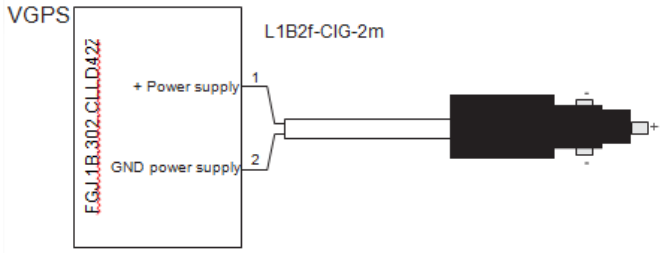


Pin assignment
1: +9 to +36 V_{DC} power supply
2: GND power supply

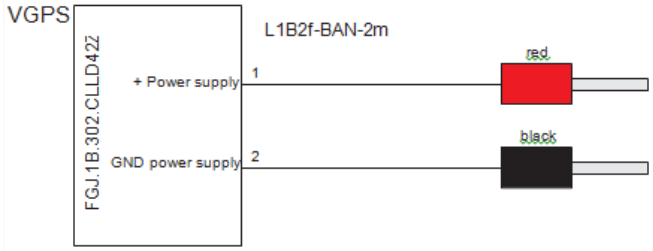
5.1.6 Cable for external power supply

Type of cable: LIYY 2x0.75, length: 2 m

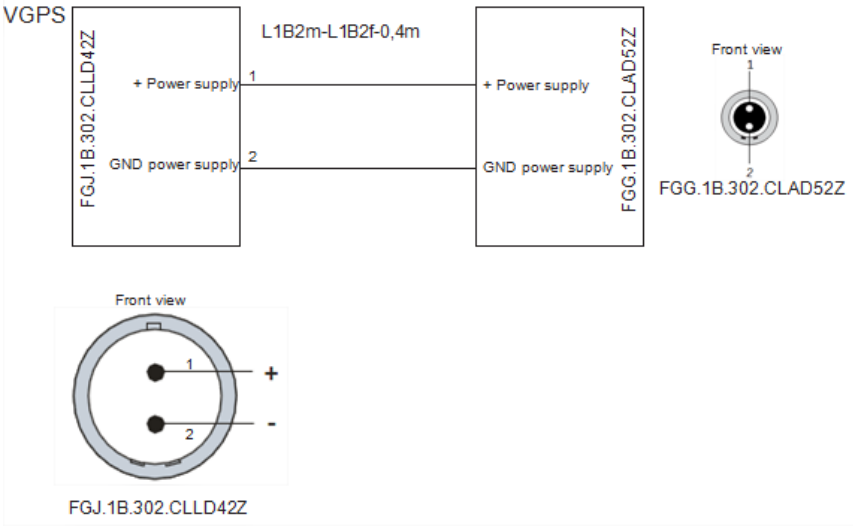
Standard:
(included)



Optional:



Optional:

