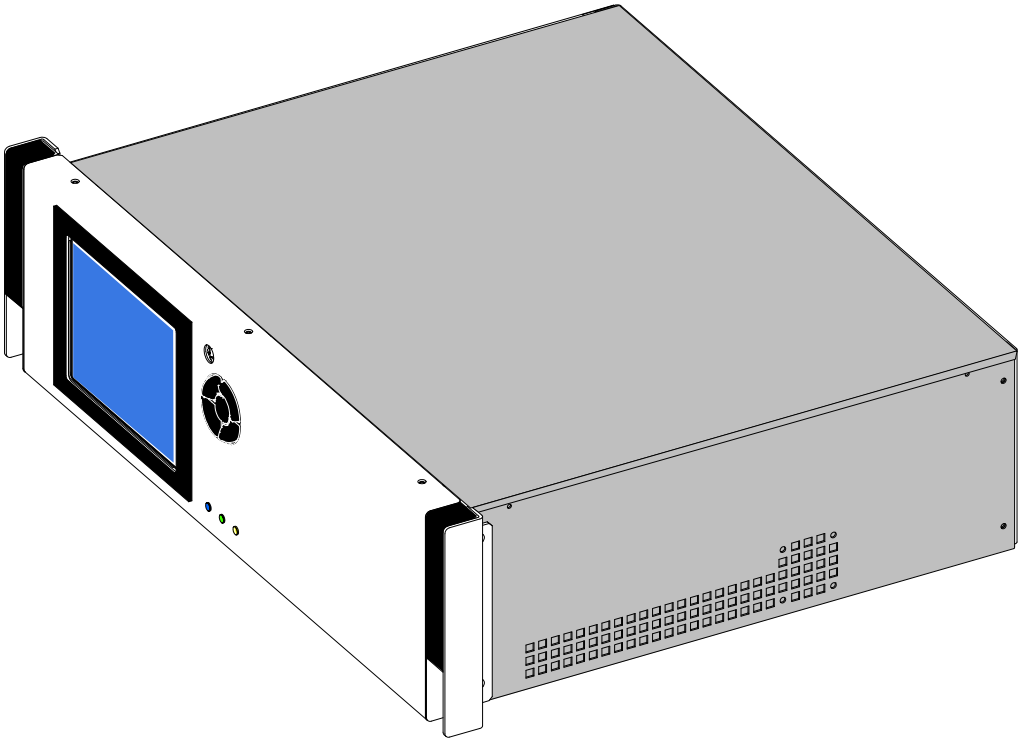
Broadcast Electronics

1 GENERAL INFORMATION

2 OPERATING INSTRUCTIONS

3 WIRING DIAGRAMS



Central Control Unit

Technical Manual

Document History		
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C	29/11/2017	Added: ▪ para 2.10 − Software upgrade

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FOREWORD (how to consult the manual)

1 CIRCUIT DIAGRAMS (*how to consult them*)

1.1 Acronyms

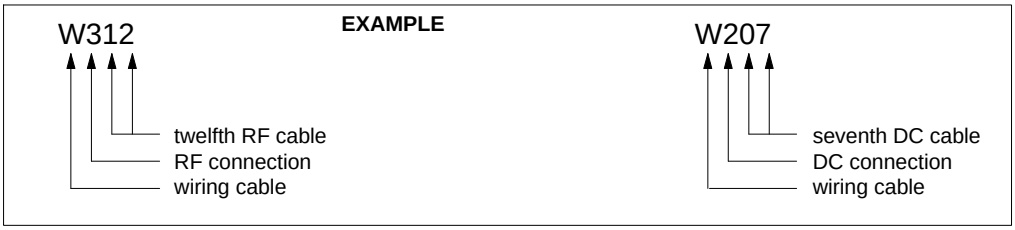
Circuit diagrams are identified by acronyms after the drawing number (i.e.: 6300621005**ID**). A list of the acronyms used is given here below:

acronym	*explanation*	*acronym*	*explanation*
SI	general wiring diagram (*for 9 digits codes)*	ST	component layout (*for 9 digits codes*)
ID	general wiring diagram (*for 10 digits codes)*	CL	component layout (*for 10 digits codes*)
SE	circuit diagram (*for 9 digits codes)*	SD	general wiring diagram for interlock chain
ED	circuit diagram (*for 10 digits codes)*		

1.2 Classification of wiring cables

Wiring cables (unipolar, multipolar, flat cables) are identified by an alphanumeric code on circuit diagrams; this code is composed of 4 digits as follows:

- 1st digit is '**W**' (for wiring)
- 2nd digit identifies the type of wiring (e.g.: AC connections, DC connections, RF connections etc.) as follows:
  - **1** ... for **AC** connections;
  - **2** ... for **DC** connections;
  - **3** ... for **RF** connections;
  - **4** ... for **LF** connections;
  - **5** ... for logic signals, alarms connections.
- 3rd and 4th digits indicate the progressive numbering for each type of wiring.

