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STREAM X 200/600 system

Hardware Configuration

User's Guide



April 2011

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The equipment conforms to the following requirements set by EC regulations, including subsequent modifications, and to the legislation set by the member states that implement these regulations:

1999/05/EEC Radio Directive

Warning: this equipment is destined for use in industrial environments (Class A apparatus). In residential, commercial and light industry environments, this apparatus may generate radio interference: in this case, the user may be required to operate while taking appropriate countermeasures.

The apparatus is sensitive to the presence of external electromagnetic fields, which may reduce its performance.



IMPORTANT NOTE FOR THE US CUSTOMERS

FCC ID: UFW-STREAMX200

This device complies with part 15 of the FCC Rules:

Operation is subject to the following conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, Including interference that may cause undesired operation

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Operation of this device is restricted to law enforcement, fire and rescue officials, scientific research institutes, commercial mining companies, and construction companies. Operation by any other party is a violation of 47 U.S.C. § 301 and could subject the operator to serious legal penalties.

Coordination Requirements.

(a) UWB imaging systems require coordination through the FCC before the equipment may be used. The operator shall comply with any constraints on equipment usage resulting from this coordination.

(b) The users of UWB imaging devices shall supply detailed operational areas to the FCC Office of Engineering and Technology who shall coordinate this information with the Federal Government through the National Telecommunications and Information Administration. The information provided by the UWB operator shall include the name, address and other pertinent contact information of the user, the desired geographical area of operation, and the FCC ID number and other nomenclature of the UWB device. This material shall be submitted to the following address:

Frequency Coordination Branch., OET

Federal Communications Commission

445 12th Street, SW

Washington, D.C. 20554

ATTN: UWB Coordination

(d) Users of authorized, coordinated UWB systems may transfer them to other qualified users and to different locations upon coordination of change of ownership or location to the FCC and coordination with existing authorized operations.

(e) The NTIA/FCC coordination report shall include any needed constraints that apply to day-to-day operations. Such constraints could specify prohibited areas of operations or areas located near authorized radio stations for which additional coordination is required before operation of the UWB equipment. If additional local coordination is required, a local coordination contact will be provided.

(f) The coordination of routine UWB operations shall not take longer than 15 business days from the receipt of the coordination request by NTIA. Special temporary operations may be handled with an expedited turn-around time when circumstances warrant. The operation of UWB systems in emergency situations involving the safety of life or property may occur without coordination provided a notification procedure, similar to that contained in CFR47 Section 2.405(a)-(e), is followed by the UWB equipment user.

Notice: Use of this device as a wall imaging system is prohibited by FCC regulations.

IMPORTANT NOTE FOR THE US CUSTOMERS

FCC ID: STREAMX600

This device complies with part 15 of the FCC Rules:

Operation is subject to the following conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Operation of this device is restricted to law enforcement, fire and rescue officials, scientific research institutes, commercial mining companies, and construction companies. Operation by any other party is a violation of 47 U.S.C. § 301 and could subject the operator to serious legal penalties.

Coordination Requirements.

(a) UWB imaging systems require coordination through the FCC before the equipment may be used. The operator shall comply with any constraints on equipment usage resulting from this coordination.

(b) The users of UWB imaging devices shall supply detailed operational areas to the FCC Office of Engineering and Technology who shall coordinate this information with the Federal Government through the National Telecommunications and Information Administration. The information provided by the UWB operator shall include the name, address and other pertinent contact information of the user, the desired geographical area of operation, and the FCC ID number and other nomenclature of the UWB device. This material shall be submitted to the following address:

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Notice: Use of this device as a wall imaging system is prohibited by FCC regulations.

IMPORTANT NOTE FOR THE CANADIAN CUSTOMERS

IC Certification Number: IC:8991A – STREAMX200

This device complies with the requirements of IC Standard RSS-220

This Ground Penetrating Radar Device shall be operated only when in contact with or within 1 m of the ground.

This Ground Penetrating Radar Device shall be operated only by law enforcement agencies, scientific research institutes, commercial mining companies, construction companies, and emergency rescue or firefighting organizations.

NOTE IMPORTANTE POUR LES UTILISATEURS CANADIENS

Numéro de certification IC:8991A – STREAMX200

Cet appareil est conforme aux exigences de la norme RSS IC-220

Cet équipement géoradar doit être utilisé que lorsqu'il est en contact ou à moins de 1 mètre du sol.