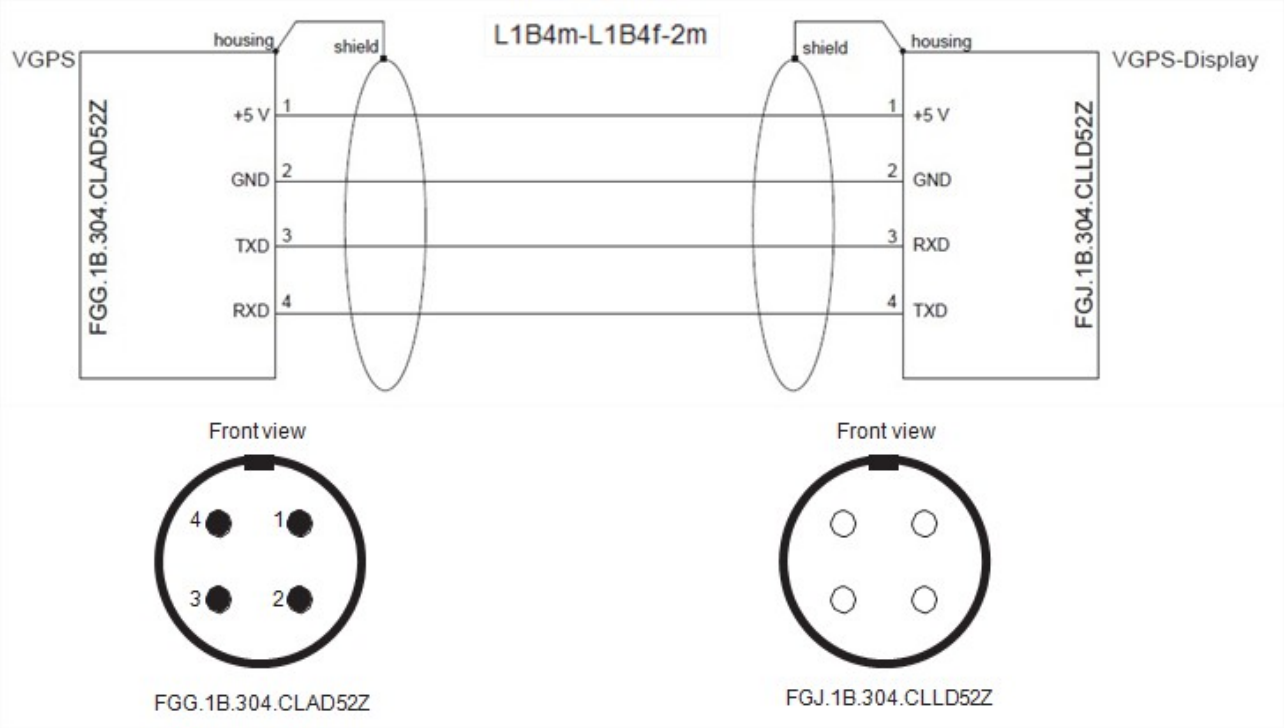


Optional: AC adapter

+ different AC cable (depends on the country)

5.1.7 Cable for connecting VGPS to VGPS-Display (optional)

Type of cable: LIYCY 4x0.25 shielded, length: 2 m

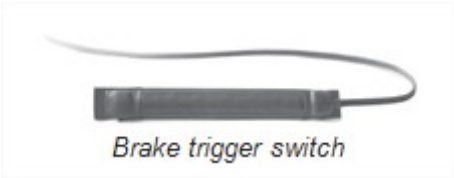


5.2 Options

5.2.1 Brake trigger switch

(Available to purchase as an option)

The brake trigger is designed to be mounted on the brake pedal or the accelerator pedal, and gives an indica- tion when the pedal is pressed. The normal method of fixing is via rubber bands. The brake trigger can be used during a brake stop to determine the speed at which the brake pedal was pressed, and the braking distance from this point can be viewed. This switch can be connected directly to an input of the data acquisition system or to the DS-VGPS-HS. The DS-VGPS-HS will recognize the exact time of the switching point. A serial command with this time information will be transmitted to the data acquisition unit. DEWESoft displays this event as a separate channel. This channel can be used during post processing to calculate the brake distance.

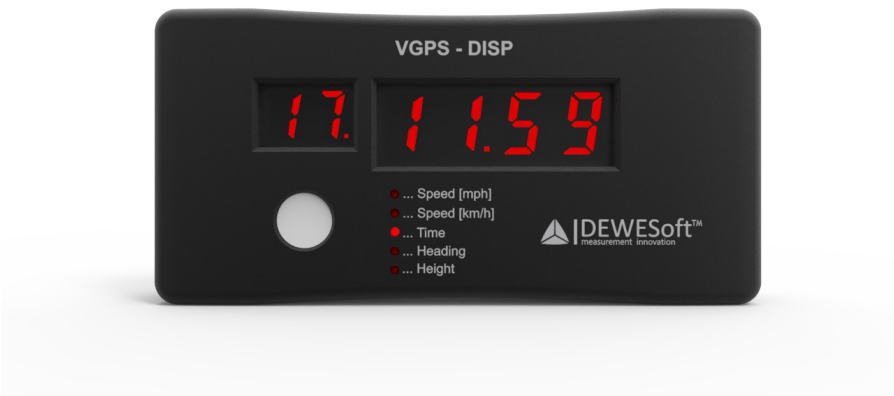


5.2.2 Digital display

The LED display is used to monitor various GPS parameters.

