STONEX

STONEX S580

GNSS RECEIVER

User Manual

CONTENTS

1. Device Description

Front view of S580

Side view of S580

Upper view of S580

The receiver interface description will be shown in the following table.

Num.	Item	Description
1	Connection led indicator	Blue flash when Bluetooth/Wi-Fi connected
2	Data link led indicator	Green flash when differential data transmitting
3	Satellite led indicator	Green flash according to number of satellites tracked
4	Battery led indicator	• Green always on when normally operating • Red flash with warning beep when power is less than 10% • Red always on in charging • Green on when charging finished
5	Power button	Button to turn on/off the receiver
6	USB type-C port	Type C port supports USB 2.0, not OTG

2. Basic Operations

2.1 Power on/off, reset, charging

Press and hold the power button for 3 seconds to turn on/off receiver.

Press and hold the power button for 12 seconds to reset the receiver.

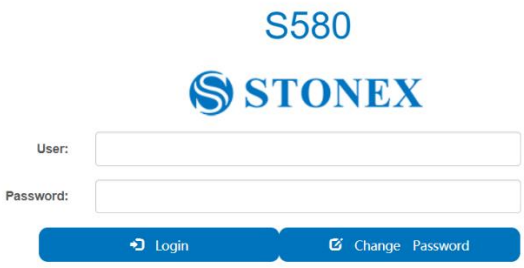
Use the standard charger and type-C data cable to charge. The battery led indicator is red in charging and green when fully charged.

2.2 How to connect mobile phone or PC to receiver via Wi-Fi

The name of Stonex GNSS receiver hotspot is the receiver serial number.

After connecting to S580 Wi-Fi, open a browser and type the following IP address: 192.168.10.1.

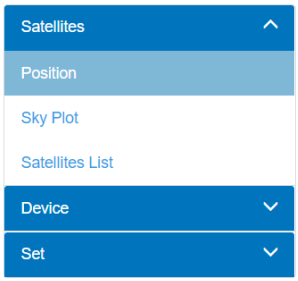
A window pops up and asks for username and password; the default username and password are “admin” and “password” respectively. Then you can login the web user interface of S580, as it follows:



3. Web Interface

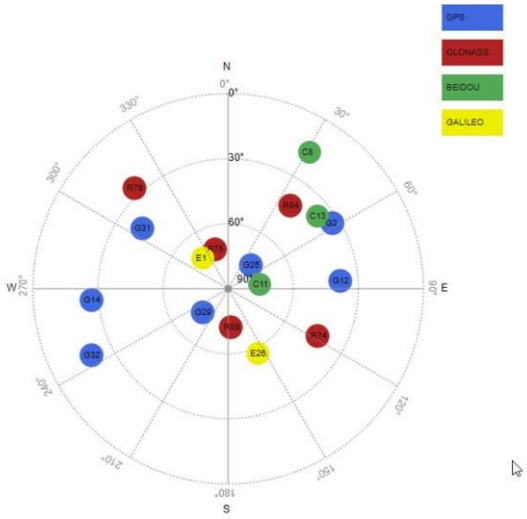
3.1 Satellites section

In the **Position** page, you can view the current position information and the quality of the solution in the case differential corrections are received.

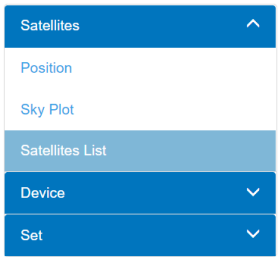


Satellites	21/23	Solution	Single
Longitude	9°10′57.3831″	Latitude	45°33′44.1081″
Altitude	208.744	HRMS	0.531
VRMS	0.8	PDOP	0.92
HDOP	0.59	VDOP	0.7
Date	2021-05-24	Time	18:40:17
Differential Delay	0(s)		
Reference Lon	0°0′0.0000″	Reference Lat	0°0′0.0000″
Reference Alt	0.000	Reference Distance	0.0000(km)

In the **Sky Plot** page, you can view satellite Sky map. The satellites are colored according to the constellation.



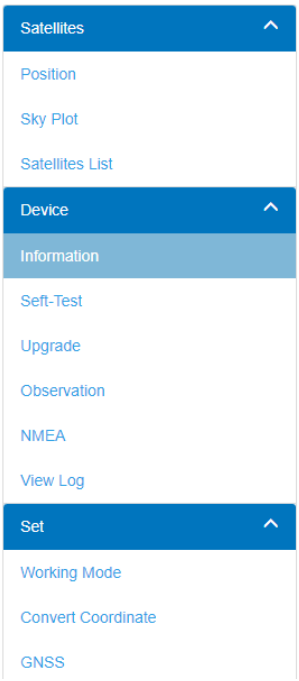
In the **Satellites List** page, you can see satellites information. In this page, the satellites are also coloured according to the constellation. Gray colour is used to satellites tracked but not used to calculate the current position.



Number	Elevation	Azimuth	L1	L2
G4	5	316	26	26
G5	19	73	33	33
G16	17	300	25	24
G18	51	174	43	43
G20	24	96	34	34
G25	35	119	37	37
G26	43	303	38	38
G29	62	50	43	43
G31	52	242	41	41
R71	4	48	20	N/A
R76	6	148	18	N/A
R77	56	155	26	N/A
R78	63	316	41	N/A
R79	11	325	35	N/A

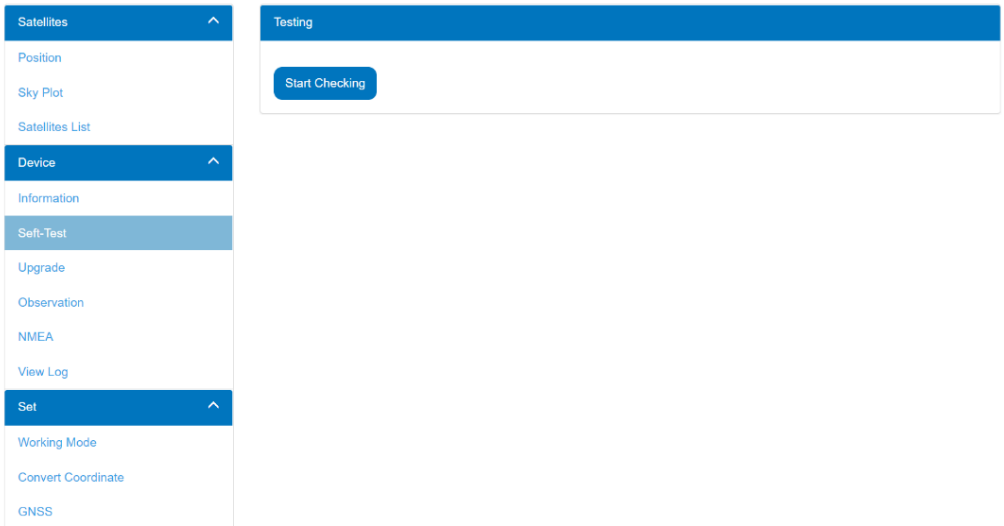
3.2 Device Section

In the **Information** page, you can view device info such as firmware version, available storage, the level of the battery, etc.