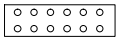


1.3 Connection of wiring cables

The wiring cables between two connectors, are always intended pin−to−pin unless otherwise specified. In the event the wiring is not pin−to−pin, it is shown on the drawing.

1.4 Symbols and identifications of connectors/terminal blocks

Connectors and terminal boards arranged inside an equipment, a unit or a board, are identified on the associated circuit diagram, by symbols as follows:

symbol	*objetc*
	male connector identified by “Jx”
	female connector identified by “Jx”
	terminal block identified by “Kx”
	coaxial cable identified by “Wx”

Both for connectors and terminal blocks, the numbering is progressive within each equipment, unit, or board; that is on a general wiring diagram two or more ”J6” (or ”K3”) may exist because they are arranged inside different equipment, unit or board.

Male and female connectors are identified respectively by “J” and “P” in some circuit diagrams before the year 2000.

However a connector (or terminal block) will always have the same identification number both on the general wiring diagram of the unit and on the general wiring diagram of the equipment where the unit is arranged.

FOREWORD (how to consult the manual)

2 SAFETY INFORMATION

2.1 Introduction

The equipment fully complies with the requirements for the safety of personnel as specified in IEC 215 rules. The equipment, if operated per specification, is designed and manufactured to protect the operator from high voltage, heat, radiation and other dangers.

Warning labels are attached to enclosures and/or various assemblies to identify potentially dangerous conditions to the operator. These Warning labels must be adhered to.

2.2 Warning, Cautions and Notes

Throughout the manual *Warning* and *Cautions* notices are used to identify procedures, conditions and materials that could be potentially cause death, injury or damage to equipment.

WARNING!

Used to indicate a potential hazard that requires correct procedures or practises in order to prevent personal injury or damage to equipment.

CAUTION!

Used to indicate correct operation or maintenance in order to prevent damage to, or destruction of equipment or other property.

NOTE!

Used to highlight important information or procedures.

TIP

Tips on how alert the operator faster or easier to complete a task

2.3 Hazard symbols

Throughout the manual *hazard symbols* are used to alert the operator of a potential hazard related to the operation to be carried out.

Warning

Shock hazard

Danger of getting crushed when working with loads.

Danger of falling off ladders while working

Danger when lifting heavy loads.

Danger of getting hands crushed when working.

Danger of burns on contact with hot surfaces.

2.4 Beryllia devices

Some units or parts of the equipment may contain beryllia devices. Normally these components can be handled without risk, but there is a toxic hazard if beryllia dust from a damaged component is inhaled or implanted in the skin.

Units or parts containing beryllia oxide are identified by the label shown on the left.

For handling and disposal of beryllia devices, refer to "*Safety Precautions*" section, para 3. – "*SPECIFICATION ON HANDLING AND DISPOSAL OF BERYLLIA DEVICES*".

1. *GENERAL INFORMATION*

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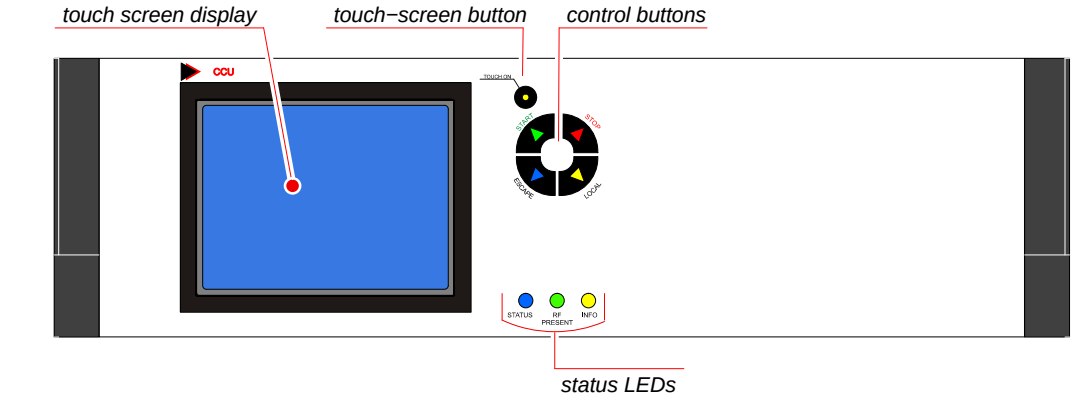