Display description:

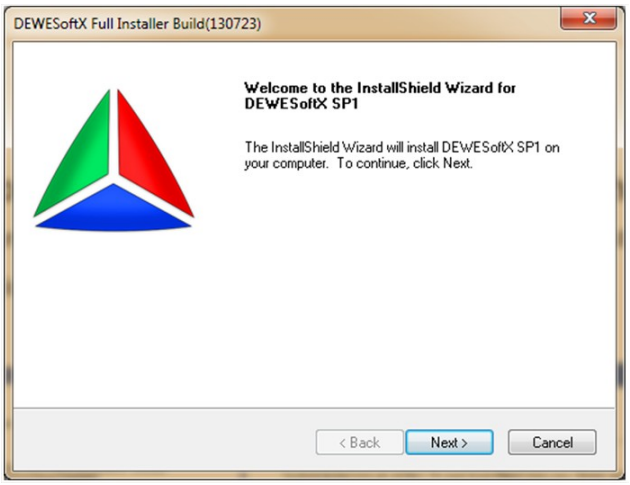
Blinking middle dashes on all digits - the display is unable to communicate with the VGPS. Pressing and releasing the push-button on the front of the VGPS-Display switches the display to different mode. After pressing the push-button, the LED beside mode changed to appropriate display mode.

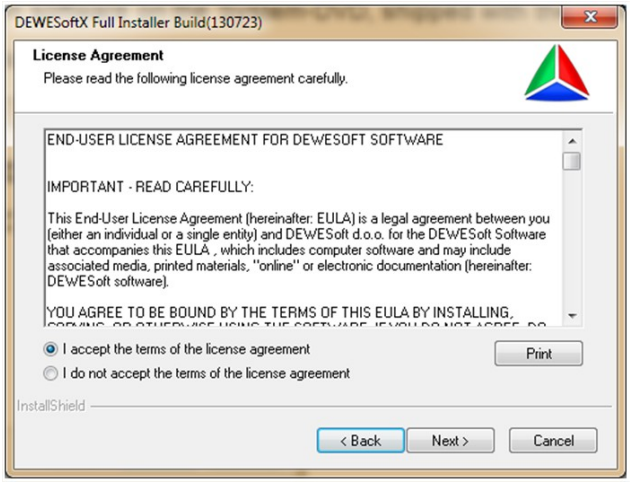
	Mode 01: Number of satellites and velocity in mph.
	Mode 02: Number of satellites and velocity in kph.
	Mode 03: GPS UTC time reported by the satellites goes up in increments of 0.05 seconds. The format is hh.mm.ss. The base for the time is Universal Time coordinate, derived from the atomic clocks on board the satellite and hence is extremely accurate.

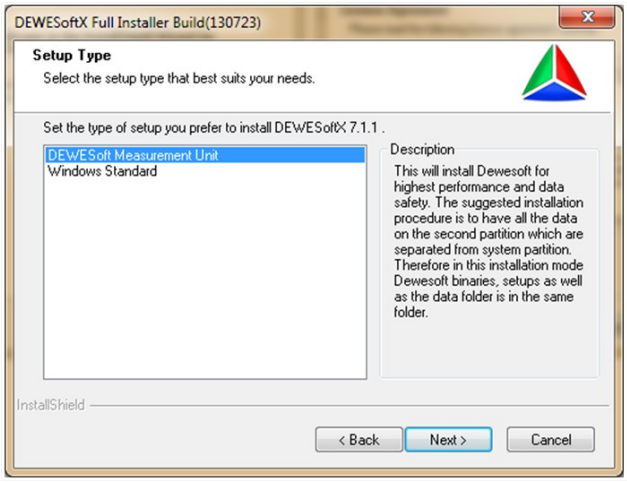
	Mode 04: Heading in degrees. Number of satellites and heading of the vehicle relative to true North. Resolution: 0.1 degree
	Mode 05: Number of satellites and height relative to the Datum WGS84 (approx. 50 meters below UK sea level). Resolution: 0.1 meters

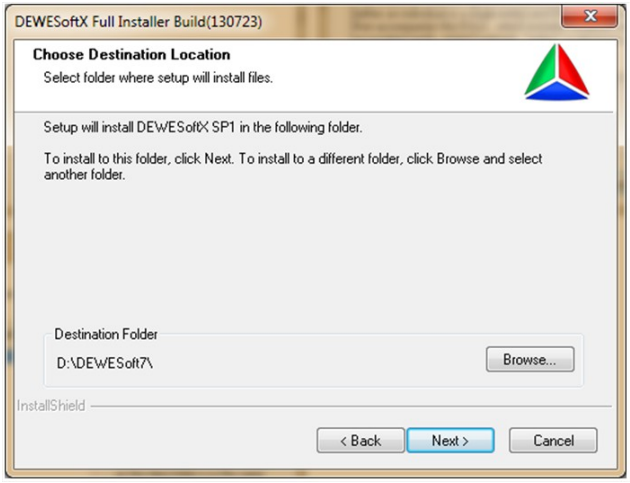
6 Installation of the DEWESoft X measurement software