Cet équipement géoradar doit être utilisé que par des organismes d'application de la loi, des instituts de recherche scientifique, des sociétés minières commerciales, des entreprises de construction et de secours d'urgence ou les organisations de lutte contre les incendies.

IMPORTANT NOTE FOR THE CANADIAN CUSTOMERS

IC Certification Number: IC:8991A – STREAMX600

This device complies with the requirements of IC Standard RSS-220

This Ground Penetrating Radar Device shall be operated only when in contact with or within 1 m of the ground.

This Ground Penetrating Radar Device shall be operated only by law enforcement agencies, scientific research institutes, commercial mining companies, construction companies, and emergency rescue or firefighting organizations.

NOTE IMPORTANTE POUR LES UTILISATEURS CANADIENS

Numéro de certification IC:8991A – STREAMX600

Cet appareil est conforme aux exigences de la norme RSS IC-220

Cet équipement géoradar doit être utilisé que lorsqu'il est en contact ou à moins de 1 mètre du sol.

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RADIO-FREQUENCY EXPOSURE COMPLIANCE

This product operated is usually operated at least 1 m from the operator.

Typical power density levels at a distance of 1 m or greater is below $1 \mu\text{W}/\text{cm}^2$ ($0.01 \text{ W}/\text{m}^2$) which are far below the levels specified by the current regulations.

Thus, this product pose no health and safety risk when operated in the normal manner of intended use.

CONFORMITÉ D'EXPOSITION AUX FRÉQUENCES RADIO

Le produit doit être à au moins un mètre de l'utilisateur lorsqu'en opération.

Le niveau de densité de puissance à une distance de 1 mètre et plus est de $1 \mu\text{W}/\text{cm}^2$ ($0.01 \text{ W}/\text{m}^2$), ce qui est nettement inférieur aux niveaux spécifiés par la réglementation en vigueur.

Ainsi, ce produit ne représente aucun risque pour la santé et la sécurité lorsqu'il est exploité dans les conditions d'utilisation prescrites.



CLEANING INFORMATION

Before cleaning any external parts of the apparatus, make sure that all cables have been disconnected, including the power supply cable. If a damp cloth is used, make sure it is not too wet, to avoid any damage to the electrical components of the equipment. Wait until the equipment is totally dry before reconnecting the cables.

The system should be cleaned periodically using a damp cloth.

Do not use solvents or abrasive detergents.

Do not apply liquid directly to the electrical contacts of the various connectors. If a specific spray is used to clean the PC TFT monitor, make sure it is not flammable; in any case, do not spray it directly on the screen, instead, spray it onto the cleaning cloth.



BATTERIES REMOVAL INFORMATION

Laptop Batteries:

Manufacturer: PANASONIC

Type: Li-ion Ni

Characteristics: 10.65V 5.7Ah

Removal instructions:

1. turn off the laptop;
2. open the drawer with the symbol of the batteries;
3. extract the battery pack pulling the tab.

Radar batteries:

Manufacturer: FIAMM FG2A007

Type: rechargeable lead acid

Characteristics: 12V & 100Ah



The crossed out wheeled bin symbol shown on the equipment indicates that the product must be recycled separately from other waste at the end of its useful life.

Separate waste disposal of this product at the end of its useful life will be organised and managed by IDS. When you decide to dispose of the equipment, contact IDS and follow the system that IDS has set up to permit the separate collection of the apparatus at its life end.

Adequate separate collection for its subsequent recycling, treatment and environmental friendly disposal contribute towards avoiding any unnecessary effects on the environment and to health and favour the reuse or recycling of the materials that make up the equipment. Unauthorised disposal of this product as unsorted waste by its possessor will lead to an administrative penalty foreseen by national regulations.

