MEGASAT

Shipman

WSTA-VM250P

User Manual

Table of contents

Notes, Cautions, and Warnnings

Caution – Improper handling by unqualified personnel can cause serious damage to this equipment. Unqualified personnel who tamper with this
equipment may be held liable for any resultant damage to the equipment.

Install under DRY condition ONLY! Do not install this system in the rain,
or under any wet conditions. Moisture may affect electronics and void warrenty!

Warning – Need 2 people to install the antenna onto the roof. Do not try to install the antenna by yourself.

Note – Before you begin, carefully read each of the procedures in this manual. If you have not performed similar operations on comparable equipment, ***do not attempt*** to perform these procedures.

Introduction

The satellite antenna system is the innovative and a technologically advanced satellite In-Motion system. The antenna has a unique combination of state-of-the art components with the most sophisticated satellite acquisition and tracking programs to provide the following features:

- Fast satellite acquisition
- Compatible with any Satellite Receiver
- Compatible with all Direct Broadcast Satellites (DBS)
- Built-in Digital Broadcast Receiver(DVB)
- Capable of High Definition receiving

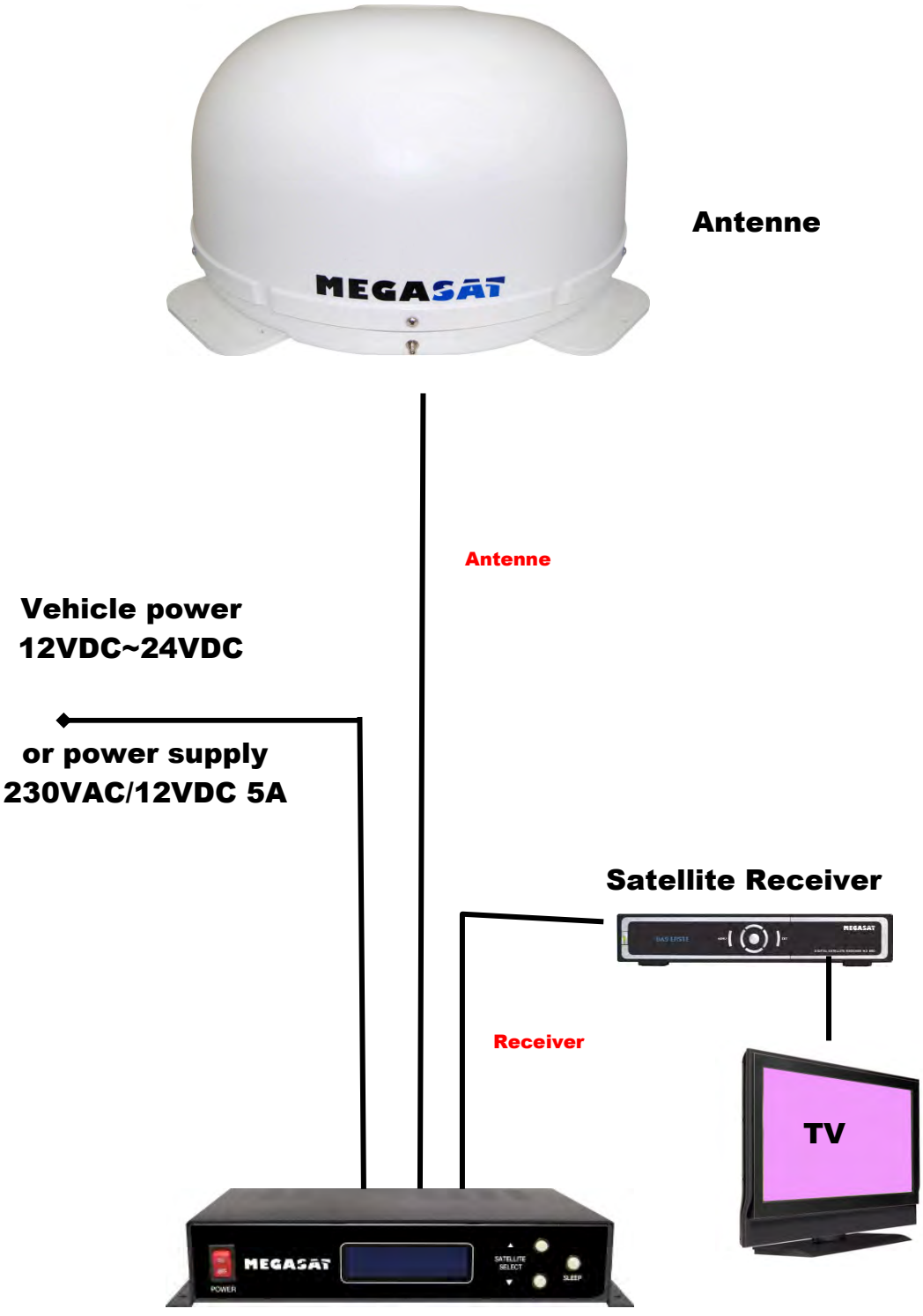
Specification

Antenna Type	Parabola
Frequency Band	Ku Band
Radome Dimension	390x700mm
Antenna Weight	9kg
Antenna Gain	33dBi
Minimum EIRP	49dBW
Polarization	V/H or RHCP/LHCP
Type of Stabilization	2-Axis Step Motor
Elevation Range	19° to 64°
Azimuth Range	Unlimited
Tracking Rate	50°/sec
Temperate Range	-20° to 70°
Power	12~24VDC

Table 1-1 Specification

Antenna System Overview

A complete satellite TV system, illustrated in Figure 1-1, includes the antenna connected to a IDU, a satellite TV receiver, and a television set.



Direct Broadcast Satellite Overview

Direct Broadcast Service (DBS) satellites broadcast audio, video and data information from satellites located 22,000 miles in space. A receiving station, such as the antenna, should include a dish and satellite receiver to receive the signals and process them for use by the consumer audio and video equipment. The system requires a clear view of the satellite to maximize the signal reception.