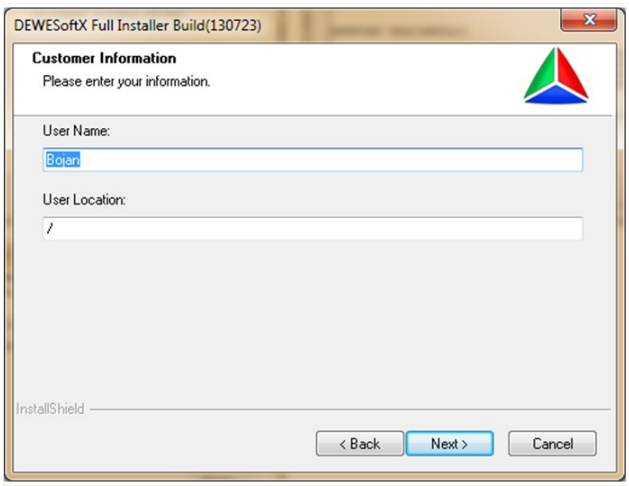
Start the installation software on the System USB stick, shipped with the system. Follow the instructions of the install program according to your license.

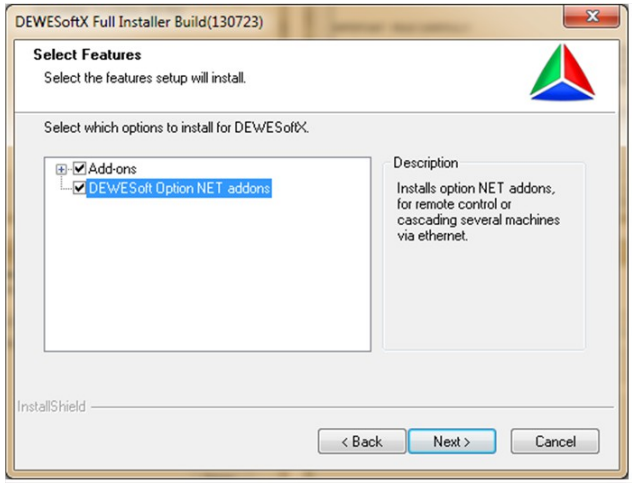


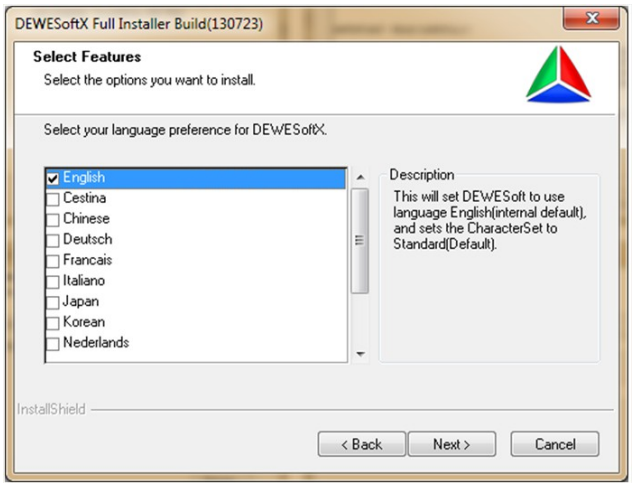


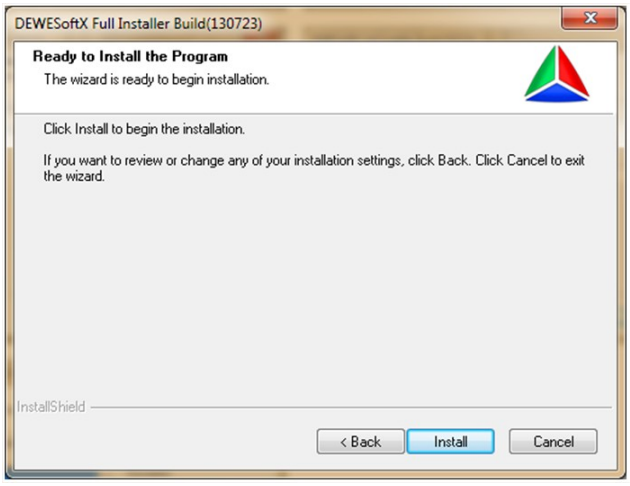




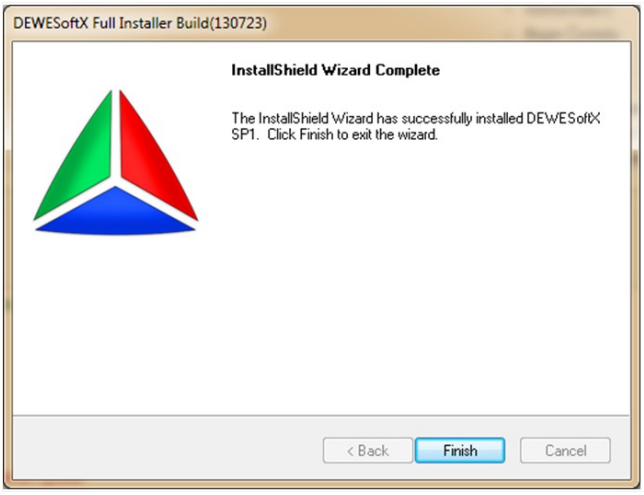