WARRANTY CERTIFICATE CONDITIONS

- 1) IDS Ingegneria dei Sistemi S.p.A, hereinafter referred to as IDS, warrants hardware/software products for a period of 12 months from the delivery date to the original customer;
- 2) The delivery date is certified by the “Warranty Registration Form”;
- 3) IDS’s hardware products will be free from defects in materials workmanship under normal use and service;
- 4) IDS’s obligation is limited to repairing or replacing parts or equipment which are returned to IDS, without alteration or further damage, and which in IDS s judgment, were defective or became defective during normal use;
- 5) IDS’ software will have to be installed on a PC according to the requirement of the IDS hardware (see IDS User’s Guide the Software Data Acquisition);
- 6) IDS’ s software products designed by IDS for use for IDS hardware products are warranted not to fail to execute their programming instructions due to defects during the warranty period, provided they are properly installed on IDS hardware products. IDS does not warrant if the IDS software will be used and operated in hardware and software combinations not selected by IDS;
- 7) IDS does not assumes any liability for any direct, indirect, special, incidental or consequential damages or injuries caused by proper or improper operation of its equipment whether defective or not defective;
- 8) This software may include automated data processing and analysis tools. While every effort is made to ensure the accuracy of the information provided by those tools, they must not be intended as a substitute for intelligent analysis; rather, they have to be intended as an advisor and the user must not completely rely on the results provided by them to give the complete answer. IDS assumes no liability for any direct, indirect special, incidental or consequential damages or injuries caused by such reliance on the accuracy, reliability, or timeliness of the information provided by those tools. Any person or entity who relies on information obtained from the automated data processing/analysis tools only, does so at his or her own risk;
- 9) IDS’s warranty does not extend and shall not apply to:
 - a) Products which have been repaired or altered by other than IDS personnel;
 - b) Products which have been subjected to misuse, neglect, accident or improper installation;
 - c) Products in which have been installed Hardware/Software accessories not supplied by IDS and/or without any approval by IDS;
 - d) Products which have been connected to equipment different from the ones supplied by IDS (except the PC data Logger which must conform to IDS specifications);
 - e) Products which have been damaged by natural disaster or calamities.
- 10) Before returning any equipment to IDS , you have to contact the IDS Customer Care Office that will authorize you to return the material to be repaired;
- 11) Once the parts/equipment to be repaired arrive to IDS, IDS may inspect the defective products to verify they are eligible for repair or replacement. All packing must be saved for inspection purpose in order to assist IDS to understand the cause of the defects. IDS, will not be obliged to repair, or replace for products returned as defective but damaged from abuse, misuse, negligence , accident loss or damage in transit;
- 12) The final clients, is responsible for ensuring the defective products returned to be properly packaged;
- 13) The above warranty are sole and exclusive, and no other warranty, whether written or oral, is

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1. HARDWARE CONFIGURATION OF THE STREAM-X SYSTEM

The **STREAM-X** system consists of the following parts

- *DAD Fast Wave Control Units*
- *1 Laptop*
- *1 LAN Cable*
- *2 Battery Cables (1 standard cable + 1 crocodile cable)*
- *2 Batteries*
- *1 Antenna-DAD Long Cable*
- *1 Antenna Array (2 Modules @ 200MHz or 1 Module @ 600 MHz)*
- *1 Black sledge (2 Modules with cross arms)*
- *1 Antenna-Antenna Short Cable*
- *1 White frame with Doppler encoder*
- *1 Motor rack*