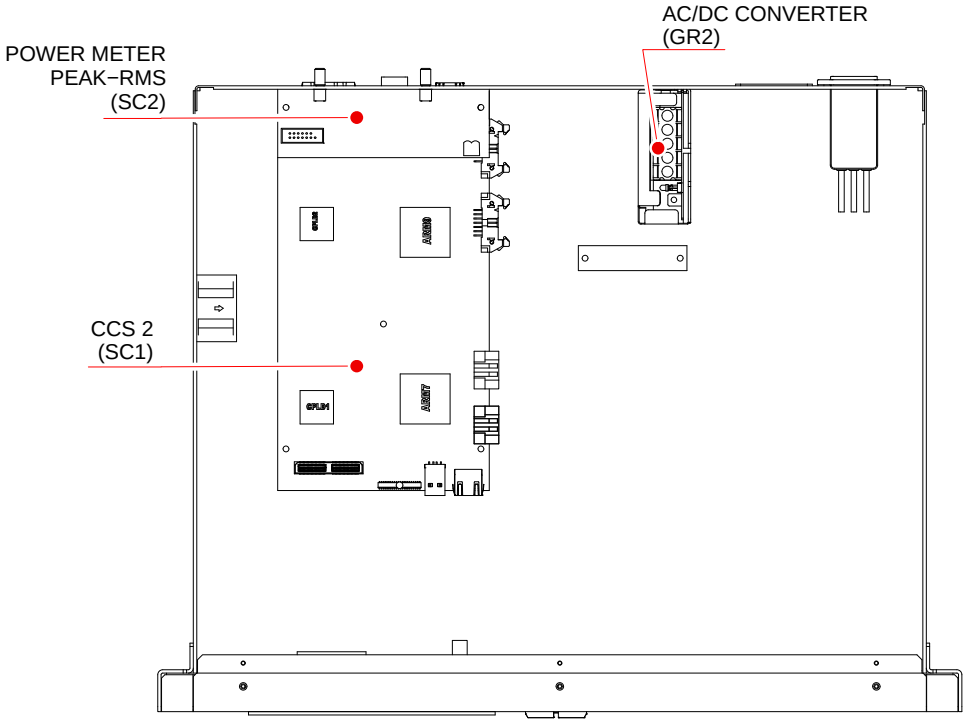

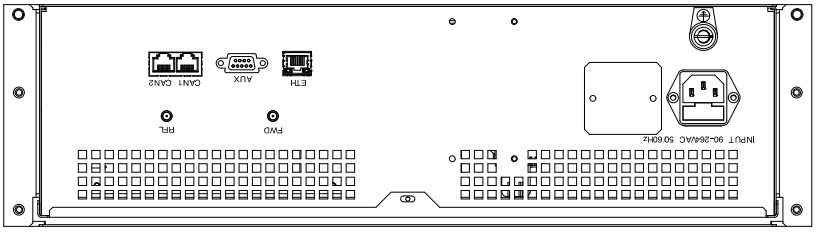

Fig. 1.1 − Central Control Unit general views

1: GENERAL INFORMATION

1.1 MANUAL APPLICABILITY

The present technical manual provides information relevant to the following units:

- Central Control Unit . . . . . p/n. 5516101204.
- Central Control Unit . . . . . p/n. 5516101206.

The only differernce between the two versions of the unit is the *display* used.

From here on for the sake of simplicity, throughout this manual **C**entral **C**ontrol **U**nit will be referred to as CCU.

The contents of the present manual are arranged in chapters according to the following:

− Chapter 1 : General Information
− Chapter 2 : Operating Instructions
− Chapter 3 : Technical description of the boards

1.2 GENERAL INFORMATION

***C**entral **C**ontrol **U**nit* (see general views on Fig. 1.1) has been designed for the control and managing of a transmitter both air and liquid cooled. The information between *CCU*and transmitter are exchanged via serial interface CAN bus.

The control board uses two microprocessors:

- μP1 manages all remote control operations via *ethernet interface* and local operations through *touch screen display* (or *keyboard*). It also manages the operations for upgarding its own firmware and the one of the second microprocessor.
- μP2 manages all operations of supervision and control of the transmitter via CAN bus.

Since all devices Itelco are endowed with a serial interface RS−485, ***CCU*** also is equipped with this type of interface, so as to manage the communication with CAN system.

μP1 may be directly connected to the Internet and so it is subject to software ”attack”. To avoid interruption of transmission due these problems, the architecture has been designed in such a way that only the μP2 is used to control vital functions of the transmitter, via CAN bus.

As for the firmware updates the system has been designed to carry out the operations from a remote location by connecting on *ethernet interface* in the event of sudden interruption of power during the operation.

The remote control is carried out via *ethernet interface* with the following protocols:

- HTTP (Web Server) for control over *internet* using Web Browser.
- SNMP for control over TCP/IP through appropriate supervision software.
- TFTP for remote firmware updating using TCP/IP network.
- Telnet for remote configuration.

Local control is achieved through a *touch screen color display* and some auxiliary buttons. Anyway, *touch screen display* may be disabled in case of problems and all control functions to are performed by these auxiliary buttons.

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2: OPERATING INSTRUCTIONS

2.1 INTRODUCTION

The present chapter describes all the control and indicators available to the operating personnel and the correct way to use CCU. The content of the present chapter is divided in paragraphs as follows:

2.1 − Introduction

2.2 − Legend of CCU front panel

2.3 − Legend of CCU rear panel

2.4 − Navigation

2.5 − Operations

2.2 LEGEND OF CCU FRONT PANEL

Tab. 2.1 refers to Fig. 2.1 which shows the front pane of CCU. Each number of the table marks an indicator, connector, test point etc. located on the panel. A simple description of the function carried out is given for each number.