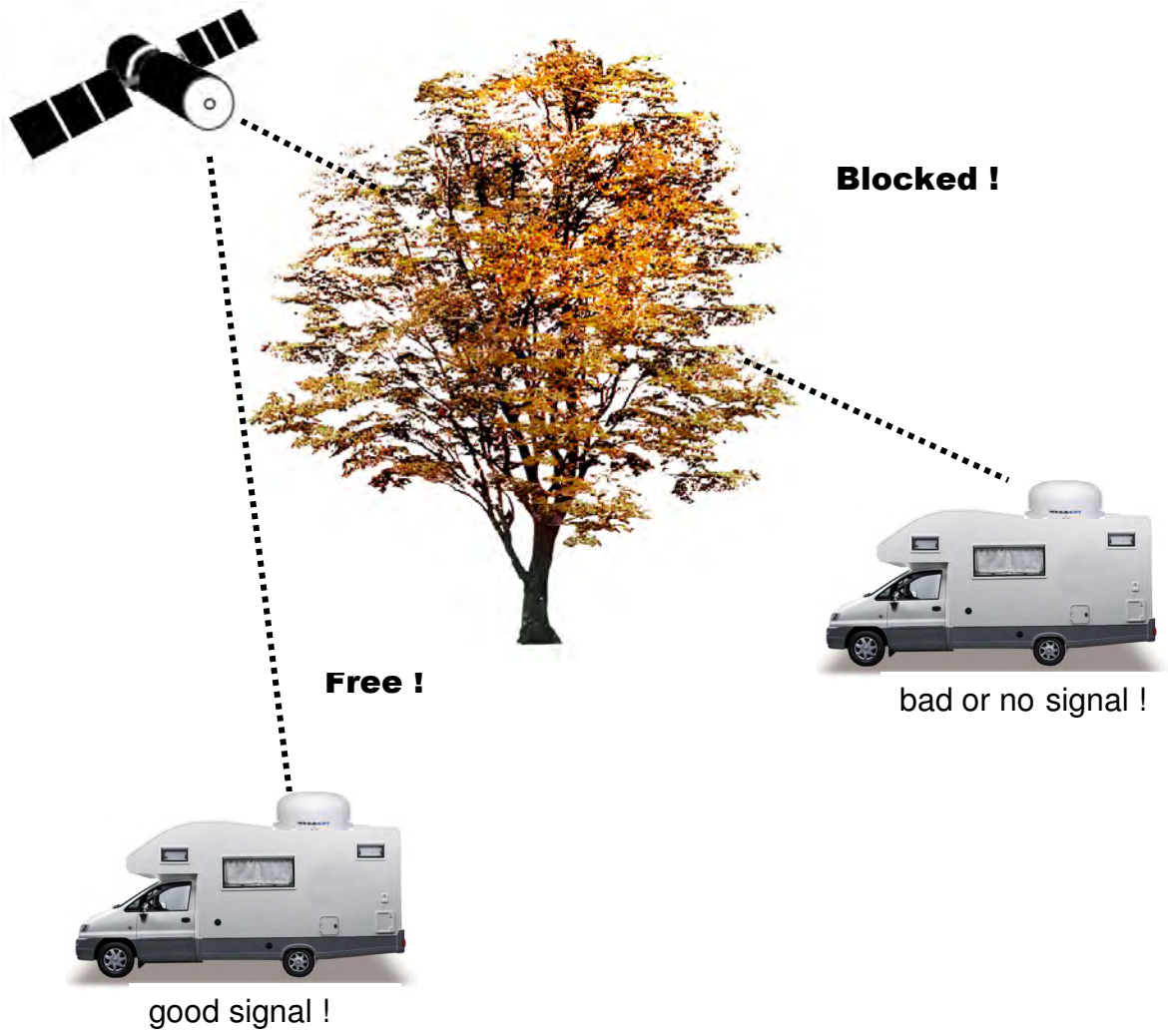


Figure 1-2 Satellite Blockage

Objects such as tall lighthouse, bridges and big ship that block this view will cause a loss of signal. The signal will be quickly restored once the antenna has a clear line of sight again. Heavy rain, cloud, snow or ice may also interfere with the signal reception quality. If the satellite signal is lost due to blockage or severe weather condition, services from the receiver will be lost (picture will freeze frame and may disappear). When the satellite signal strength is again high enough, then the receiver will resume providing desired programming services.

System Components

Antenna Unit

The antenna unit houses the antenna positioning mechanism, LNB (low noise block), and control elements within a radome. Weather tight connectors join the power, signal, and control cabling from the below deck units.

IDU(InDoor Unit)

The IDU is the system's user interface, providing access to the system and its functions through an LCD and three buttons. The IDU also serves as the vessel's junction box, allowing the system to use vessel power, and supply and receive data to/from the antenna unit.

Figure 1-3 System Components

nstallation

This section offers a general explanation of how properly to install the antenna. Installation of the antenna must be accomplished by or under the supervision of an authorized dealer for the Limited Warranty to be valid and in force. The steps in the installation and setup process are as follows:

Unpacking the unit

1. Open box and remove packing material.
The following items are included in the packaging of the antenna.

Item	Description	Quantity
1	Antenna Unit	1 each
2	IDU(In Door Unit)	1 each
3	Power Cable	1 each
4	Coaxial Cable (10m)	1 each
5	Coaxial Cable (1m)	1 each
6	User Manual	1 set

Table 2-1 Parts included

2. Lift dome out of box vertically. Then lift unit out of box vertically. Do not turn box and "roll" out, or turn upside down to remove.

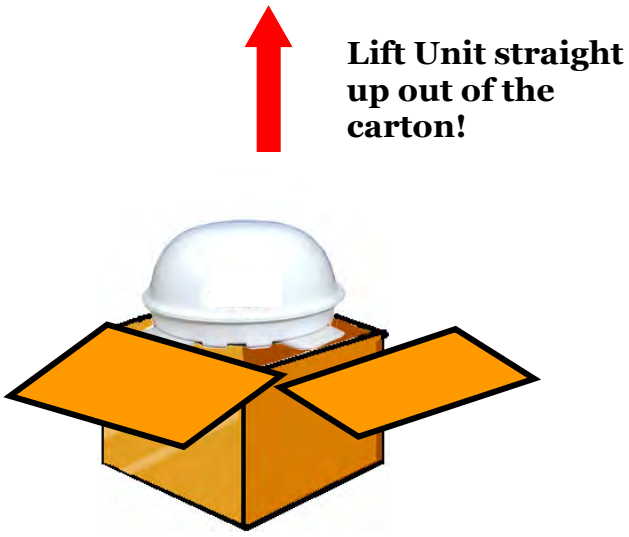


Figure 2-1 Unpacking the unit

Preparing for the installation

Install Tools and Materials

The antenna system is designed for simple installation and setup. However, the following list of equipment or items should be available during installation of the antenna.

- Electric drill and drill bits
- Socket wrench
- Silicon sealant
- Fastener suitable for specific application

1. Verification of the Vessel's Power Supply.

- Confirm that the vessel's power supply is 12VDC~24VDC.

2. Verification of the Satellite Receiver and IDU's attachment and the electricity supply

- Attach Satellite Receiver and IDU in the interior of the vessel or the trunk.
- Connect the power of Satellite Receiver and IDU.
- Once the power of Satellite Receiver and IDU is verified, it confirms that both Satellite Receiver and IDU are working normally.

3. Procedure of the satellite's attachment and installation.

- Attach the satellite on the flat surface area of the vessel's roof.
- Connect each end of the Coaxial antenna cable to the satellite's terminal and the IDU.
- Connect the IDU and the Satellite Receiver box together through the coaxial cable.
- Make sure that the satellite is working normally, once the power is supplied.

Warning : Things to consider when installing the antenna.

- **Turn off the power** when attaching or detaching the antenna.
- Make sure that the attached satellite is fixed **on the flat surface.**
- When attaching, ensure that all the products are adhered properly.
- Ensure that all the cables are connected properly.

Selecting the location

Determine the optimum mounting location for the antenna radome assembly. It should be installed where:

1. The antenna has a clear line-of-sight view to as much of the sky as is practical. Choose a location where masts or other structures do not block the satellite signal from the dish as the vessel turns.

2. The antenna is at least 5 feet away from other transmitting antennas (HF, VHF and radar) that may generate signals that may interfere with the antenna. The further away the antenna is from these other antennas, the less impact their operation will have on it.

3. Direct radiation into the antenna from vessels radar, especially high power surveillance radar arrays, is minimized. The radome should be as far away from the vessels Radar as possible and should NOT be mounted on the same plane as the vessels Radar.

4. The antenna radome assembly should be rigidly mounted to the vessel. If necessary, reinforce the mounting area to assure that it does not flex due to the vessel motion or vibration.

If these conditions cannot be entirely satisfied, the site selection will inevitably be a “best” compromise between the various considerations.

Perform a through site inspection on the roof for the antenna to be mounted.

1. **The antenna must have a clear view of the sky and the horizon at all the directions to avoid blockage of the satellite signal.**
2. **The antenna should be on the top of the vehicle.**

Figure 2-2 Selecting the location

Equipment and cable installation

This offers a general explanation of how to install the IDU and satellite receiver properly to the inside of vessel connecting with coaxial cable.

1. The Coaxial cable is routed from the antenna to the IDU inside the vessel.
2. After Once deciding where to place the IDU and satellite receiver, make sure that both units are placed in a dry and protected area.
3. The IDU and satellite receiver should be placed away from any heat source and in an area with proper ventilation.
4. Ensure that there are at least 3cm of space around both units for ventilation and connection of cables. **Do not stack the units on top of each other.**
5. The following describes the basic wiring configurations for the antenna system.
   - Connect the Coaxial cable to the antenna port on the back of the IDU
   - Connect one end of the supplied coaxial cable to the receiver port on the back of the IDU
   - Connect the other end of the coaxial cable to the satellite receiver

Setting the LNB skew angle (manual)

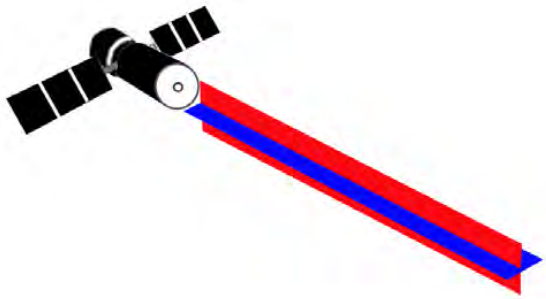


Figure 2-3 Satellite signals

Signals transmitted in vertical(red) and horizontal(blue) wave offset exactly 90º from each other. Since linear satellite signals are oriented in a precise cross pattern, Free Way 1S antenna's receiving element, called an LNB (low-noise block) must be oriented in the same way to optimize reception. This orientation adjustment is referred to as the LNB's "skew angle." ***Figure 1-4*** illustrates how skew determines the amount of signal the LNB collects. The more signal, the better reception.