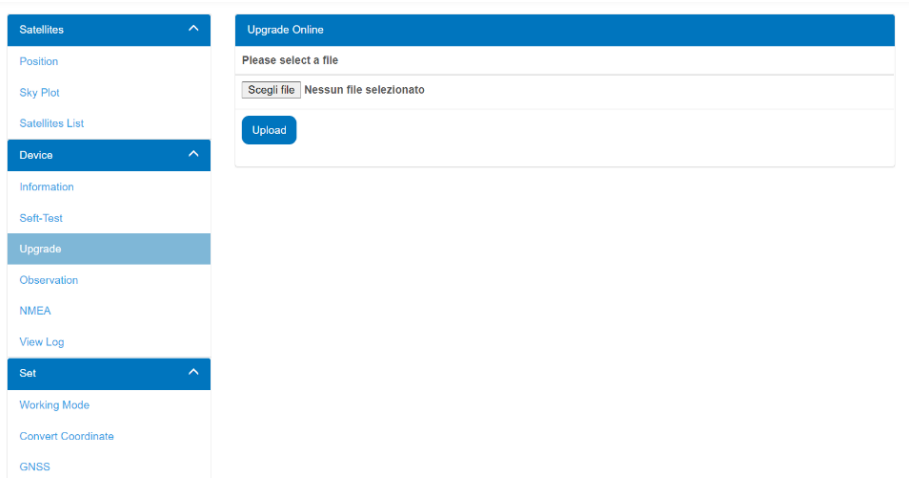


Firmware	1.0.2022-02-15-1-Release
WEBUI	WEBUI-v1.0.211130
Device Model	S580
Device Serial	S580662100142
Hardware Version	M5II-V1.2
Gnss Model	F9P
GNSS Hardware	00190000
GNSS Firmware	HPG 1.13
GNSS Function Code	MOD=ZED-F9P|GPS;GLO;GAL;BDS|SBAS;QZSS|
Differential Mode	Differential corrections
Current Data Link	External
Available Storage	4.04 G
Total Storage	4.36 G
Power Source	Battery
Battery Level	52%

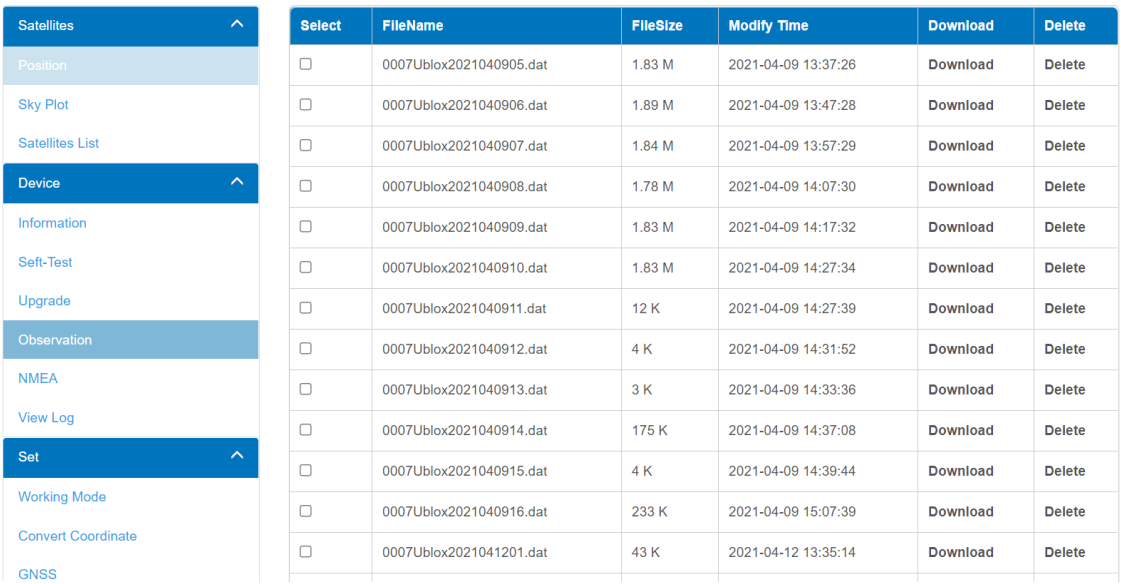
In the **Self-Test** page, you can run the self-test, it is used to identify if there are hardware problems with one or more modules of the receivers, GPS board, wi-fi, etc.



The **Upgrade** page, it's used to upload the firmware. To upgrade your S580 choose the firmware file from your PC and press Upload. Wait until the process is completed.