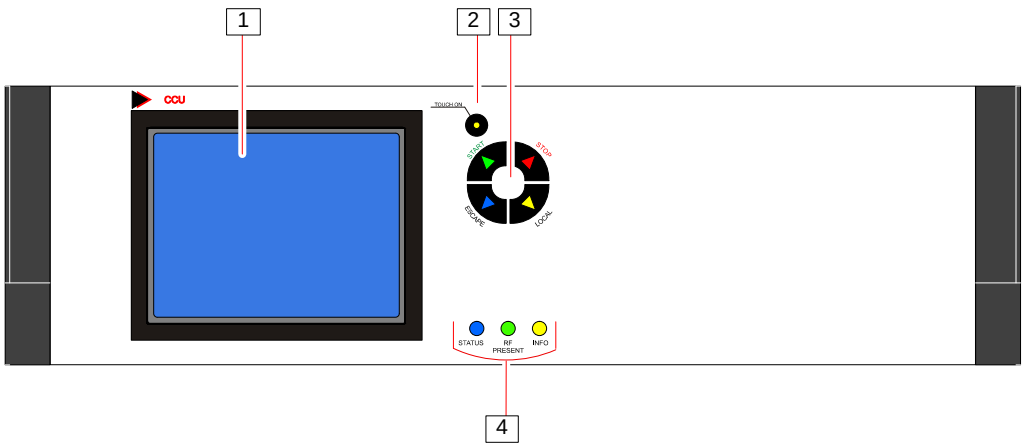


Fig. 2.1 − CCU front panel legend

Tab. 2.1 − CCU front panel legend (ref. Fig. 2.1)

NO.	LABEL	FUNCTION
1		Liquid Crystal *touch−screen* Display. It displays the information on the functioning state of the equipment.
2	TOUCH − SCREEN	Push−button; it enables (the associated yellow led is lit) or disables the transmitter control via *touch−screen*. Disabling *touch−screen* control enables the keybord (#4).
3		Control buttons: START allows starting the equipment functioning when the *CCU* is set in **local** mode. The associated *green* led is lit. STOP allows stopping the equipment functioning when the *CCU* is set in **local** mode. The associated *red* led is lit. LOCAL toggle button; sets *local/remote* control of the equipment. When *local* mode is selected, “START” and “STOP” buttons and navigation keyboard are enabled and the associated *yellow* led (arrow), lights up. ESCAPE allows to quit from current menu.
4	STATUS	Indicator led (*multicolor*); According to the colour, it shows TX status, as follows: *SOLID BLUE* TX is delivering its nominal RF output power; *BLINKING BLUE/RED* when an alarm with *Warning level* has occurred (transmitter goes on). *SOLID RED* when an alarm with *Critical level* has occurred (transmitter stops).
	RF PRESENT	Indicator led (*solid green*); it indicates TX operates properly (RF output power at the rated value).
	INFO	Indicator led (*solid yellow*); it indicates that an alarm condition occurred since alarm history has been displayed for the last time

2.3 LEGEND OF CCU REAR PANEL

Tab. 2.2 refers to Fig. 2.2 which shows the rear panel of CCU. Each number of the table marks an indicator, connector, test point etc. located on the panel. A simple description of the function carried out is given for each number.

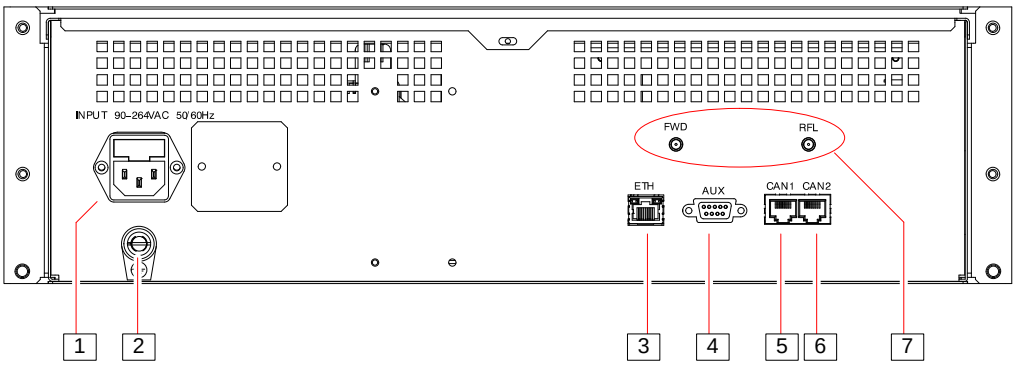


Fig. 2.2 − CCU rear panel legend

Tab. 2.2 − CCU rear panel legend (ref. Fig. 2.2)

NO.	DESCRIPTION	FUNCTION
1		Line socket of the unit (110 to 220V_{AC}).
2		Grounding screw of the unit frame.
3	ETH	Connetcor (RJ45). It allows the connection to a *LAN* via Ethernet.
4	AUX	Connector (SUB−D, 9 pin). It is the connetion for the relevant serial line.
5	CAN 1	Connetcor (RJ45). It allows the connection to CAN bus serial line of the units arranged inside transmitter cabinet.
6	CAN 2	Connetcor (RJ45). It allows the connection to the CAN bus serial line of other equipments (i.e.: transmitters of a system) .
7	FWD/RFL	Connetcors (SMA). Input connectors of the internal power meter (peak−rms). They receive the forward *(fwd)* and reflecetd *(rfl)* signls outgoing from the external directional coupler of the transmitter where *CCU* is housed.