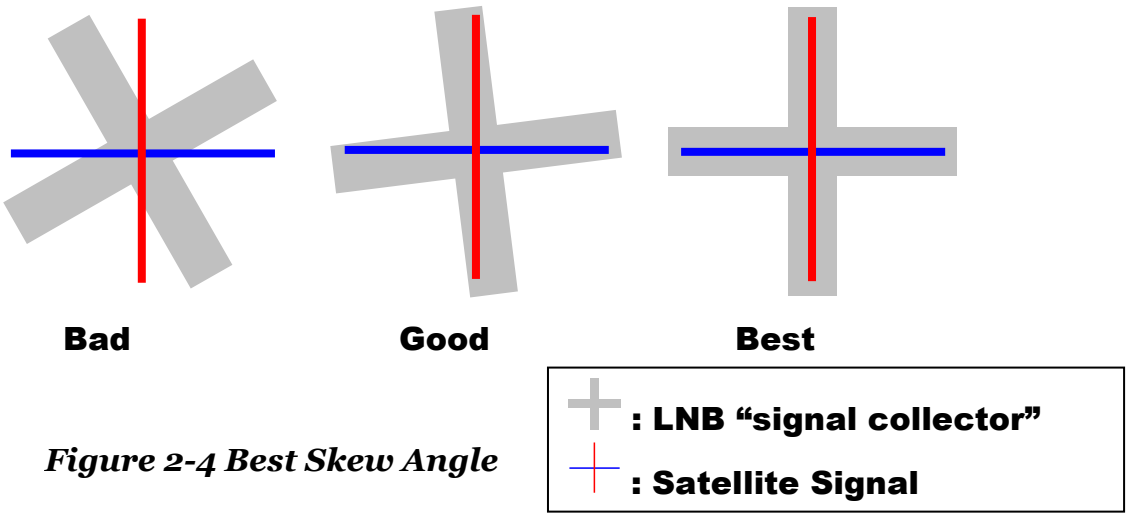
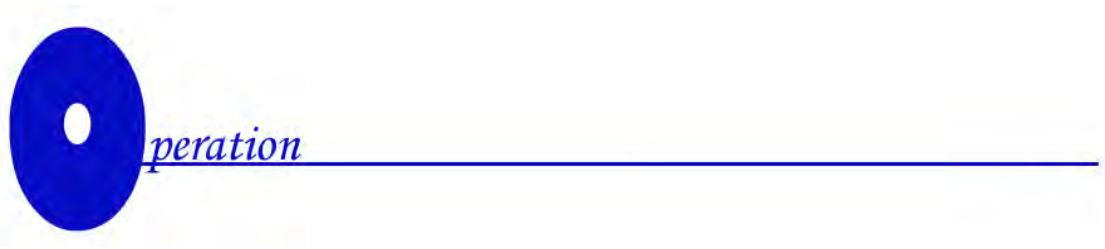


Figure 2-4 Best Skew Angle

The correct skew setting varies depending on your geographic location, since the orientation of your antenna to the satellite changes as you move. For complete details about adjusting the LNB's skew angle, **see "Appendix A – How to Set the Skew Angle"**



The antenna system is easy to use. Under normal conditions, operation of the antenna requires no intervention from the user. Antenna unit initialization and satellite acquisition is completely automatic.

Receiving Satellite TV Signals

Television satellites are located in fixed positions above the Earth's equator and beam TV signals down to certain regions of the planet. To receive TV signals from a satellite, you must be located within that satellite's unique coverage area. To check it, **see "Appendix B – Satellite Coverage Map"** In addition, since TV satellites are located above the equator, the antenna must have a clear view of the sky to receive satellite TV signals. Anything that stands between the antenna and the satellite can block the signal, resulting in lost reception. Common causes of blockage include lighthouses, boat masts, trees, buildings, and bridges. Heavy rain, ice, or snow might also temporarily interrupt satellite signals.

Turning the System On/Off

Since power to the antenna system is controlled by the IDU, you can turn the antenna on or off by applying/removing operating power to the IDU.

Turning on the System

Follow the steps below to turn on your antenna System.

1. Make sure the antenna has a clear view of the sky.

2. Turn on your satellite TV receiver and TV.

3. Apply operating power to the IDU.

4. Wait one minute for system startup. The IDU will display the Tracking Satellite screen after system testing is complete.

Turning off the System

Follow the steps below to turn off your antenna System.

1. Remove operating power from the IDU.

2. Turn off your satellite TV receiver and TV.

Changing Channels

If you have followed the installation instructions, your system should be set to the satellite of your choice and the system should have downloaded the appropriate channel guides. When the antenna system and satellite receiver is properly configured, it is easy to change the channel using the remote control that normally comes with the receiver unit.

Watching TV

The antenna is designed to operate as efficiently and as reliably as possible when the vessel is moved and anchored. It is also the quickest satellite acquisition system available among the antennas. If you have anchored the vessel and the antenna has completed to searching selected satellite, turn off IDU Power to avoid unnecessary use of power. Because the LNB receives its power from the Satellite Receiver through the IDU, the antenna will continue to receive the satellite TV signals.

Switching between Satellites

You can switch between satellites using the IDU by pressing Satellite select buttons. Follow the steps below to switch to another satellite.

1. Ensure that the LCD screen of the IDU is displayed.

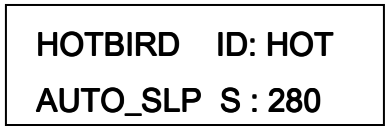


Figure 3-1 IDU LCD Screen

2. Press the Satellite select buttons to switch to another satellite.
3. The antenna shifts to track selected satellite. Wait for the Tracking Satellite screen to reappear with the ID of selected satellite displayed.