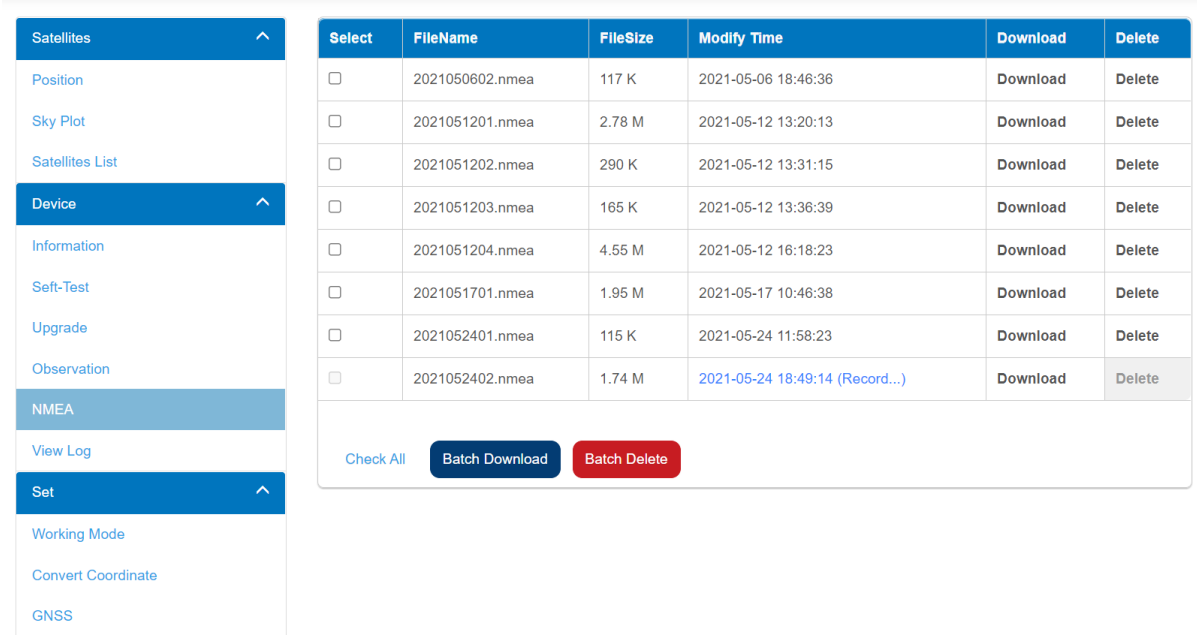


In the **Observation** page, you can download observation files. Download the raw data stored inside the S580 on your PC and then use them in the post process operation.

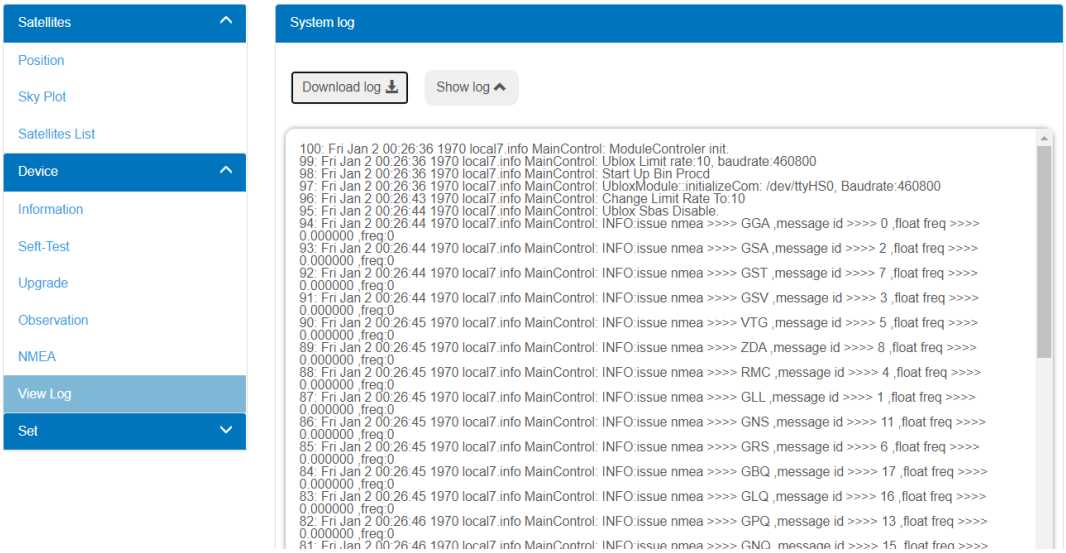


Select	FileName	FileSize	Modify Time	Download	Delete
☐	0007Ublox2021040905.dat	1.83 M	2021-04-09 13:37:26	Download	Delete
☐	0007Ublox2021040906.dat	1.89 M	2021-04-09 13:47:28	Download	Delete
☐	0007Ublox2021040907.dat	1.84 M	2021-04-09 13:57:29	Download	Delete
☐	0007Ublox2021040908.dat	1.78 M	2021-04-09 14:07:30	Download	Delete
☐	0007Ublox2021040909.dat	1.83 M	2021-04-09 14:17:32	Download	Delete
☐	0007Ublox2021040910.dat	1.83 M	2021-04-09 14:27:34	Download	Delete
☐	0007Ublox2021040911.dat	12 K	2021-04-09 14:27:39	Download	Delete
☐	0007Ublox2021040912.dat	4 K	2021-04-09 14:31:52	Download	Delete
☐	0007Ublox2021040913.dat	3 K	2021-04-09 14:33:36	Download	Delete
☐	0007Ublox2021040914.dat	175 K	2021-04-09 14:37:08	Download	Delete
☐	0007Ublox2021040915.dat	4 K	2021-04-09 14:39:44	Download	Delete
☐	0007Ublox2021040916.dat	233 K	2021-04-09 15:07:39	Download	Delete
☐	0007Ublox2021041201.dat	43 K	2021-04-12 13:35:14	Download	Delete

In the **NMEA** page, you can download NMEA files.



In the **View Log** page, you can download, and view device run log.

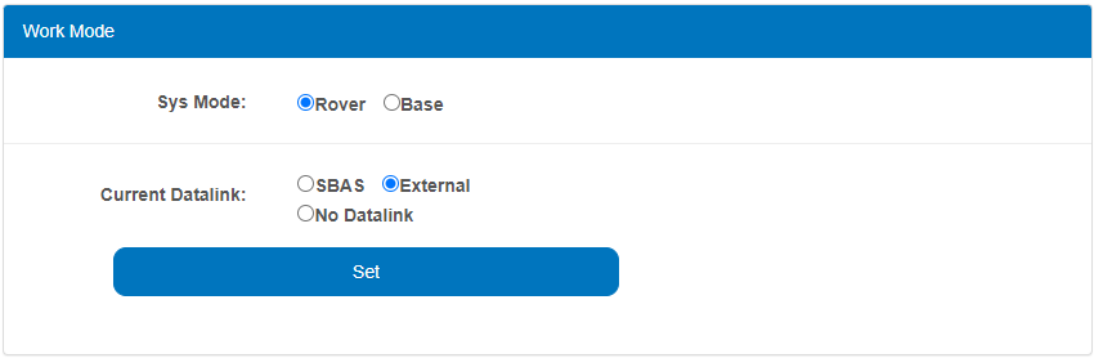


3.3 Set section

In the **Working Mode** page, you can set the Work mode and the Observation settings.

In the Work mode subsection, you can choose between Rover or Base.