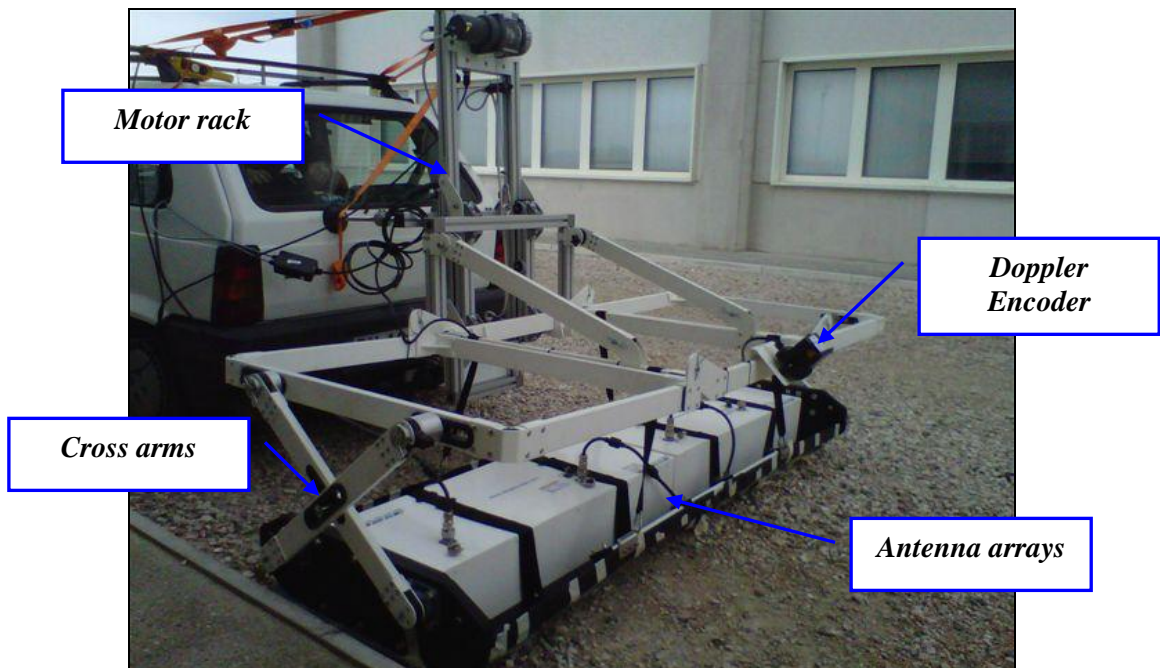


Fig. 1.1 – STREAM-X System in complete configuration

1.1 Assembly procedure of the System

In the following chapters the procedure to assemble the mechanical kit of Stream-X will be explained. This procedure shows the assembling of the 200 MHz system (AR200-V8 antennas). The 600 MHz antenna only difference is the use of the AR600-V12 antenna model.



Fig. 1.2 – 600 MHz array (AR600-V12 model)

The black sledge is composed of two modules: link them with the white joints and fix the structure with the dedicated screws (Fig. 1.3). Insert the antenna modules in place and fix them with the elastic bands as shown in Fig. 1.4.