Operating the IDU

Appearance

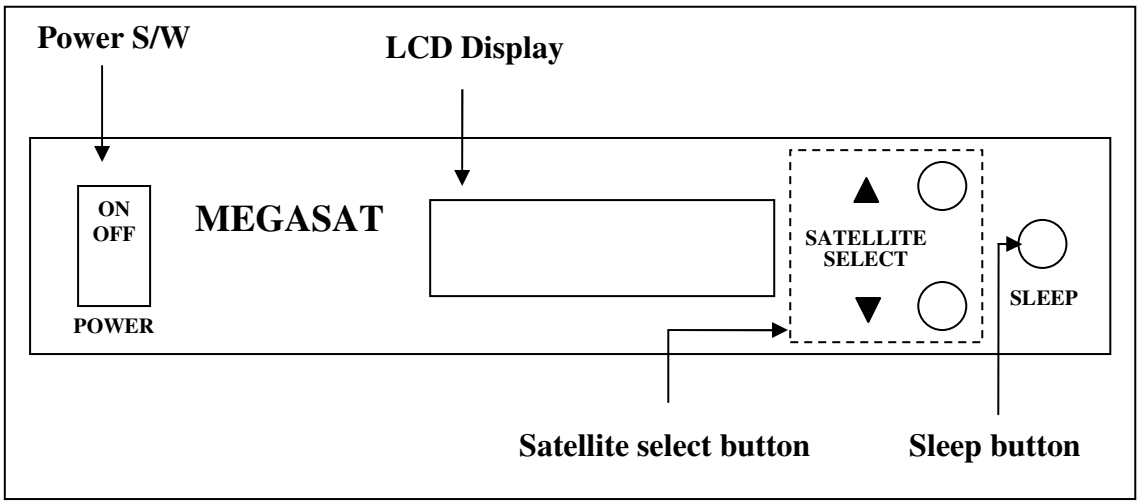


Figure 3-2 Appearance of IDU

Functions of LCD Display

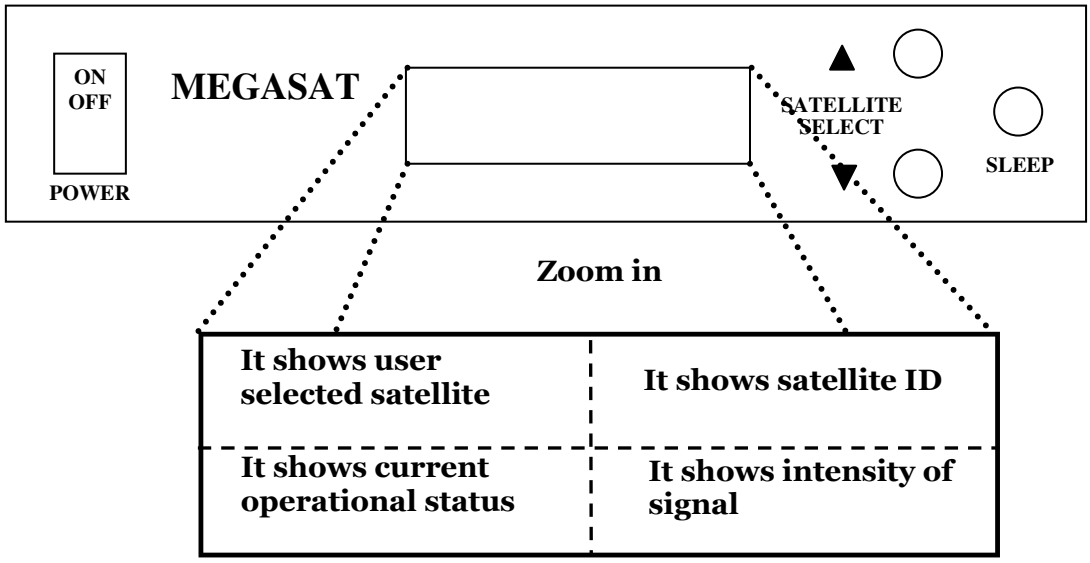
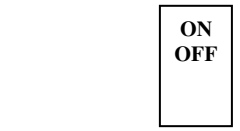


Figure 3-3 Functions of LCD Display

Explanation of words in LCD

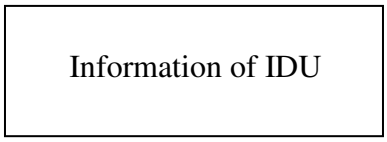
- INIT : It shows condition of initializing the antenna.
- INIT-SCH : It shows condition of initial search mode.
- SAT-MOVE: It shows condition of moving to another satellite.
- S:xxx : It shows intensity of signal.
- ID:xxx : It shows ID of acquired satellite.
- GYRO-CAL : It shows condition of calibrating the Gyro Sensor.

General Operation Order



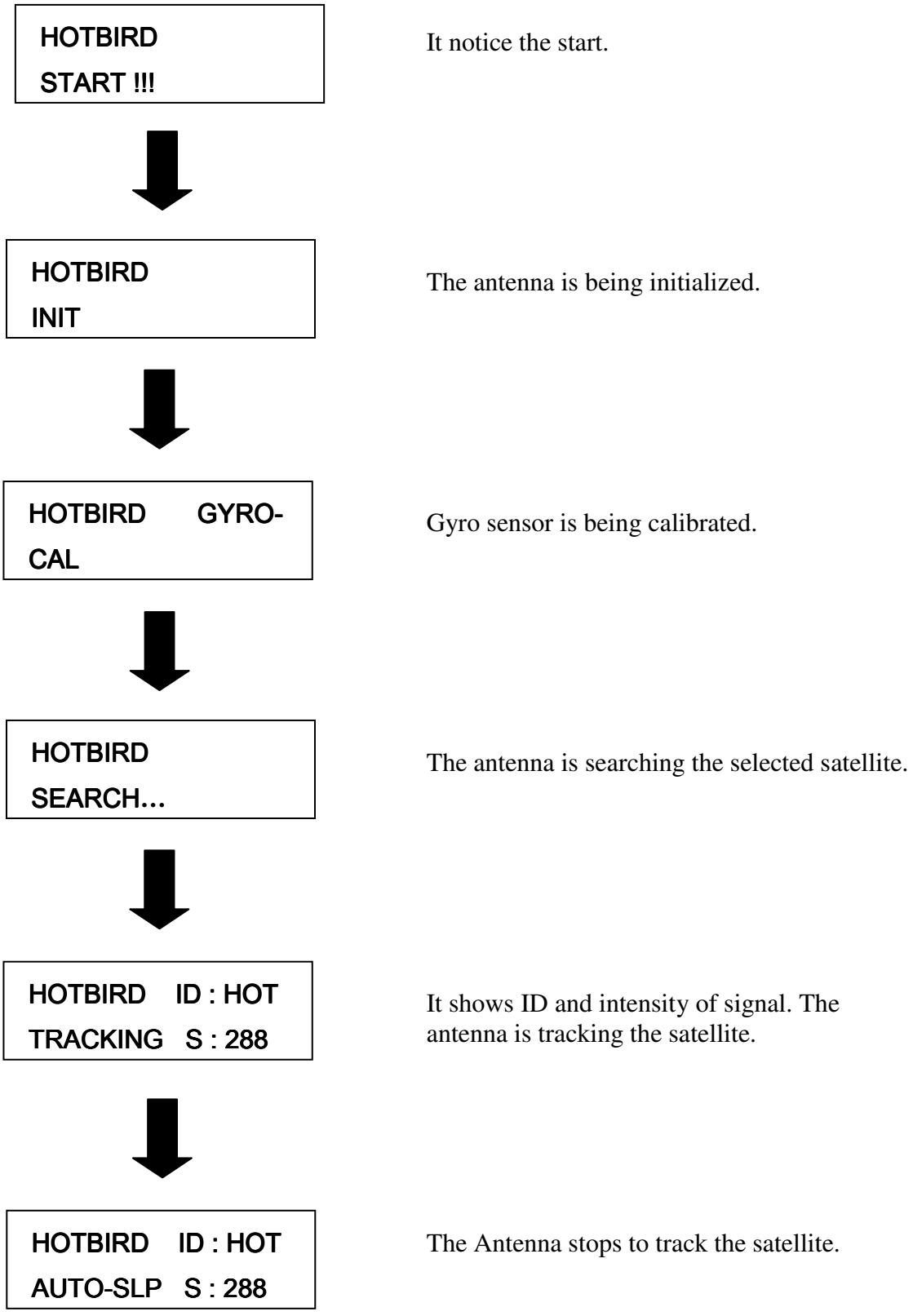
POWER

Turn the power switch on.