The Rover settings are basilar: you can choose to receive the correction from Bluetooth (External), to use the informations from the SBAS satellite or to not receive corrections (No Datalink)

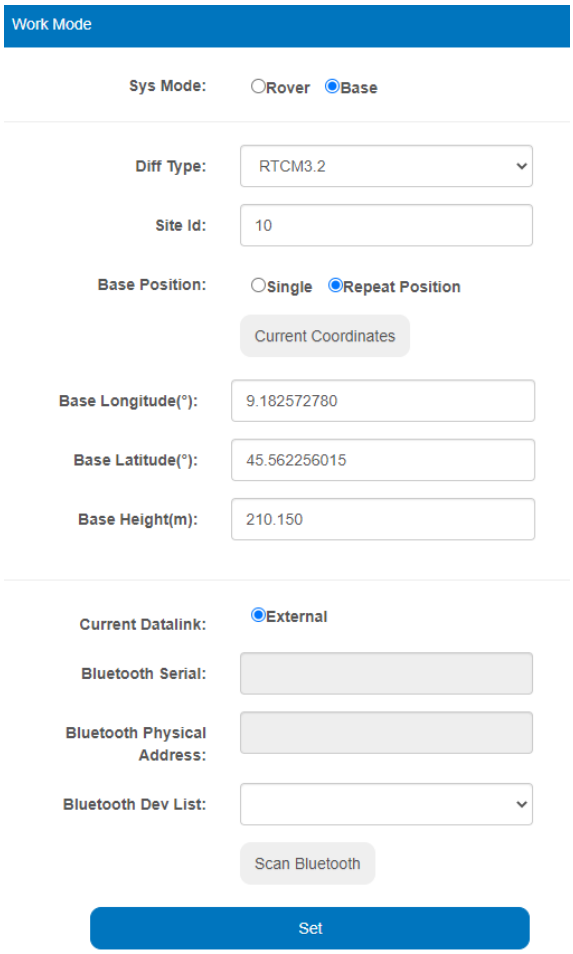


The Base settings let you choose:

- the Site Id (up to 3 digits)
- the Base position: Single: the receiver will use the position at the moment of the base startup, Repeat Position: the base will use the coordinates specified in decimal degrees
  Ex.

Longitude	9°10'57.5534"
Latitude	45°33'44.0512"

Base Longitude(°):	9.1827644667
Base Latitude(°):	45.5622352167



To connect to the SR02 external radio you must scan for the Device list and select the serial number of the radio.

For the SR02 configuration refer to the section 4.2 of this manual.

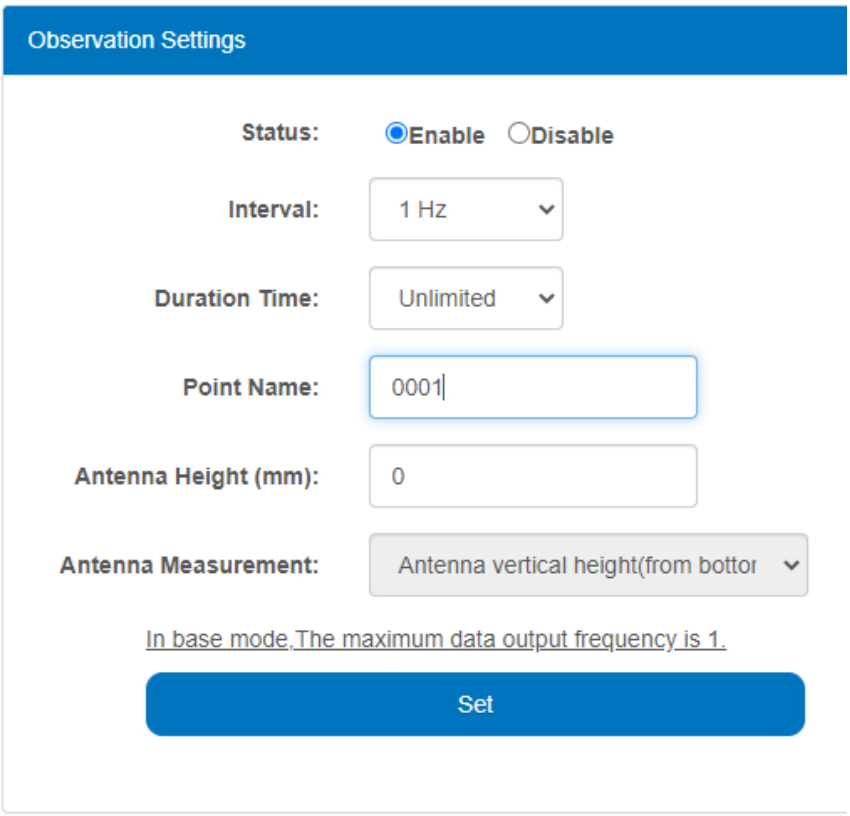
In the Observation Settings subsection, you can start and stop the record of the raw data and configure the registration options. You can record raw data even while you work in Rover SBAS or External (RTK), or while working as base.

Interval: set the frequency/time interval between the registration epochs (max frequency while working as base is 1Hz);

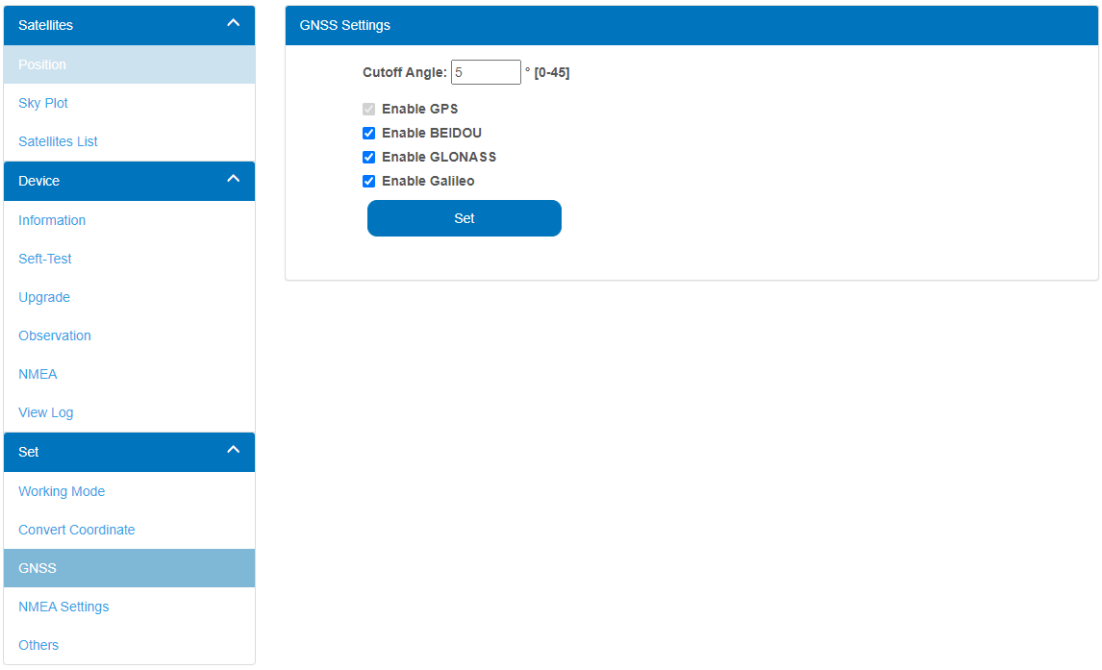
Duration time: set the duration of the single observation file. Ex. If you set 15 min, after 15 min from the start of the registration, the observation file will be closed and another one will be open. This will continue until you stop (disable) the raw data recording.