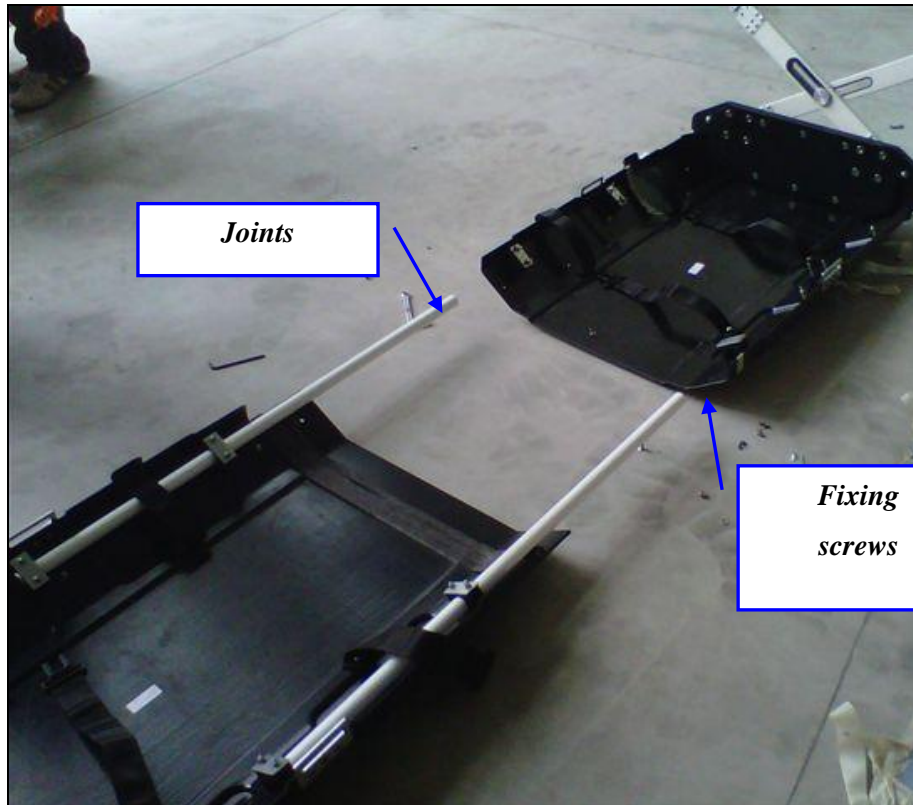



Fig. 1.3 – Stream X sledge kit



Fig. 1.4 – Antenna positioning

	<p>Notice that antenna connectors are placed to be aligned with the arm in the external side of the “cross”. This positioning must be done to respect the standard configuration file of IDS acquisition software.</p>
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Put the motor rack over the hook linked to the vehicle with the automatic locking system (Fig. 1.5). Unscrew the supports until they touch the vehicle and modify their extension until the frame reaches approximately 90° with the ground level. Stabilize the frame applying straps. Link the remote to the remote connector and the crocodile battery cable to the bigger car battery supplied with the system (Red goes with +, Black goes with -). This will let you activate the motor rack: place the moving frame in the lowest position.

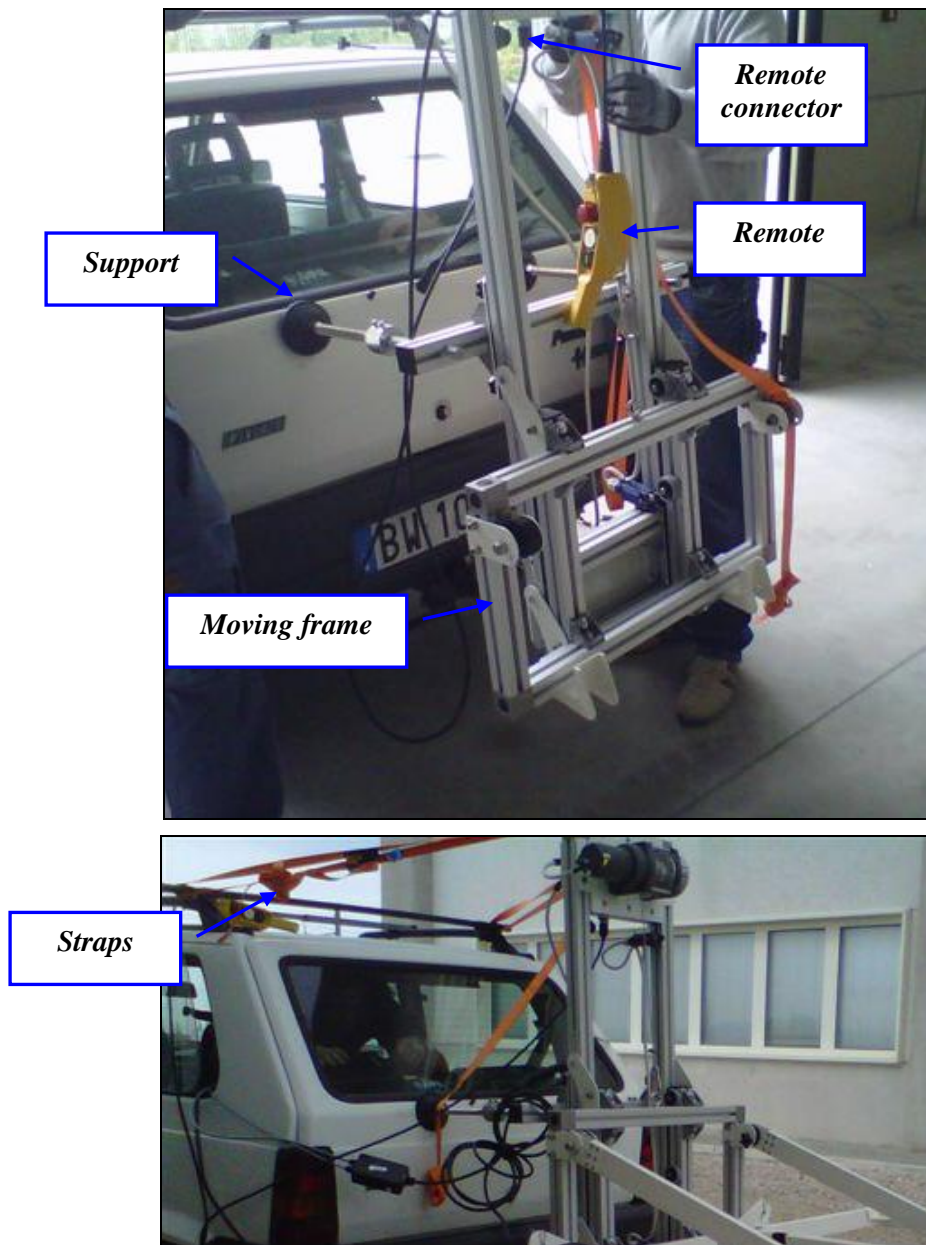


Fig. 1.5 – Motor rack



Fig. 1.6 – Fixing the white frame

When the rack is in place the white frame can be connected to it. Just put the central part of the frame in the pivots of the rack and place the locking bars over the joints (Fig. 1.6).