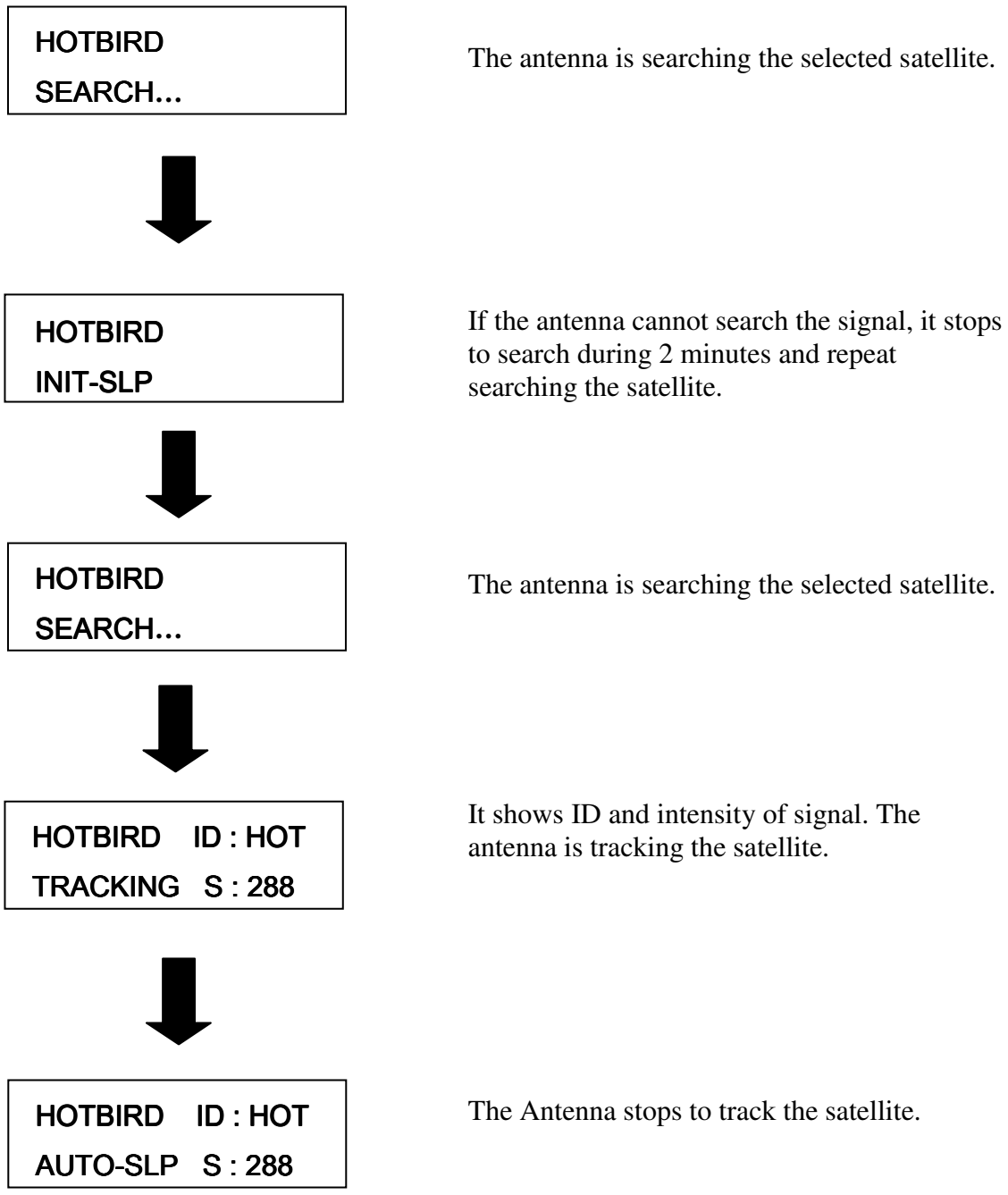


LCD shows information of IDU.

Push the Satellite select buttons to choose satellite.


HOTBIRD
START !!!
It notice the start.
HOTBIRD
INIT
The antenna is being initialized.
HOTBIRD GYRO-
CAL
Gyro sensor is being calibrated.
HOTBIRD
SEARCH…
The antenna is searching the selected satellite.
HOTBIRD ID : HOT
TRACKING S : 288
It shows ID and intensity of signal. The antenna is tracking the satellite.
HOTBIRD ID : HOT
AUTO-SLP S : 288
The Antenna stops to track the satellite.

In case of search failure



Troubleshooting

There are a number of common issues that can affect the signal quality or the operation of the antenna system. The following sections address these issues and potential solutions.

Simple check

Can the antenna see the satellite?

The antenna requires an unobstructed view of the sky to receive satellite TV signals. Common causes of blockage include trees, buildings, bridges, and mountains.

Is there excessive dirt or moisture on the antenna dome?

Dirt buildup or moisture on the dome can reduce satellite reception. Clean the exterior of the dome periodically.

Is it raining heavily?

Heavy rain or snow can weaken satellite TV signals. Reception should improve once the inclement weather subsides.

Is everything turned on and connected properly?

Make sure your TV and receiver are both turned on and set up for the satellite input. Finally, check any connecting cables to ensure none have come loose.

Is the antenna's LNB set to the correct skew angle? (Manual Skew Ver. Only)

To optimize reception, the antenna's LNB needs to be set to the correct skew angle for the satellite you want to track. **See "Appendix A – How to set the skew angle"** for details

Causes and Remedies

Receiver Fault

Your satellite TV receiver might be set up incorrectly or defective. First check the receiver's configuration to ensure it is set up for the desired programming. In the case of a faulty receiver, refer to your selected receiver's user manual for service and warranty information.

Satellite Coverage Issue

Television satellites are located in fixed positions above the Earth's equator and beam TV signals down to certain regions of the planet (not worldwide). To receive TV signals from a satellite, you must be located within that satellite's unique coverage area. **See "Appendix-B Satellite Coverage Map"**

Satellite Signal Blocked

The Antenna needs a clear line of sight (LOS), view to the satellite for uninterrupted reception. Objects such as tall lighthouse, bridges and big ship that block this view will cause a loss of signal. The signal will be quickly restored once the antenna has a clear line of sight again. Heavy rain, cloud, snow or ice may also interfere with the signal reception quality. If the satellite signal is lost due to blockage or severe weather condition, services from the receiver will be lost (picture will freeze frame and may disappear). When the satellite signal strength is again high enough, then the receiver will resume providing desired programming services.

Satellite Frequency Data Changed

If some channels work, while one or more other channels do not, or if the antenna cannot find the selected satellite, the satellite's frequency data might have changed. You can visit any WIWORLD-authorized dealer or distributor for assistance or visit http://www.wiworld.co.kr

Improper Wiring

If the system has been improperly wired, the antenna will not operate correctly. Refer to the User Manual for complete system wiring information or visit website (http://www.wiworld.co.kr)

Loose Cable Connectors

We recommend periodically checking the antenna unit's cable connections. A loose cable connector can reduce signal quality or prevent automatic satellite switching using the receiver's remote control. Fasten the cable connector.

Appendix A

How to Set up the Skew Angle

Signals transmitted in vertical and horizontal wave offset exactly 90° from each other. Since linear satellite signals are oriented in a precise cross pattern, the antenna's receiving element, called an LNB (low-noise block) must be oriented in the same way to optimize reception. This orientation adjustment is referred to as the LNB's "skew angle." The correct skew setting varies depending on your geographic location, since the orientation of your antenna to the satellite changes as you move. This appendix provides how to set up the skew angle.

European Position Grid

If you wish to determine the Skew Angle(LNB), use the position grid(***Figure A-1 European Positon Grid***) and table(***TableA-1 Regional Skew angle***).

Figure A-1 Europe Position Grid

If you wish to set the correct skew, see "***TableA-1 Regional Skew angle***". The correct skew setting varies depending on your geographic location, since the orientation of your antenna to the satellite changes as you move.

Raster Position *Grid Position*	**TURKSAT 43°E**	**ASTRA2 28.2°E**	**ASTRA3 23.5°E**	**ASTRA1 19.2°E**	**HOTBIRD 13.0°E**	**Astra4 4.8°E**	**THOR 0.8°W**	**AB3 5.0°W**	**HISPASAT 30°W**
1	17°	13°	11°	10°	7°	3°	1°	-1°	-11°
2	14°	10°	8°	6°	4°	0°	-3°	-4°	-14°
3	11°	6°	4°	2°	-1°	-4°	-7°	-9°	-18°
4	6°	1°	-1°	-3°	-5°	-9°	-11°	-12°	-20°
5	2°	-2°	-4°	-6°	-9°	-12°	-14°	-15°	-22°
6	22°	17°	14°	12°	9°	4°	1°	-1°	-15°
7	19°	13°	10°	8°	5°	0°	-3°	-6°	-18°
8	15°	8°	5°	2°	-1°	-6°	-9°	-11°	-22°
9	8°	2°	-1°	-3°	-7°	-11°	-14°	-16°	-25°
10	1°	-3°	-6°	-8°	-11°	-15°	-18°	-20°	-27°
11	29°	21°	18°	16°	12°	6°	2°	-2°	-19°
12	25°	17°	13°	10°	6°	0°	-4°	-8°	-23°
13	20°	10°	6°	3°	-2°	-7°	-11°	-14°	-28°
14	10°	2°	-1°	-4°	-9°	-15°	-18°	-21°	-32°
15	1°	-4°	-7°	-10°	-14°	-20°	-23°	-25°	-34°
16	35°	27°	23°	20°	15°	8°	2°	-2°	-23°
17	30°	21°	17°	14°	8°	0°	-6°	-10°	-29°
18	24°	12°	8°	4°	-2°	-10°	-15°	-18°	-34°
19	13°	3°	-2°	-6°	-11°	-18°	-23°	-26°	-38°
20	1°	-5°	-9°	-13°	-18°	-25°	-28°	-31°	-41°
21	41°	33°	29°	25°	19°	9°	3°	-2°	-29°
22	36°	26°	21°	17°	10°	0°	-7°	-12°	-35°
23	29°	16°	10°	5°	-2°	-12°	-18°	-23°	-41°
24	16°	4°	-2°	-7°	-14°	-23°	-28°	-32°	-45°
25	2°	-6°	-11°	-16°	-23°	-30°	-34°	-37°	-48°