Point name: this will be visible in the Observation file header, maximum 4 digits.

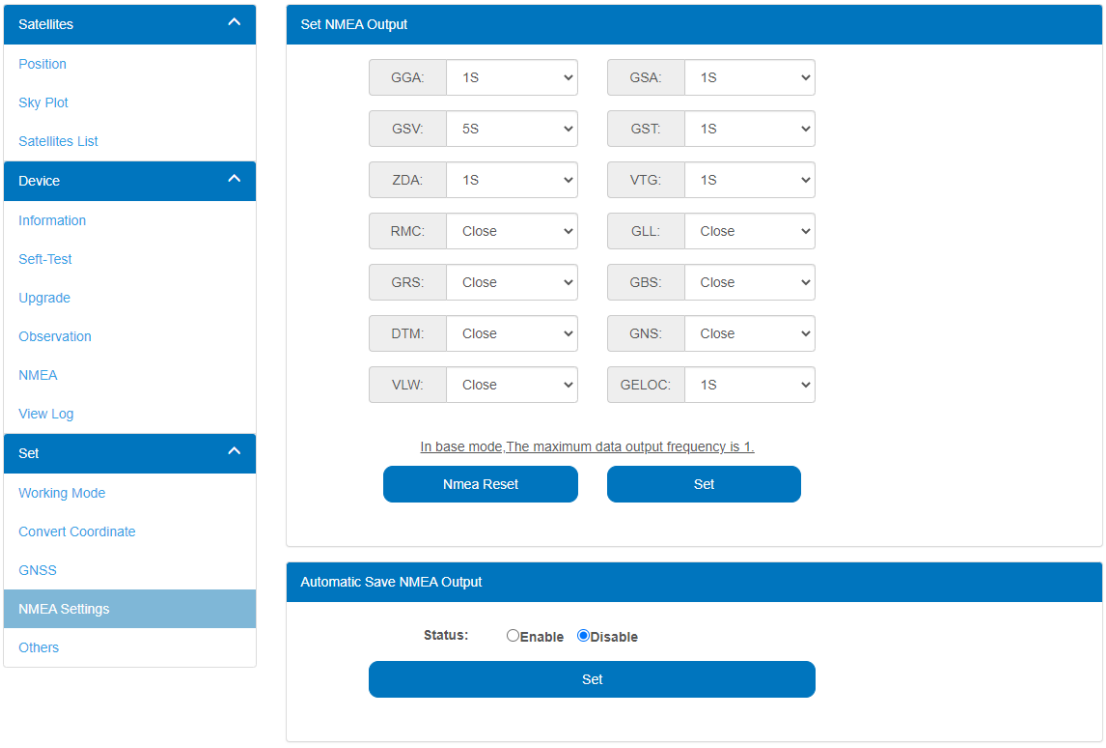
Antenna Height: this will be visible in the Observation file header, the unit of measure is millimeters, the measure must be taken to the bottom of the device.



In the **GNSS** page, you can set the cutoff angle and the constellation used (GPS always enabled).



In the set **NMEA Settings** page, you can set NMEA statements and output frequency. You can also start and stop the NMEA recordings



4. External radio setup

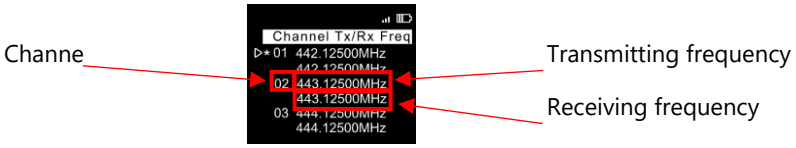
4.1 Rover mode

General scheme

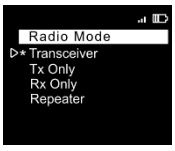
The SR02 radio receive the corrections from the base' radio and transmit them to a controller equipped with Cube-a via Bluetooth, the controller at this point will forward the correction to the S580 using the Bluetooth connection.

Radio configuration

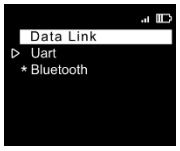
1. Set the same protocol and frequency used by the base, pressing the radio buttons. Right and left arrows let you change page, up and down arrow let you select different options, press the power button to confirm. The left arrow will also bring you back to the higher pages in case you've entered subpages.
    a. Select the frequency: **Channel Tx/Rx Freq** page, the usual frequencies utilized by Stonex devices are on Channels starting from number 19, the star show the channel in use.