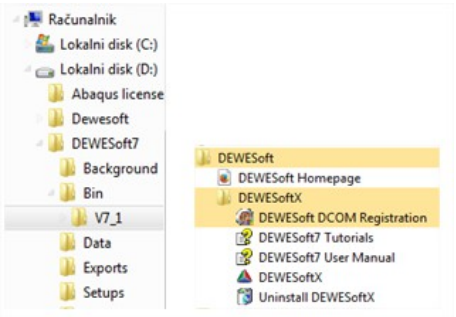






Now DEWESoft X is installed on your computer. The software creates some directories on your hard disk.





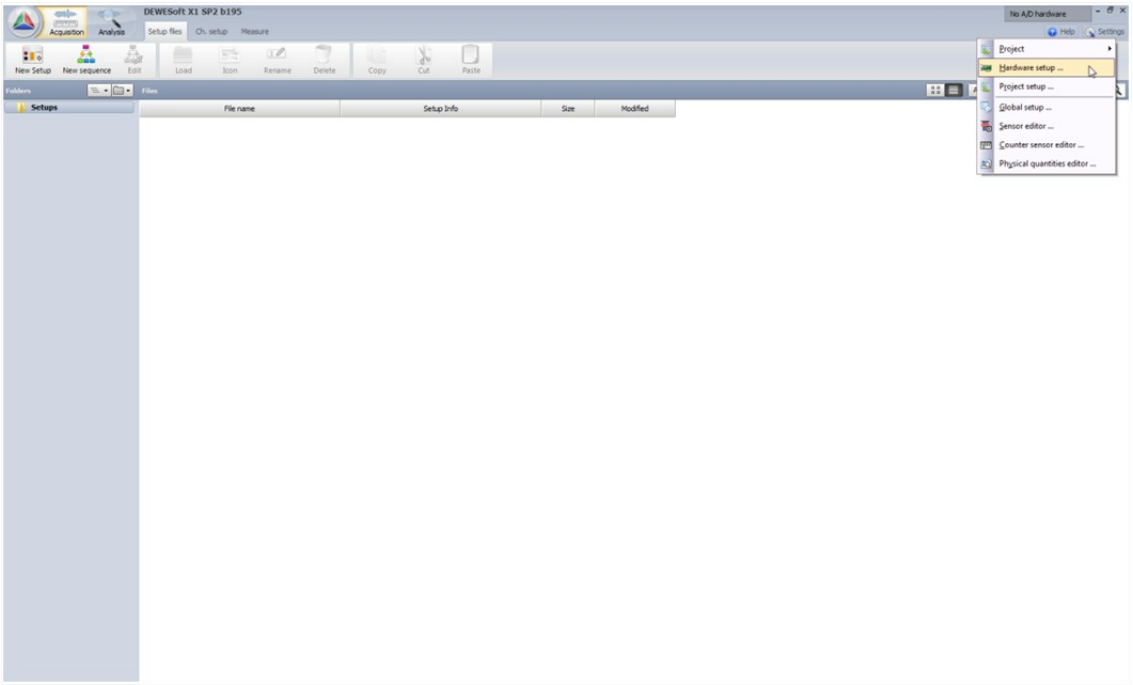
You can start the software in the Windows start menu or use the icon created on your desktop. For more information about the DEWESoft X installation please refer to the *DEWESoft Software Users Manual*.