2.4 NAVIGATION

2.4.1 General information on data displaying

The managing of the transmitter and the information on its functioning status is achieved through the *touch screen* display of CCU by means of a menu system.

Information and menu are displayed as shown in Fig. 2.3.

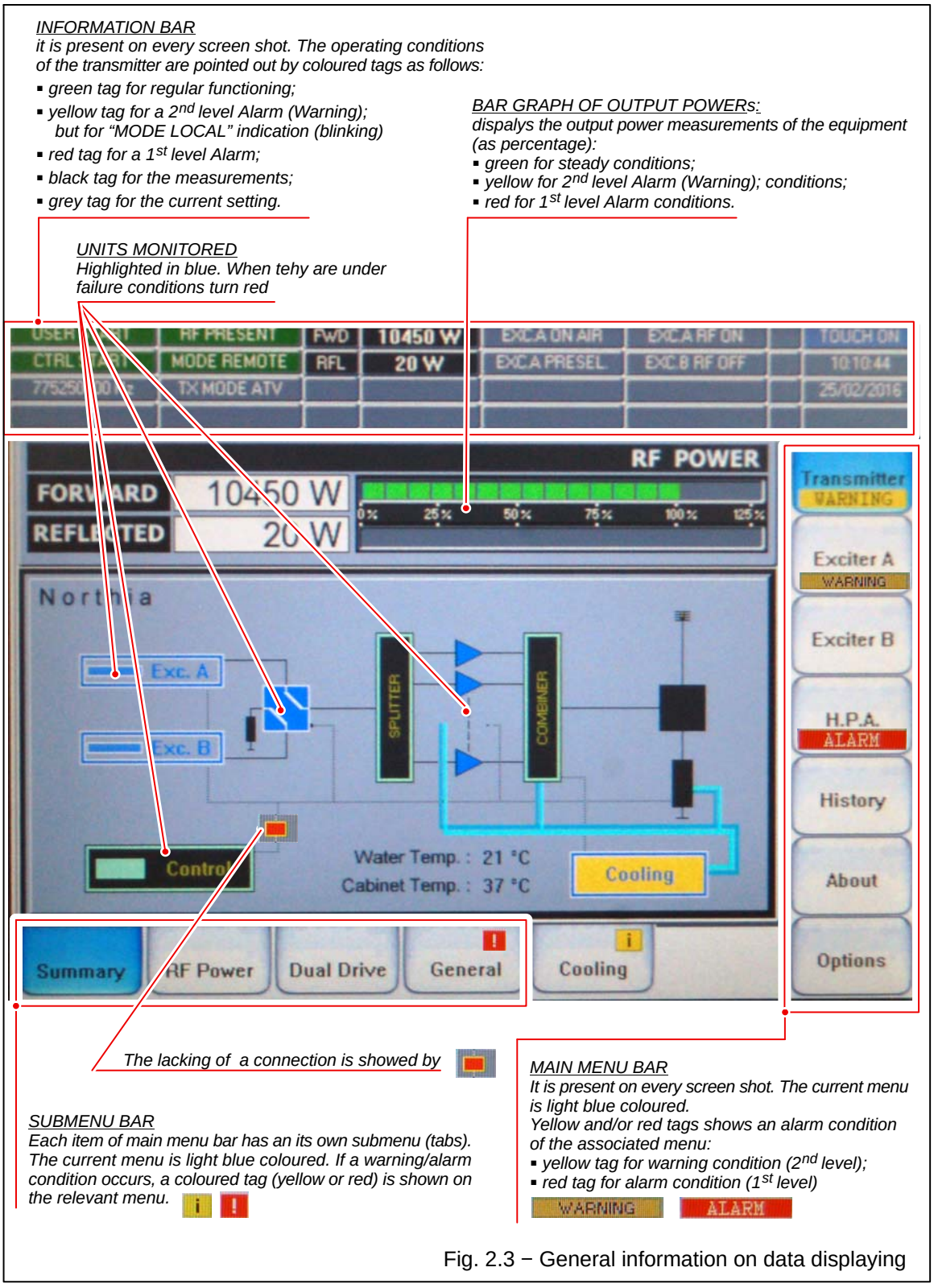


Fig. 2.3 − General information on data displaying

NOTE!

Alarms and numerical values shown, are by way of example only.

NOTE!