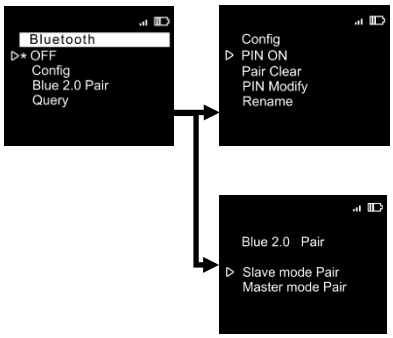
    b. Select the radio protocol: **Data Protocol** page (es. TRIMTALK 450S)
    c. Select the radio link rate: **Radio Link Rate** page (es. 9600-25KHz)
2. **Radio Mode** page, select Transceiver



3. **Data Link** page, select Bluetooth



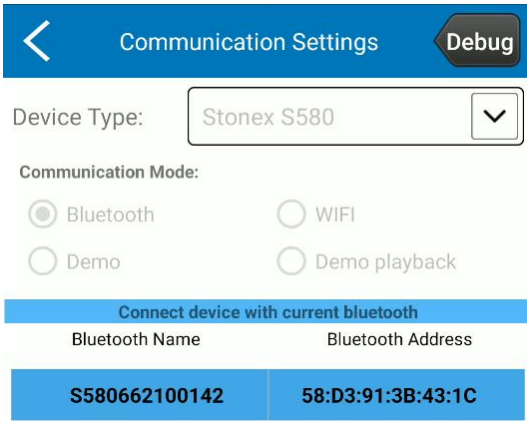
4. **Bluetooth** page: set the following configuration:



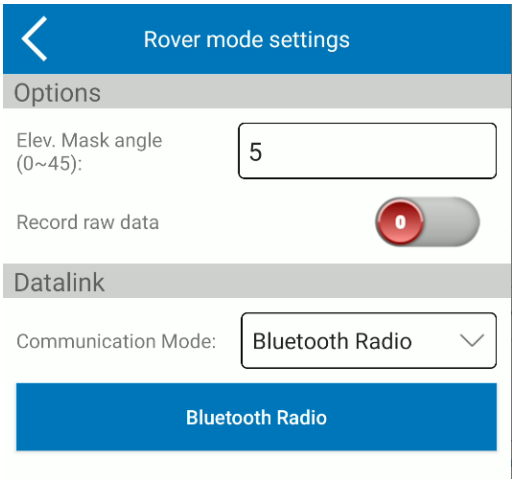
When these settings are shown, it means that the Bluetooth is enabled, and the PIN is disabled.

Cube-a configuration

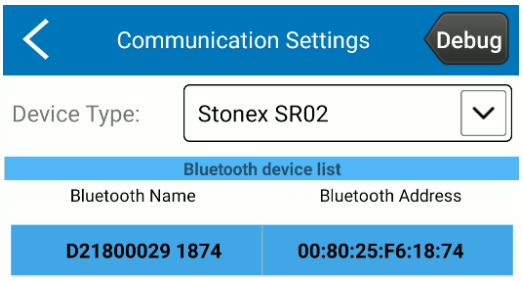
1. Connect to S580



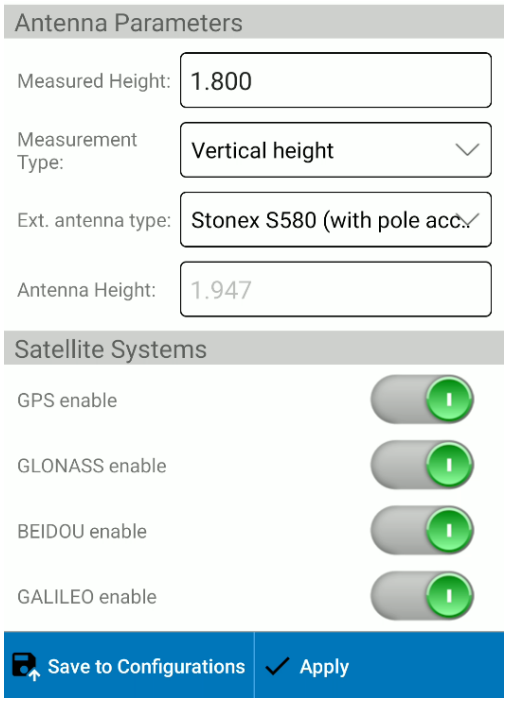
2. In Device > Working mode> Rover, select Bluetooth Radio as Communication Mode



3. Press Bluetooth Radio, search for the radio serial number, select it and press Connect



4. Go back and complete the rest of the rover configuration then press Apply

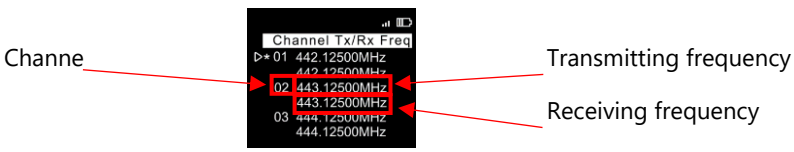


4.2 Base mode

The connection to the S580 is direct and can be done only using the WebUI, please refer to the 3.3 section of this manual.

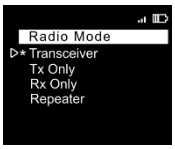
Radio configuration

1. Set the protocol and frequency you want to use, pressing the radio buttons. Right and left arrows let you change page, up and down arrow let you select different options, press the power button to confirm. The left arrow will also bring you back to the higher pages in case you've entered subpages.
    a. Select the frequency: **Channel Tx/Rx Freq** page, the usual frequencies utilized by Stonex devices are on Channels starting from number 19, the star show the channel in use.

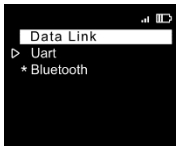


    b. Select the radio protocol: **Data Protocol** page (es. TRIMTALK 450S)
    c. Select the radio link rate: **Radio Link Rate** page (es. 9600-25KHz)

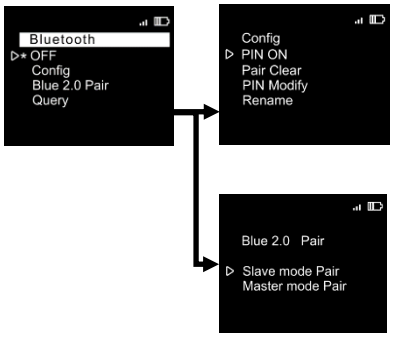
2. **Radio Mode** page, select Transceiver



3. **Data Link** page, select Bluetooth



4. **Bluetooth** page: set the following configuration:



When these settings are shown, it means that the Bluetooth is enabled, and the PIN is disabled.

5. Care and Transport

5.1 Equipment care

Respect the temperature limits when storing the equipment, particularly in summer if the equipment is inside a vehicle. Refer to “Technical Features” for information about temperature limits.

5.2 Build in Battery Care

Your product is powered by a rechargeable battery. The full performance of a new battery is achieved only after two or three complete charge and discharge cycles. The battery can be charged and discharged hundreds of times but will eventually wear out.

Do leave a fully charged battery connected to a charger, since overcharging may shorten its lifetime.