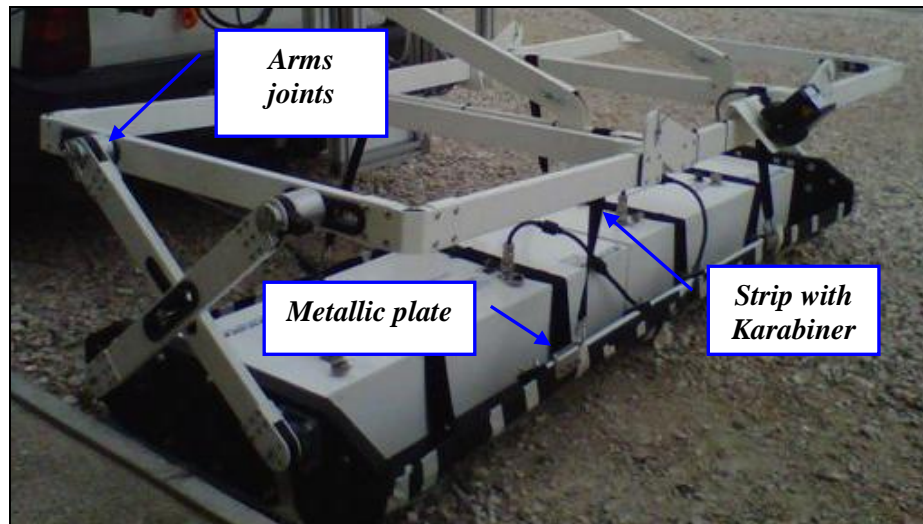


Fig. 1.7 – Link to the antenna sledge

Use the four strips with karabiner to link the white frame with the metallic plates of the antenna sledge (Fig. 1.7). Link the cross arms with their corresponding joints: to do this operation easily, you may lift a little bit the sledge from the ground using the motor rack.

1.1.1 Cabling

In the following chapter you will find the description of the Stream X cabling. Your system will be supplied with:

- One 5m antenna cable: this one will connect ANT1 port of the DAD unit to IN connector of the rightmost antenna frame (looking from behind).

- One 1.5m antenna cable: this one will connect the two modules of the array in cascade (not required for the STREAMX600 system)
- Three Doppler encoder cables: these unique shaped cables will link the encoder with its piloting black box and the black box with both the wheel port of the DAD and the radar battery (small one).
- LAN cable: this cable connects the DAD to the laptop.
- Crocodile cable: this cable is used to power the motor rack

1.2 The DAD Fast Wave Control Units

The **DAD Control Unit** is the control unit responsible for directing the antennas and digitalising the acquired radar data.

The **DAD Control Unit** has the following ports

- **Lan Port** for a network connection to the Notebook Computer
- **Battery Port** to connect the battery
- **Wheel Port** to connect the position sensor wheel
- **Ant.1/CHAINED - Ant.2** for radar antenna connection
- **Power switch with pilot light**
- **Wireless antenna connector**



Fig. 1.8 – DAD side Fast Wave with Battery Port, Lan Port and wireless connector



Fig. 1.9 – –DAD side Fast Wave with connections to position sensor and antennae

Considering the type of available antenna, the following combinations are possible:

1. *Ant.1 (connector with 19 poles)*

This kind of connector may be connected to the following categories of radar antennae.

- Entire range of **TR IDS** antennae that has a 19 pole connector and foresee a cascade connection (including STREAMX200 and STREAMX600 antennas); Fig. 2-3 shows an example of a an antennae with a 19 pole connector with a cascade connection.