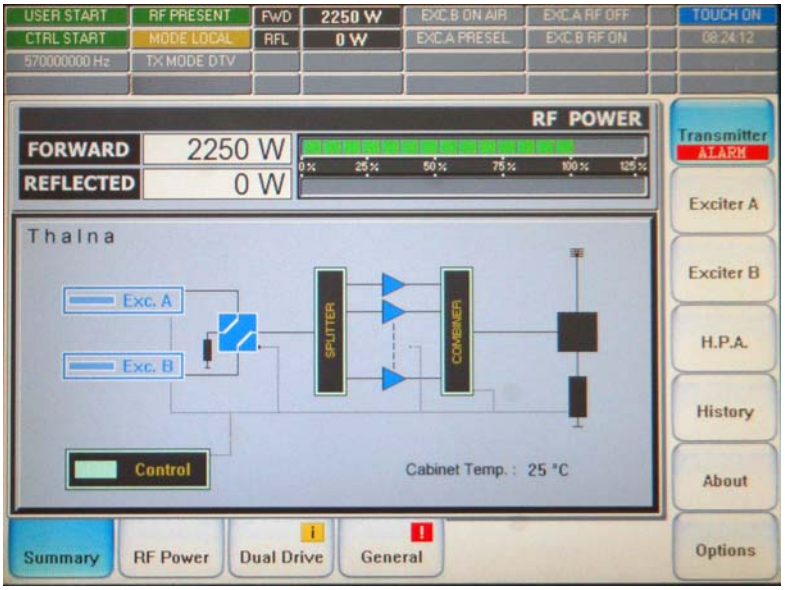
When the unit displays any menu other than"Transmitter/Global Satus", if no operation is carried out within 20 minutes, comes back to "Transmitter/Global status".

NOTE!

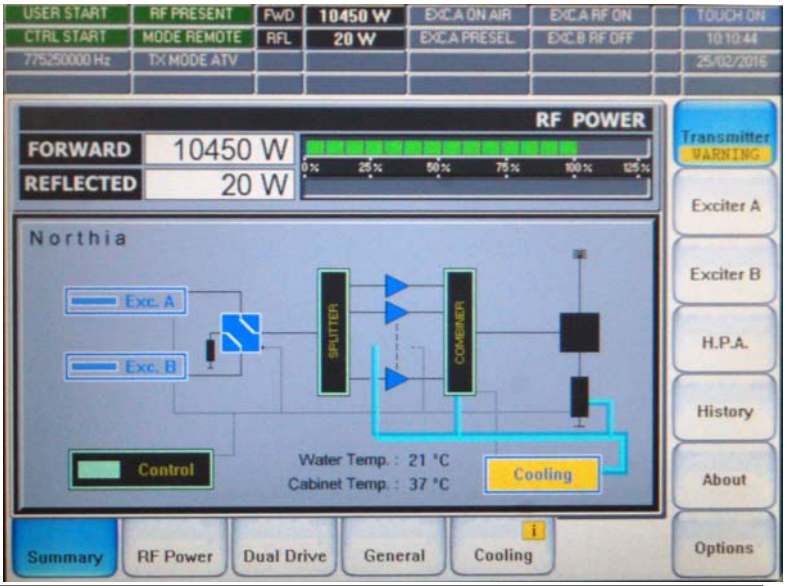
The screen shots shown from now on throughout the manual, are referred both to Thalna and Northia line transmitters.

The screen shots for Thalna and Northia line transmitters which differ, will be shown both.

More in detail the screen shots are referred to a DTV transmitter, but they are still valid for ATV operations since the only difference is the displaying of RF powers (Video, Reflected and Audio).



Thalna line
Transmitter



Northia line
Transmitter

2.4.2 Abbreviations and symbols used on screenshots

Here below a list of the abbreviations and symbols used on the screen−shots of the menu, is given along with a short explanation.

Tab. 2.3 − List of Abbreviations and symbols used on screenshots

abbreviation symbol	description
ALM	Alarm indication displayed on “History” menu; it is a *1st level alarm* (transmitter stops).
WRN	Warning indication displayed on “History” menu; it is a *2nd level alarm* (transmitter goes on).
SET	Abbreviation for *setting*, displayed on “History” menu; indicates an operation performed by the user.
PA1	Abbreviation for *power amplifier 1*, displayed on “History” menu; indicates an event associated to *power amplifier 1*.
TXM	Abbreviation for *transmitter*, displayed on “History” menu; indicates an event associated to *transmitter*.
	Symbol displayed on “Transmitter/Global Status” and “HPA” menu; indicates the failure condition of *pre−driver* or *driver* stage.
	Symbol displayed on “Transmitter/Global Status” and “HPA” menu; indicates the failure condition of *1 transistor* of a *final* stage.
	Symbol displayed on “Transmitter/Global Status” and “HPA” menu; indicates the failure condition of *2 transistor* of a *final* stage.
	Symbol displayed on “Transmitter/Global Status” and “HPA” menu; indicates the maximum current absorption of a *final* stage.
	Symbol displayed on buttons of the *submenu*; indicates a *2nd level alarm* (transmitter goes on).
	Symbol displayed on buttons of the *main menu*; indicates a *2nd level alarm* (transmitter goes on).
	Symbol displayed on buttons of the *submenu bar*; indicates a *1st level alarm* (transmitter stops).
	Symbol displayed on buttons of the *main menu bar*; indicates a *2nd level alarm* (transmitter stops).
	Symbol displayed on “Transmitter/Global Status”; indicates the absence of the connection between the units involved.