If left unused, a fully charged battery will lose its charge over time.

5.3 Charger Care

Do not attempt to charge/power your product with other than the charger provided. The use of any other types may damage or destroy the product and could be dangerous. Use of other chargers may invalidate any approval or warranty.

For availability of approved enhancements, please check with your dealer.

Charge/power the product according to the instructions supplied with the product.

5.4 Maintenance

Unplug the product or charger before cleaning. Cleaning the product by wiping with a dry or slightly damp cloth.

The cord and charger may only be dry dusted.

5.5 Transport

When transporting the product by rail, air or sea, always use the complete original STONEX packaging, transport container and cardboard box, or its equivalent, to protect against shock and vibration.

Never carry the product loose in a road vehicle, as it can be affected by shock and vibration.

Always carry the product in its transport container, original packaging or equivalent and secure it. When transporting or shipping batteries, the person responsible for the product must ensure that the applicable national and international rules and regulations are observed. Before transportation or shipping, contact your local passenger or freight transport company.

6. Warning and declaration

6.1 FCC warning statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: this device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna;
- Increase the separation between the equipment and receiver;
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected;
- Consult the dealer or an experienced radio/TV technician for help.

6.2 FCC RF warning statement

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

7. S580 Technical Features

RECEIVER	
Satellite signals tracked	GPS: L1C/A, L2C
	GLONASS: L1OF, L2OF
	BEIDOU: B1, B2
	GALILEO: E1, E5b
	QZSS: L1C/A, L2C
	SBAS: L1
Channels	184
Position Rate	Up to 10 Hz
Signal Reacquisition	< 2 sec
RTK Initialization	Typically > 10 sec
Hot Start	Typically < 15 sec
Initialization Reliability	> 99.9 %

POSITIONING[1]	
STATIC POST PROCESSING	
Horizontal	< 2 cm + 1 ppm RMS
Vertical	< 3 cm + 1 ppm RMS
CODE DIFFERENTIAL POSITIONING	
Horizontal	< 0.5 m RMS
Vertical	< 1.0 m RMS
REAL TIME KINEMATIC	
Fixed RTK Horizontal	< 2 cm + 1 ppm RMS
Fixed RTK Vertical	< 3 cm + 1 ppm RMS

INTEGRATED GNSS ANTENNA
Full constellation GNSS antenna

HARDWARE	
Processor	SC20
RAM	512 MB
Flash Memory	8GB
Operating System	Android

EXTERNAL RADIO (optional)	
Model	SR02
Type	Tx - Rx - Transceiver (2 watt)
Frequency Range	410 - 470 MHz
Channel Spacing	12.5 KHz / 25 KHz
Maximum Range	3-4 Km in urban environment Up to 10 Km with optimal conditions[2]

COMMUNICATION	
I/O Connectors	TYPE-C connector support USB 2.0
Bluetooth	2.1+EDR / 3.0 / 4.1 LE
Wi-Fi	802.11 b/g/n
Real time protocols	RTCM 3.x

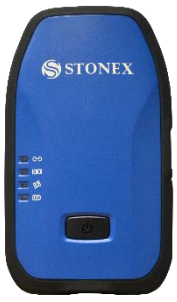
POWER SUPPLY	
Battery	Rechargeable 3.8 V - 6.120 mAh
Working Time	> 10 hours
Charge Time	Typically 4 hours

PHYSICAL SPECIFICATION	
Dimensions	136 mm x 78 mm x 31 mm
Weight	313g
Operating Temperature	-40°C to 65°C (-40°F to 149°F)
Storage Temperature	-40°C to 80°C (-40°F to 176°F)
Waterproof/Dustproof	IP67
Shock Resistance	Designed to endure a 1.2 m drop on concrete floor with no damage

STANDARD ACCESSORIES
Power adapter, USB cable, Belt case, Pole mount

OPTIONAL ACCESSORIES
Carbon fiber pole, Telescopic pole, Soft case

1. Accuracy and reliability are generally subject to satellite geometry (DOPs), multipath, atmospheric conditions and obstructions. In static mode they are subject even to occupation times: the longer is the Baseline, the longer must be the occupation time.
2. Varies with the operating environment and with electromagnetic pollution.



S580 Phase center
L1= 121.5 mm
L2= 116.5 mm

S580 Phase center with pole adapter
L1= 146.5 mm
L2= 141.5 mm

8. S580 Bundle

8.1 Standard Configuration

S580 standard bundle is composed by the receiver, the pole mount, the Power adaptor with plugs according to the country, two USB cable (1 Type C-Type C and 1 Type C-Type A), a cloth bag to use the S580 without the pole and a carton box.

PRODUCT CODE	DESCRIPTION	Q.TY
B10-150504	**S580 GNSS, 184Ch, WIFI, BT - Bundle**	1
	S580 - Pole mount	1
	Power Adaptor with 4 plugs (US, UK, EU and AU)	1
	Type C-Type C, 1.5m	1
	Type C-Type A, 1.5m	1
	Cloth bag for S580, black	1
	Carton box	1

9. Appendix 1: Copyrights, warranty and environmental recycling

Copyrights and trademarks

STONEX®, the STONEX® logo, and S580 GNSS receiver are trademarks of STONEX® Limited.

STONEX® Cube-Connector, STONEX® GPS Processor are trademarks of STONEX® Limited.

Bluetooth is a trademark owned by Bluetooth SIG, Inc. and licensed to Trimble Navigation Limited. All other trademarks are the property of their respective owners.

Release Notice

This is the March 2022 release of the STONEX® S580 GNSS new model receiver user guide.

The following limited warranties give you specific legal rights. You may have others, which vary from state/jurisdiction to state/jurisdiction.

Standard Limited Warranty

Version 2021

The terms and conditions of this Limited Warranty constitute the complete and exclusive warranty agreement between The Customer or Dealer and STONEX® for the Product and supersedes any prior agreement or representation made in any STONEX® sales document or advice that may be provided to Customer by any STONEX® representative in connection with Customer's purchase of the Product. No change to the conditions of this Limited Warranty is valid unless it is made in written form and signed by an authorized STONEX® supervisor.

STONEX® warrants that its Products:

- Are free from defects in materials or workmanship.
- Accessories or specific parts for which different limited warranty period shall apply.
- Have been tested/calibrated in proper working status prior to shipment.