Table A-1 Regional Skew Angle

Setting the Skew Angle

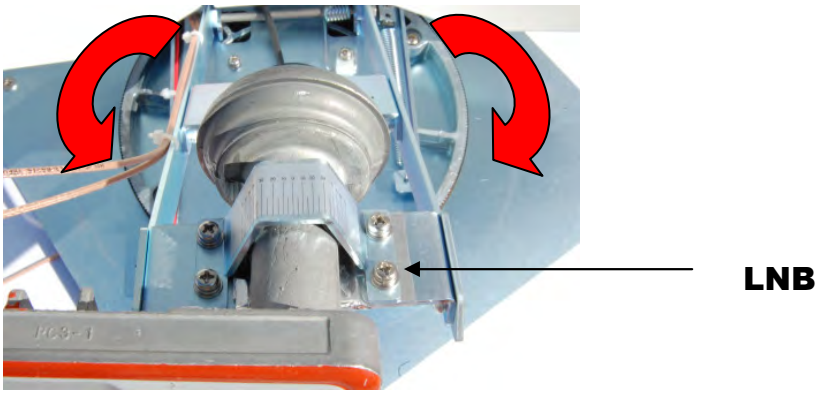
If you have determine the correct skew angle, follow the steps below to adjust the antenna's LNB skew angle.

Caution – To avoid bodily injury, be sure to turn off the antenna and disconnect power to all wore components.

1. Turn off the antenna and disconnect power to all wired components.

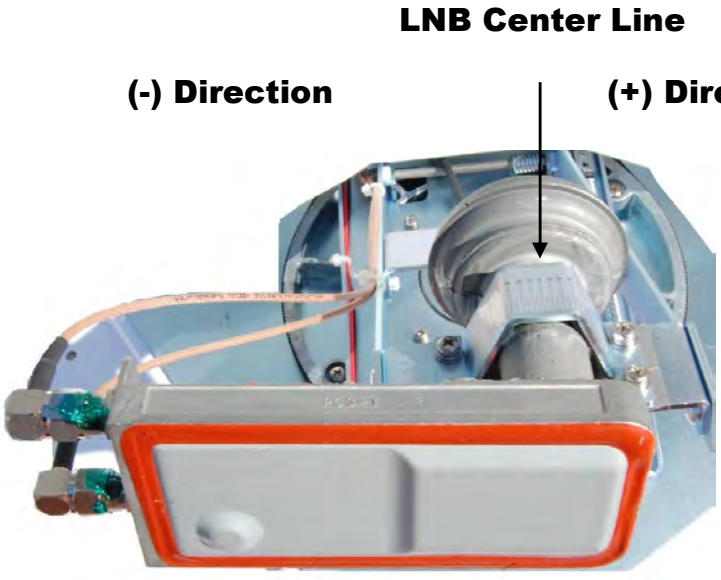
2. Using the screwdriver, remove the screws securing the radome. Then remove and set it aside in a safe place.

Figure A-2 The Back of the Reflector



4. Loosen the four screws fastening the LNB.

5. Adjust the LNB clockwise or counter-clockwise, until the skew arrow on the LNB points to the skew angle that you determined earlier.



Caution
Be sure to keep the LNB fully inserted into the hall to ensure the optimum performance.

Figure A-3 LNB Skew Angle Adjustment

6. Tighten the four screws.

7. Reinstall the radome.

Appendix B

Satellite Coverage Map

Television satellites are located in fixed positions above the Earth's equator and beam TV signals down to certain regions of the planet (not worldwide). To receive TV signals from a satellite, you must be located within that satellite's unique coverage area.

Satellite Coverage Map

Satellite TV broadcast spot beams are aimed at land masses where the bulk of subscribers can be found. Thus, the signal strength decreases as you travel away from the land masses. The further you travel offshore you will require a larger size antenna. Although this information is believed to be correct, WIWORLD Technologies has no control over the variations on the actual satellite footprint coverage. Signal strength and reception can be affected by the weather conditions.