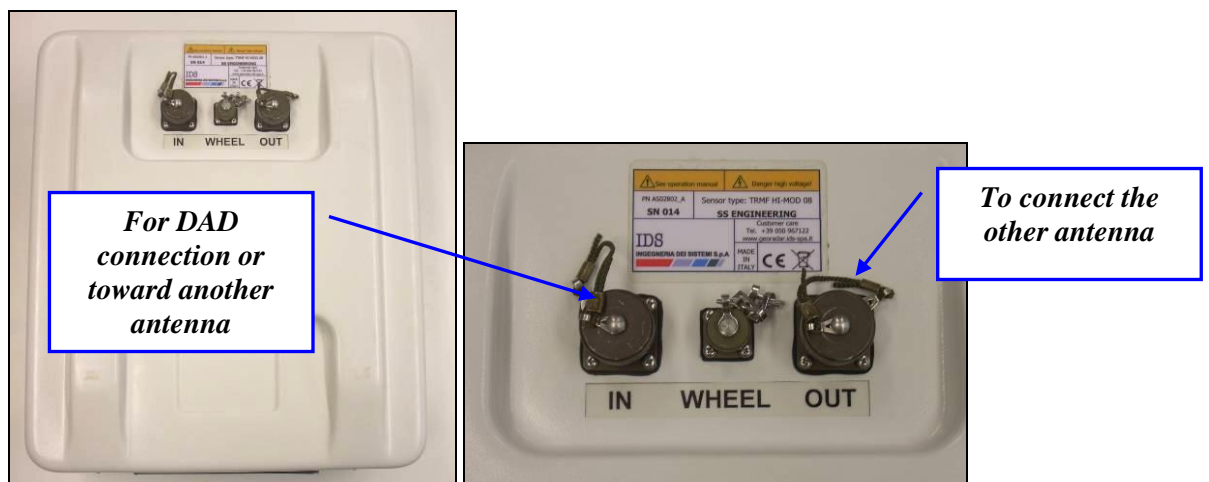


Fig. 1.10 – Example of antenna with a 19 pole connector and possibility of a cascade connection

- Entire range of **TR IDS** antennae that have an 11 pole connector, if supplied with an appropriate 19-11 pole adaptor (Fig. 1.11).



Fig. 1.11 – 19-11 pole Adaptor

2. *Ant.2 (11 pole connector)*

This kind of connector may have the following antenna radar categories connected

- Entire range of mono static **TR IDS** antennae with an 11 pole connector
- Entire range of **TR IDS** antennae with internal or external multiplex and an 11 pole connector

1.3 *The Laptop Computer*

The **K2STREAM** acquisition SW is installed on a **Laptop**. This SW is dedicated to the specific phases of setting up, acquiring and saving radar data.

IDS recommends to use one of the two following laptops:

1.3.1 *Panasonic Toughbook rugged tablet PC*


The Panasonic Toughbook CF-19 PC (Fig. 1.12), has the following characteristics:

- *CPU*: 1.6GHz Intel Core Duo.
- *Operating System*: Windows XP Professional SP2.
- *RAM/Expandable to*: 512MB SDRAM (DDR2)/4GB
- *Hard Drive/Speed*: 80GB shock-proof (mounted on a gel support or equivalent).
- *Optical Drive*: 2.4X DVD+R DL
- *Display Resolution*: 10.4 inches/1024 x 768

- *Graphics/Video Memory:* Intel 945GM video accelerator with up to 128MB shared video memory
- *Wireless Networking:* WLAN 802.11a/b/g, Bluetooth 2.0, Optional WWAN (EVDO, HSDPA) and GPS
- *Ports:* Two USB 2.0, Firewire, Ethernet, modem, headphone, mic, docking connector
- *Card Slots:* PC Card Type II, SD Card slot
- *Weight:* 5 pounds
- *Size:* 10.7 x 8.5 x 1.9 inches
- *Warranty/Support:* Three-year limited warranty, parts and labor lifetime toll-free 24/7.
- *Battery Life (Wi-Fi On/Off):* 5h / 6h about
- *Environmental:* Water-proof (IP54)



Fig. 1.12 – Panasonic Toughbook CF-19

	<p>No communication software of the type Firewall, WiFi or Antivirus protection may be installed on the computer; these types of SW enter into conflict with the K2STREAM acquisition SW.</p> <p>IDS takes no responsibility for any functional conflicts that may occur between their own software and any other software installed by the user onto the Laptop. IDS doesn't guarantee that equipment performance will be maintained using configurations different from those recommended.</p>
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