6.1 Installation of the DS-VGPS-HS

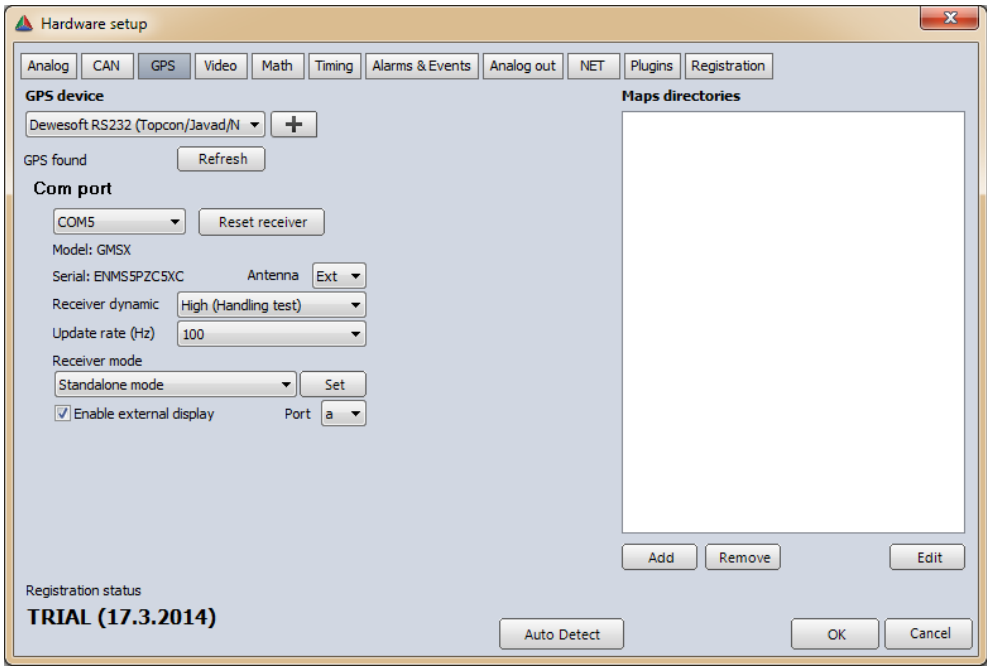
After installing DEWESoft X, connect the RS-232 connector to the corresponding COM port of your system. Check on which COM port is DS-VGPS-HS connected in Device manager.

6.2 Configuration of DEWESoft X for the DS-VGPS-HS

- Start DEWESoft X
- To unlock the GPS functionality in DEWESoft X the GPS has to be configured in the Hardware Setup screen (Settings → Hardware Setup):



In the hardware setup window select 'GPS' and follow the instructions below:



GPS device

A list of the supported GPS systems. Select the **Dewesoft RS232 (Topcon/Javad/NVS)** GPS device. If it don't find the Model of receiver press Refresh button or you have to switch COM port.

COM port

Select the corresponding COM port in the drop down menu. If the GPS can not be found select the port where the GPS is connected from the COM port drop down menu and hit the 'Refresh' button.

Model

Shows the hardware version of the VGPS system.

Serial number

Serial number of the connected GPS sensor. Serial number is recorded to reconstruct the measurement conditions.

Receiver dynamic settings

Depending on the application, the DS-VGPS-HS offers the possibility to set it into three different settings.

These can be done in the pull down menu Receiver dynamic settings.

- **Highest** (car performance for analog out): This setting should be used if the low latency time of 12 ms at the analog and speed output is needed.
- **High** (handling test): Because of the PPS-Sync facility of the DS-VGPS-HS, this setting will not increase the latency time and the dynamic behavior using the serial interface for data acquisition. The delay time at the analog and displacement output may be up to 22 ms.
- **Normal** (data logging): Select this mode for highest accuracy and lowest noise of the position and velocity signal

Reset receiver

The “Reset receiver” button will reset the internally used receiver. This function has no influence on all settings below.