Astra 2N

Figure B-1 Astra 2N Coverage Map

Astra 2S

Figure B-2 Astra 2S Coverage Map

Astra 1

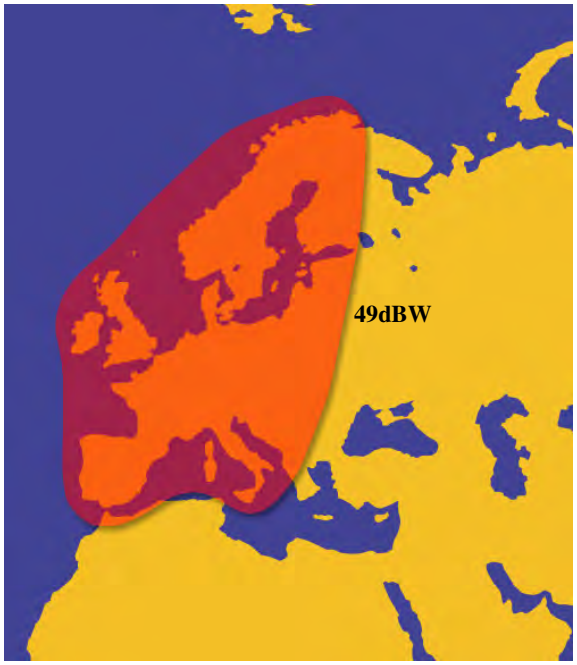


Figure B-3 Astra 1 Coverage Map

Hotbird

Figure B-4 Hotbird Coverage Map

Astra 4

Figure B-5 Sirius Coverage Map

Thor 2/3

Figure B-6 Thor 2/3 Coverage Map

Atlantic Bird 3

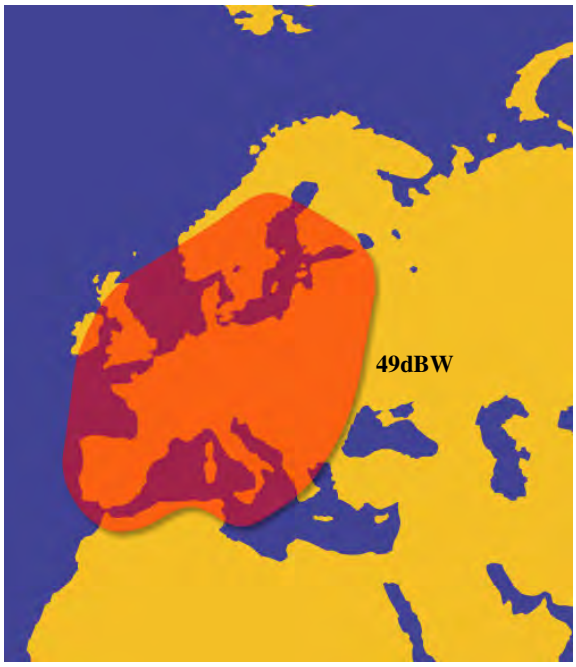


Figure B-7 Atlantic bird 3

Hispasat

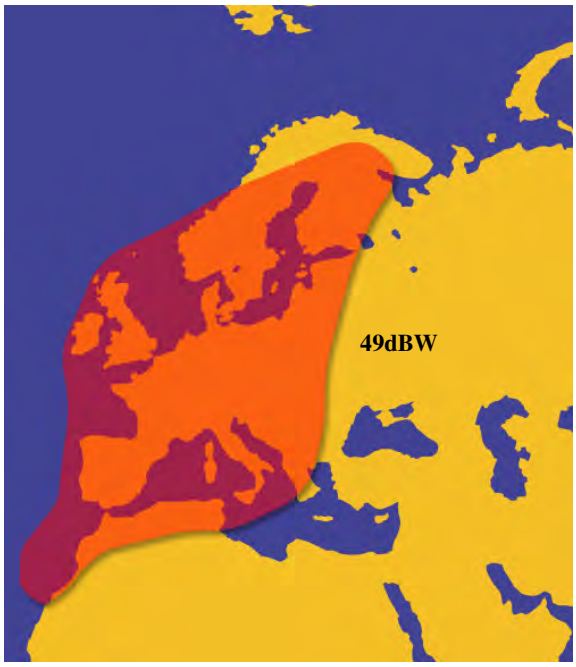
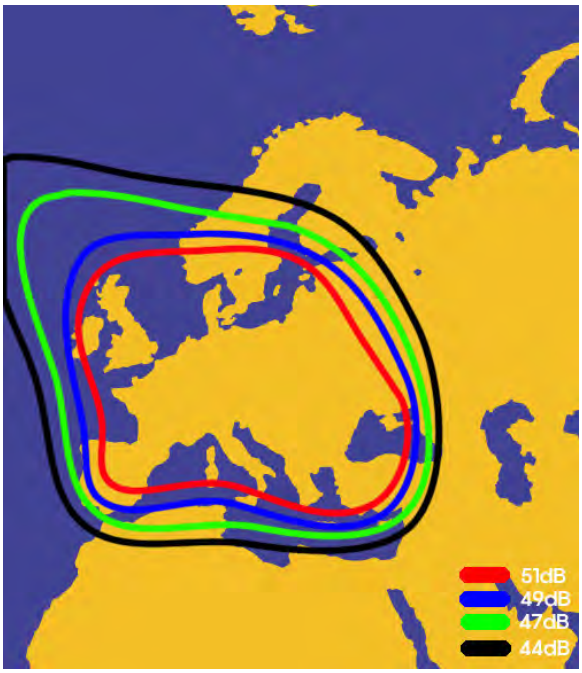


Figure B-8 Astra 2S Coverage Map

ASTRA 3



TURKSAT

Appendix C

Firmware Upgrade

If satellite beam is changed or eliminated, you have to upgrade firmware of IDU.

Firmware Upgrade

If antenna cannot search the selected satellite or move incorrectly, you need to change the firmware of IDU. To upgrade the firmware, follow the steps below.

1. Prepare the SD memory card.

Figure C-1 SD memory card

2. Before you use the SD memory card, you should format it to "FAT16(Default)"

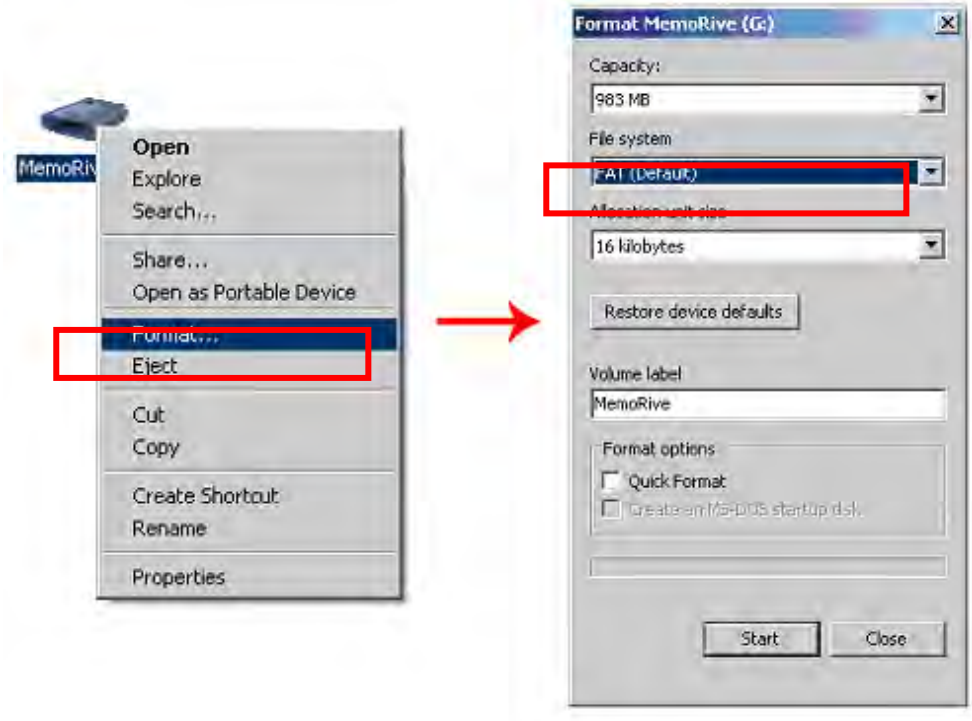
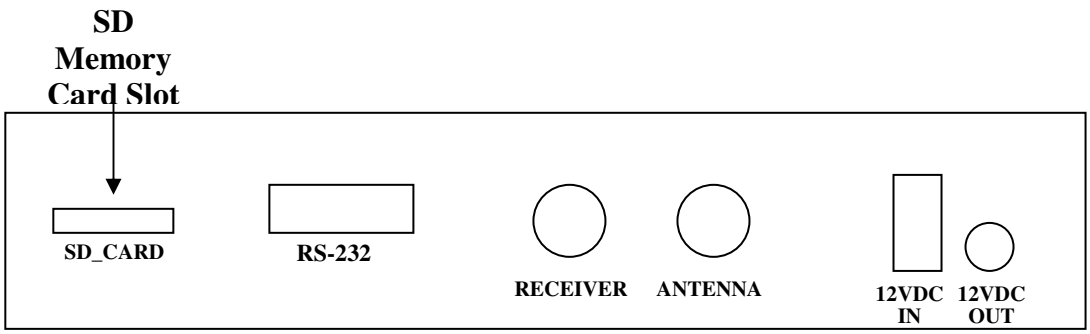


Figure C-2 Formatting SD memory card

3. After formatting your SD card, copy the new software file .

4. Turn off the IDU.

5. Put your SD memory card into the SD slot of back side of the IDU.



6. Turn on the IDU. You can see the message “WRITING SOFTWARE” in LCD Display.

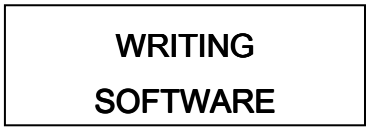


Figure C-4 Writing software

7. If you see the message “FINISH TO WRITE”, IDU is finishing the software upgrade. You have to wait until the IDU is restarted.

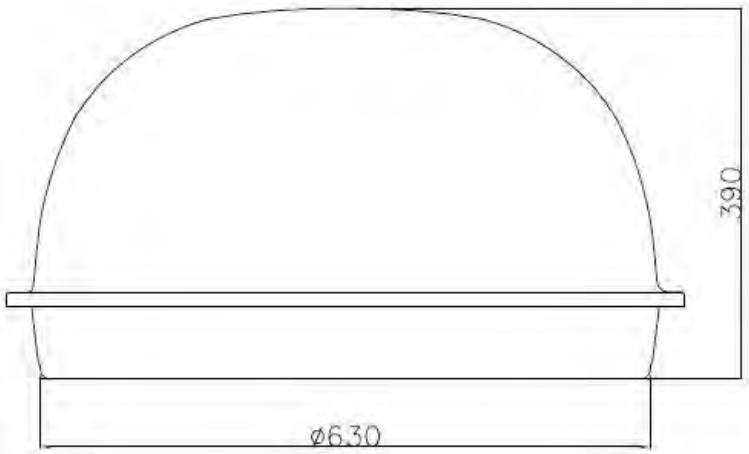
Figure C-5 Finishing to write

8. Turn off the IDU. Take your SD memory card away from the IDU.

9. Turn on the IDU.

Appendix D

Antenna Drawing



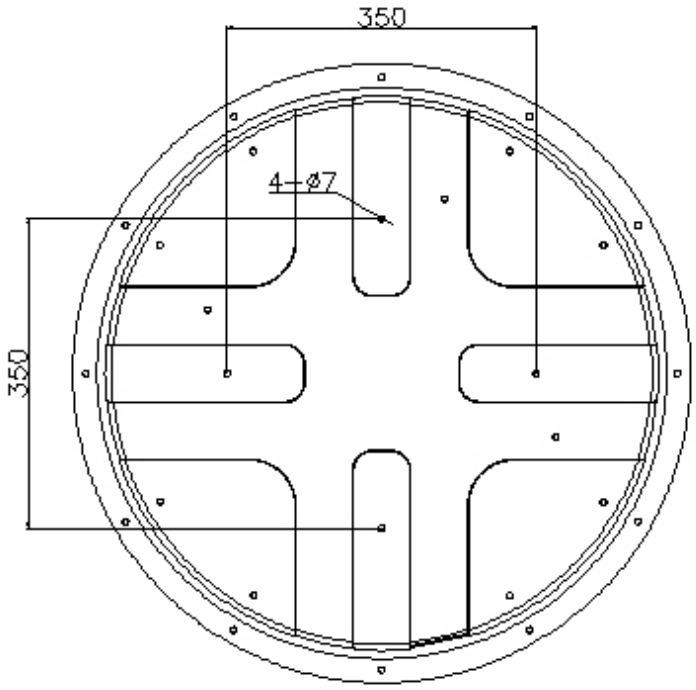


Figura C-1

Megasat

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier:
TEROSTAT MS 939 WHITE DK310M