The warranty period starts from date of first sale of the instruments. At its sole discretion, under the warranty period, STONEX® will repair the product or send parts for replacement at its expense. STONEX® agrees to repair or replace the defected instrument within thirty (30) days only if STONEX® Europe recognizes that the defects of the instrument are not caused by human factors or no obvious damage to its surface is visible. STONEX® warrants any new replaced parts or products are warranted to be free from defects in materials and workmanship for thirty (30) days or for the remainder of the Limited Warranty Period of the Product in which they are installed, whichever is longer. Faulty Parts or Products replaced under this Limited Warranty shall become property of STONEX®. All products that have to be repaired have to be returned to our technical representative office location via any delivery company the customer prefers, nevertheless STONEX® is not accountable for the unlikely event that the Products gets lost in transit. Any damage inflicted by the customer or by third party after the products has been delivered to the customer is excluded from the limited warranty as well any damage arising from an improper use, from any action or use not provided for in the enclosed user guides and/or manuals.

Shipping policy

The Customer or the dealer is required to pay for the charges for shipping of fault parts or instruments to STONEX® representative office and STONEX® is providing the shipping for return. Dealers need to follow STONEX® repair/service procedure to achieve a better and prompt service result.

Return policy Dead on Arrival instruments

All returned products have to be shipped to STONEX® representative office.

The original Purchaser has a period of seven (7) days starting from date of purchasing to signal the existence of a defect in the instrument for a full refund (less shipping and handling), provided the merchandise is in new, resalable condition and returned in the original, undamaged packaging. Customer has to pay for both the return and the original freight fees, regardless of the original freight paid by the Company. All warranty books, instruction manuals, parts and accessories must be included as well as the original box in which the item was shipped. We recommend placing the original carton inside another box, to avoid any additional damage to the carton itself. In some cases, returns of special items will require a re-stock fee. Acceptance of returned merchandise is final only after inspection by STONEX®.

Above terms and policies shall apply as for hardware. Dealers need to follow STONEX® repair/service procedure to achieve a better and prompt service result.

Firmware/Software warranty

Stonex doesn't warrant that operation of Firmware/Software on any instruments will be uninterrupted or error-free, or that functions contained in Firmware/Software will operate to meet your requirements.

Stonex will forward the Software/Firmware Fix to the dealer or customer. Firmware/software Fix means an error correction or other update created to fix a previous firmware version that substantially doesn't conform to the instruments specification.

Over Warranty repair(s) policy

Customer shall pay the standard repair fees for any service (whether part replacement or repairs) and performed by STONEX® under request and explicit authorization of the customer itself. In this case the customer is charged for return shipment's fees as well.

Disclaimer and Limitation of Remedy

All other express and implied warranties for this product, including the implied warranties of merchantability and fitness for a particular purpose and/or not infringement of any third party's rights, are hereby disclaimed. Stonex® expressly disclaims all warranties not stated in this limited warranty. Any implied warranties that may be imposed by law are limited in duration to the term of this limited warranty. Some jurisdictions do not allow the exclusion of implied warranties or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to customer. Customer must read and follow all set-up and usage instructions in the applicable user guides and/or manuals enclosed. If customer fails to do so, this product may not function properly and may be damaged. Customer may lose data or sustain personal injuries. Stonex®, its affiliates and suppliers do not warrant that operation of this product will be uninterrupted or error free; as do all electronics at times. If this product fails to work as warranted above, customer's sole and exclusive remedy shall be repair or replacement. In no event will Stonex®, its affiliates or suppliers be liable to customer or any third

party for any damage in excess of the purchase price of the product. This limitation applies to damages of any kind whatsoever including (1) damage to, or loss or corruption of, customer's records, programs, data or removable storage media, or (2) any direct or indirect damages, lost profits, lost savings or other special, incidental, exemplary or consequential damages, whether for breach of warranty, contract, tort or otherwise, or whether arising out of the use of or inability to use the product and/or the enclosed user guides and/or manuals, even if Stonex, or an authorized Stonex® representative, authorized service provider or reseller has been advised of the possibility of such damages or of any claim by any other party. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages for some products, so the exclusions or limitations may not apply to customer. This limited warranty gives customer specific legal rights, and customer may also have other rights which vary from country/state/jurisdiction to country/state.

Environmental recycling

The cardboard box, the plastic in the package and the various parts of this product must be recycled and disposed of in accordance with the current legislation of your Country.

For countries in the European Union (EU)

The disposal of electric and electronic device as solid urban waste is strictly prohibited: they must be collected separately.

Contact Local Authorities to obtain practical information about correct handling of the waste, location, and times of waste collection center. When you buy a new device of ours, you can give back to our dealer a used similar device.

The dumping of these devices at unequipped or unauthorized places may have hazardous effects on health and environment.

The crossed dustbin symbol means that the device must be taken to authorize collection centers and must be handled separately from solid urban waste.

For countries outside European Union (EU)

The treatment, recycling, collection and disposal of electric and electronic devices may vary in accordance with the laws in force in the Country in question.

10. Appendix 2: Safety Recommendations

Warnings and Cautions

An absence of specific alerts does not mean that there are no safety risks involved in the use of this equipment.

Always follow the instructions that accompany a Warning or Caution, reported in this.

This information is intended to minimize the risk of personal injury and/or damage to propriety. In particular, observe safety instructions that are presented in the following form:

WARNING - A Warning alerts about risk for health and/or damage to the propriety. A warning identifies the nature of the risk and the extent the possible injury and/or damage. It also describes how to protect yourself and/or the equipment from this risk.

CAUTION - A Caution alerts about a possible risk of damage to the equipment and/or loss of data, but no risk for human safety.

Wireless Module Approval

The receivers use internal wireless modules. Regulations regarding the use of the modem vary greatly from country to country. In some countries, the unit can be used without obtaining an approval license. Other countries require specific approval or auto certification by the set maker.

Before using this instrument, check if authorization to operate the receiver is required in your country. It is the responsibility of the importer to verify if it is necessary a certification or license for the equipment in the country of use.

Instrument Approval

Covers technical features of the equipment relatives to electromagnetic emissions that can cause interference and disturbances to other instruments (note like emc compatibility) or generate not correct functionalities of the instrument itself. Approval is granted by the manufacturer of the equipment. Some countries have unique technical requirements for operation in particular frequency bands. To comply with those requirements, Stonex srl may modified the equipment to be subjected to grant.

Unauthorized modification of the units voids already got approvals, the warranty time and the operational licenses of the instrument.

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