2.4.3 Menus family tree

A family tree of the menus available to the operator is shown in Fig. 2.4 on side.

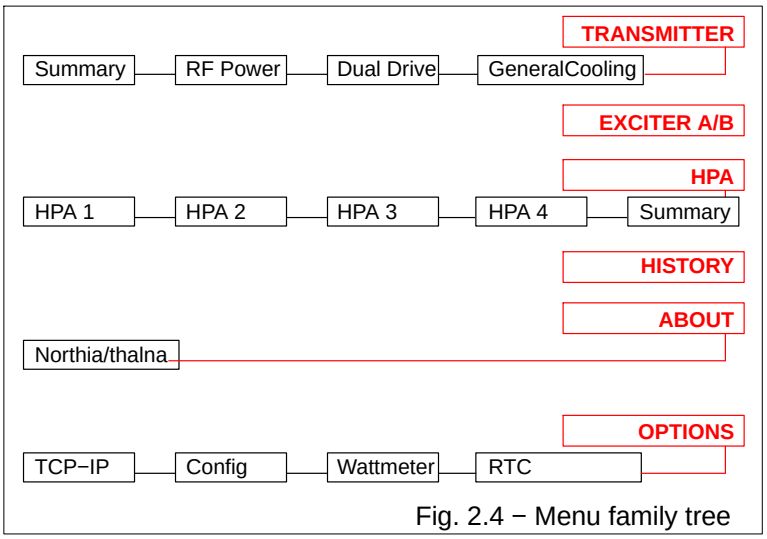
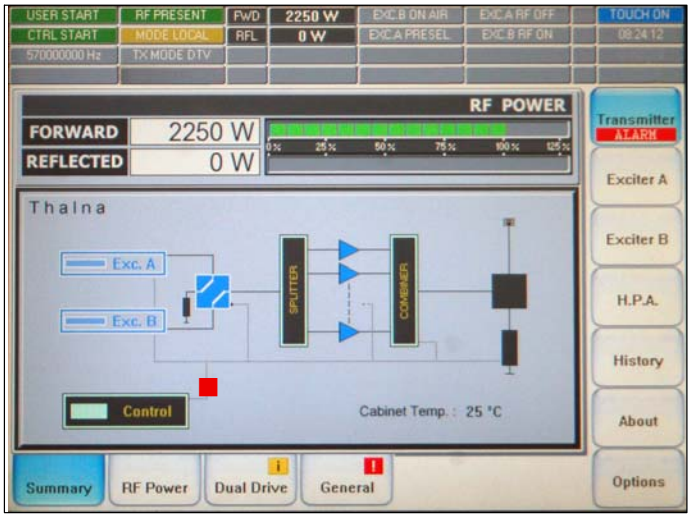


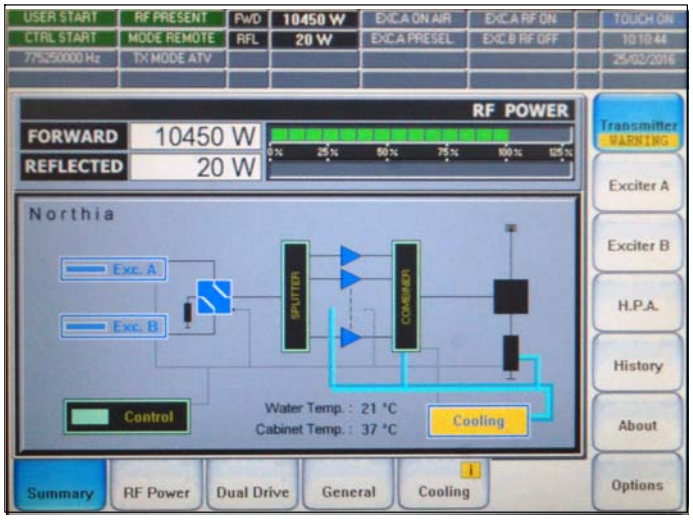
Fig. 2.4 − Menu family tree

2.4.4 Description of Menus

Fig. 2.5 − Transmitter/Summary



Thalna line



Northia line

Transmitter/Summary

A tarnsmitter block diagram is shown. The parts blue coloured are the one monitored.

The symbol ■ on a connection, indicates the interruption of it.

Any part under failure conditions is highlighted in red.

The bars graph show the *forward* and *reflected* RF output powers (W).