Relevant identified uses of the substance or mixture and uses advised against:
Intended use:
1-Component sealant

Details of the supplier of the safety data sheet:
Henkel AG & Co. KGaA
Henkelstr. 67
40191 Düsseldorf

Germany

Phone: +49 (211) 797-0

ua-productsafety.de@henkel.com

Emergency telephone number:
The Henkel information service also provides an around-the-clock telephone service on phone no.+49-(0)211-797-3350 for exceptional cases.

SECTION 2: Hazards identification

Classification of the substance or mixture:

Classification (CLP):
No data available.

Classification (DPD):
The product is not subject to classification according to the calculation methods of the "General Classification Guideline for Preparations of the EC" as issued in the last version.

Label elements (CLP):
No data available.

Label elements (DPD):
No classification required.

Other hazards:
None if used properly.

SECTION 3: Composition/information on ingredients

General chemical description:
Sealant
Base substances of preparation:
Silane-modified polyether

Declaration of the ingredients according to CLP (EC) No 1272/2008:

No data available.

Declaration of ingredients according to DPD (EC) No 1999/45:

Hazardous components CAS-No.	EC Number REACH-Reg No.	content	Classification
Trimethoxyvinylsilane 2768-02-7	220-449-8	< 5 %	Xn - Harmful; R10, R20

For full text of the R-Phrases indicated by codes see section 16 'Other Information'.
Substances without classification may have community workplace exposure limits available.

SECTION 4: First aid measures

Description of first aid measures:

General information:
If adverse health effects develop seek medical attention.

Inhalation:
Move to fresh air, consult doctor if complaint persists.

Skin contact:
Rinse with running water and soap. Apply replenishing cream. Change all contaminated clothing.

Eye contact:
Rinse immediately with plenty of running water (for 10 minutes). Seek medical attention if necessary.

Ingestion:
Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.

Most important symptoms and effects, both acute and delayed:
No particular measures required.

Indication of any immediate medical attention and special treatment needed:
No particular measures required.

SECTION 5: Firefighting measures

Extinguishing media:
Suitable extinguishing media:
All common extinguishing agents are suitable.

Extinguishing media which must not be used for safety reasons:
High pressure waterjet

Special hazards arising from the substance or mixture:
In the event of a fire, carbon monoxide (CO) and carbon dioxide (CO2) can be released.
Advice for firefighters:
Wear protective equipment.
Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:
Wear protective equipment.

Environmental precautions:
Do not empty into drains / surface water / ground water.

Methods and material for containment and cleaning up:
Remove mechanically.
Dispose of contaminated material as waste according to Chapter 13.

Reference to other sections:
See advice in chapter 8

SECTION 7: Handling and storage

Precautions for safe handling:

Hygiene measures:
Do not eat, drink or smoke while working.
Wash hands before work breaks and after finishing work.

Conditions for safe storage, including any incompatibilities:
Ensure good ventilation/extraction.
Temperatures between + 10 °C and + 25 °C

Specific end use(s):
1-Component sealant

SECTION 8: Exposure controls/personal protection

Control parameters:
None

Exposure controls:

Engineering controls:
Ensure good ventilation/extraction.

Respiratory protection:
Suitable breathing mask when there is inadequate ventilation.

Hand protection:
Chemical-resistant protective gloves (EN 374). Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374): Polychloroprene (CR; >= 1 mm thickness) or natural rubber (NR; >=1 mm thickness) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Polychloroprene (CR; >= 1 mm thickness) or natural rubber (NR; >=1 mm thickness) This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:
Protective goggles

Skin protection:
Wear protective equipment.

Advices to personal protection equipment:
Use only personal protection that's CE-labelled according to the regulation no. 819 of 19 August 1994.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties:

Appearance	solid material pasty white
Odor	characteristic
pH	No data available / Not applicable
Initial boiling point	No data available / Not applicable
Flash point	> 100 °C (> 212 °F)
Decomposition temperature	No data available / Not applicable
Vapour pressure	No data available / Not applicable
Density (20 °C (68 °F))	1,50 g/cm3
Bulk density	No data available / Not applicable
Viscosity (; 20 °C (68 °F))	200 - 300 pa.s
Viscosity (kinematic)	No data available / Not applicable
Explosive properties	No data available / Not applicable
Solubility (qualitative) (20 °C (68 °F); Solvent: Water)	Insoluble
Solubility (qualitative)	Insoluble
Solidification temperature	No data available / Not applicable
Melting point	No data available / Not applicable
Flammability	No data available / Not applicable
Auto-ignition temperature	No data available / Not applicable
Explosive limits	No data available / Not applicable
Partition coefficient: n-octanol/water	No data available / Not applicable
Evaporation rate	No data available / Not applicable
Vapor density	No data available / Not applicable
Solid content (105 °C)	98 %
Oxidising properties	No data available / Not applicable

Other information:

No data available / Not applicable

SECTION 10: Stability and reactivity

Reactivity:
None if used for intended purpose.

Chemical stability:
Stable under recommended storage conditions.

Possibility of hazardous reactions:
See section reactivity

Conditions to avoid:
None if used for intended purpose.

Hazardous decomposition products:
No decomposition if used according to specifications.

SECTION 11: Toxicological information

General toxicological information:
To the best of our knowledge no harmful effects are to be expected if the product is handled and used properly.

SECTION 12: Ecological information

General ecological information:
The preparation is classified based on the conventional method outlined in Article 6(1)(a) of Directive 1999/45/EC. Relevant available health/ecological information for the substances listed under Section 3 is provided in the following.
Do not empty into drains, soil or bodies of water.

Toxicity:

Hazardous components CAS-No.	Value type	Value	Acute Toxicity Study	Exposure time	Species	Method
Trimethoxyvinylsilane 2768-02-7	LC50	191 mg/l	Fish	96 h	Oncorhynchus mykiss	OECD Guideline 203 (Fish, Acute Toxicity Test)
Trimethoxyvinylsilane 2768-02-7	EC50	> 100 mg/l	Daphnia	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Trimethoxyvinylsilane 2768-02-7	EC50	> 100 mg/l	Algae	72 h		OECD Guideline 201 (Alga, Growth Inhibition Test)

SECTION 13: Disposal considerations

Waste treatment methods:
Product disposal:
The valid EEC waste code numbers are not product-related but are largely source-related. These can be requested from the manufacturer.

In consultation with the responsible local authority, must be subjected to special treatment.

SECTION 14: Transport information

General information:
Not hazardous according to RID, ADR, ADNR, IMDG, IATA-DGR.

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture:
VOC content 0 %
(VOCV 814.018 VOC regulation CH)

VOC Paints and Varnishes (EU):
Product (sub)category: This product is not a subject of the Directive 2004/42/EC

National regulations/information (Germany):

WGK: 1, slightly water-endangering product. (German VwVwS of July 27, 2005)
Classification in conformity with the calculation method

Storage class VCI: 11

SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text of all abbreviations indicated by codes in this safety data sheet are as follows:
R10 Flammable.
R20 Harmful by inhalation.

Further information:
This information is based on our current level of knowledge and relates to the product in the state in which it is delivered. It is intended to describe our products from the point of view of safety requirements and is not intended to guarantee any particular properties.