Update rate (Hz)

This setting will define the sample rate of the serial data storage. Please note at 100 Hz only effects velocity, distance and acceleration channel. At this update rate the position output is reduced to 20 Hz. Up to 50 Hz, all channels are stored with this rate.

Receiver mode

The receiver supports receiving correction (differential mode) signals like Waas (for USA) or Egnos (for Europe). It is recommended to enable differential mode to increase the accuracy of the absolute position.

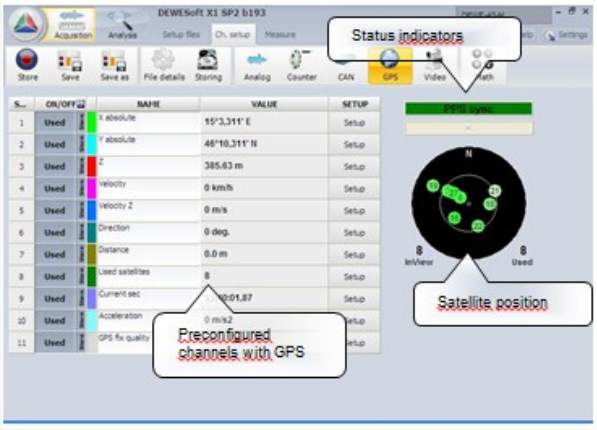
External display

On receiver port 'a' the DS-VGPS-HS supports the VGPS-Display.

6.3 Channel setup

When you are finished in the hardware settings, click on the 'Ch. setup' button and select 'GPS'.

The screenshot below shows the channel setup screen of the DS-VGPS-HS. In the column *ON/OFF* you can select the channels for storing during the measurement. The default channel names are displayed in the column *NAME*. You can change them with a double click on it. Beside the channel names the actual value is displayed.



- X absolute: Longitude component of position in degrees, minutes and fraction of minutes
- Y absolute: Latitude component of position in degrees, minutes and fraction of minutes
- Z: Altitude in meters above sea level
- Velocity: Speed over ground (vector of all 3 dimensions)
- Direction: True track over ground
- Distance: Integration of speed for getting the displacement (Only speed levels above 0.5 km/h are used to calculate the distance)
- Used satellites: Numbers of satellites used for calculation of position and speed
- Current sec: This channel counts the seconds since midnight UTC
- Mark input: Indicates an event at the mark input by changing the level from 0 to 1
- Acceleration: Based on the GPS velocity the acceleration is calculated automatically
- GPS fix quality: To recognize in which mode the receiver is (Standalone, DGPS, RTK)

The circle at the right gives an overview of the satellites in view of the GPS receiver and which of them are used from the receiver. The color of the shown satellites indicates the signal strength of them. From gray to dark green which is the strongest density. Satellites shown in the center of the circle are directly above the GPS-aerial. Satellites shown at the border of the circle are near the horizon. Green color satellites are GPS satellites, red color means GLONASS satellites.

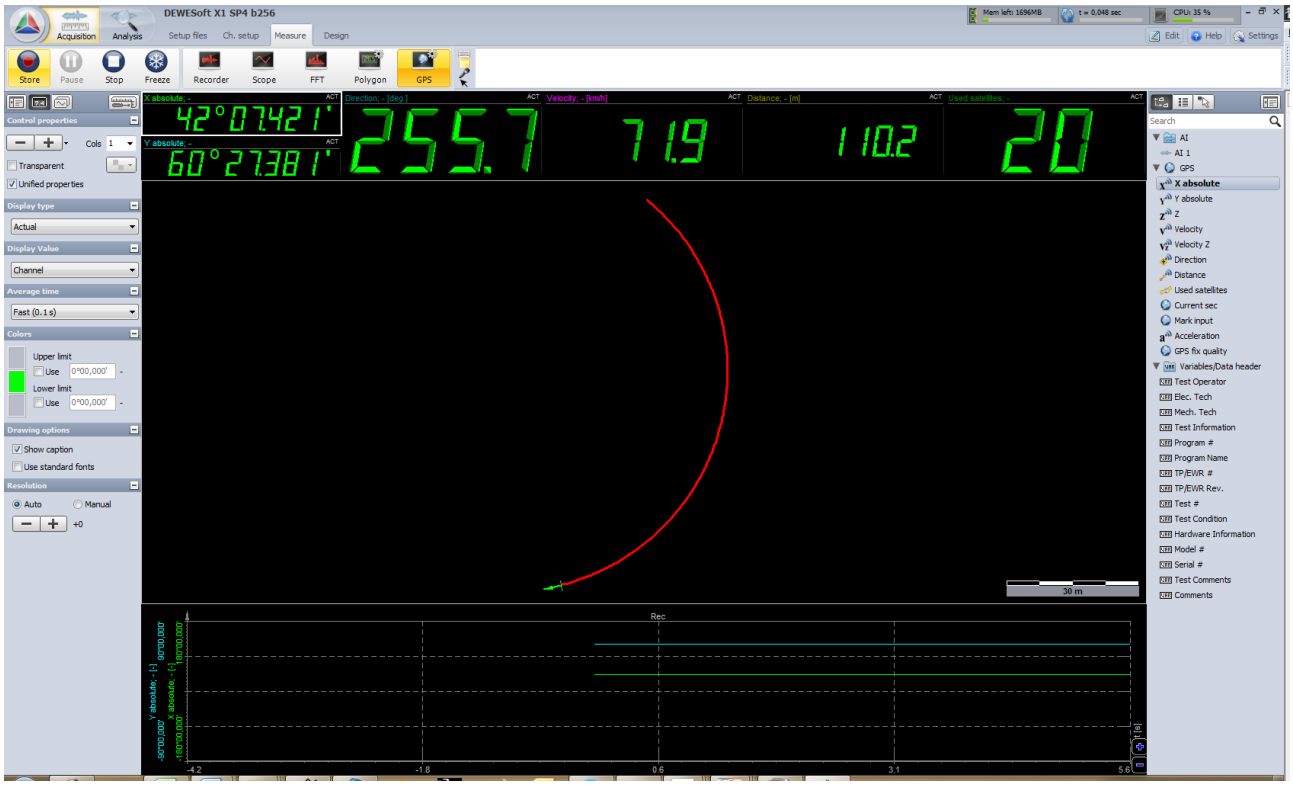
The field <PPS sync> change the color from gray to green depending if the appropriate feature is available at the moment.

The PPS sync is used for hardware synchronization to analog channels. This will eliminate the time shift caused due to calculation time of the GPS receiver and of the data transfer time of the RS-232 port.

6.4 Measurement

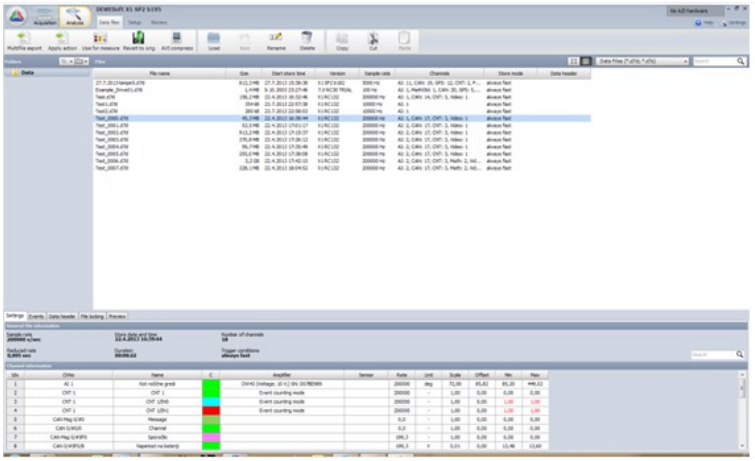
Now you are ready for measuring. Clicking the “Measure“ button opens the measurement screen.

With the “Store“ and “Stop“ button in the recorder you can control the measurement manually.



6.5 Analysis

After measurement you can analyze the stored data. One click on the “Analysis“ button gives you the possibility to choose a recorded data file and analyze it.



Use the cursor functions to zoom in/out, cut out and print out. With the “Export“ function you can export data to other applications, like Excel, Word etc.

Find details about DEWESoft in the *DEWESoft Software Users Manual*.

7 Documentation version history

Revision number: 32
Last modified: Tue 25 Feb 2014, 16:04

Version	Date [dd.mm.yyyy]	Notes
1.0.0	*22.02.14*	☑ initial revision