Fig. 2.6 − Transmitter/RF Power menu

Thalna line

Northia line

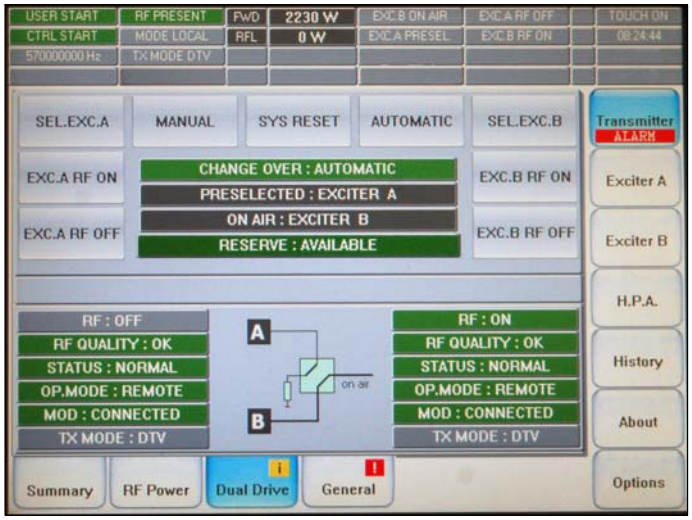
Transmitter/RF Power

Two bars graph display the measurements of *forward* and *reflected* ouput power. When a measurement is out the allowed range, the bars graph turn *yellow* (*2nd level Alarm (Warning)*) or *red* (*1st level Alarm*) depending on the condition that causes the power reduction.

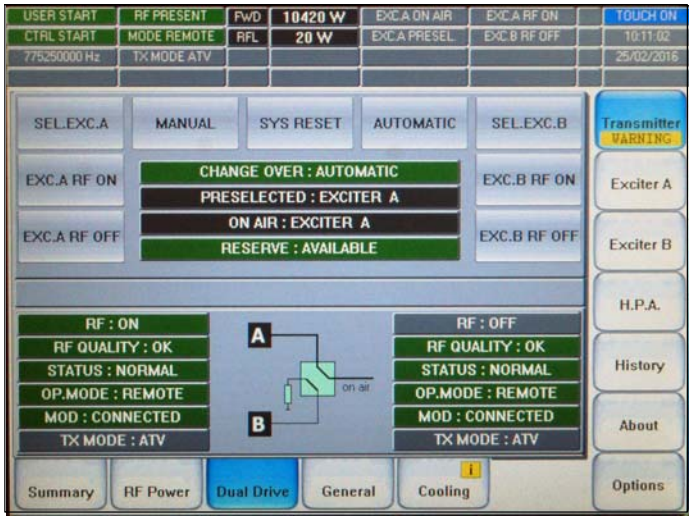
In this window it is possible *star/ing/stopping* transmitter and setting *local/remote* mode, pushing the relevant *command* buttons (TX START, TX STOP, LOCAL, REMOTE). RESET button allows restarting the transmitter when a *TripLockOut* alarm has occurred.

When a *command* button (TX START, TX STOP, LOCAL, REMOTE, RESET) is pushed a pop−up window is displayed which asks a confirmation of the command.

Fig. 2.7 − Transmitter/Dual Drive menu



Thalna line



Northia line

Transmitter/Dual Drive

The window allows setting the *Dual Drive* configuration. The commands available are:

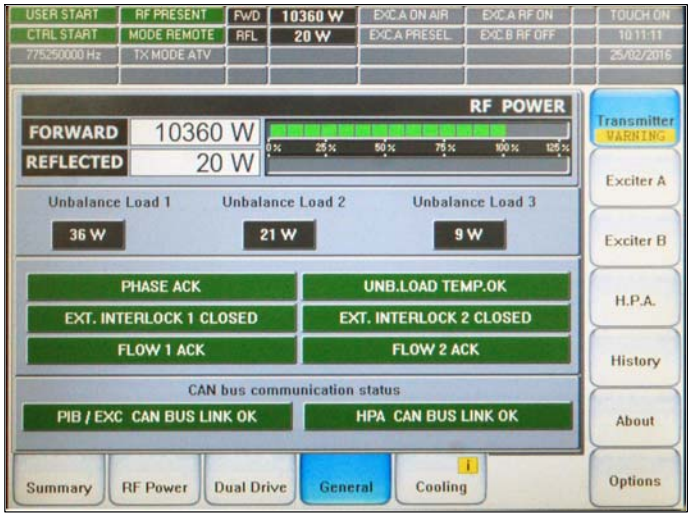
- *SEL. EXC.A/B*
  sets exciter A or B on−air,
- *MANUAL/AUTOMATIC*
  sets the type of switch−over,
- *EXC.A/B RF ON/OFF*
  switches on/off exciter A/B.
- *SYS RESET*
  resets the dual drive configuration.

When a *command* button is pushed a pop−up window is displayed which asks a confirmation of the command.

The current setup is also shown on *information bar*.

Fig. 2.8 −Transmitter/General menu

Thalna line



Northia line

Transmitter/General

The window displays general information on trnsmitter functioning status.

The bar graph of output power displays the current value as percentage:
- *green* for steady conditions;
- *yellow* for 2nd level Alarm (Warning); conditions;
- *red* for 1st level Alarm conditions.

When a P.I.B.or a unit is faulty, *CCU* displays the number associated to the P.I.B. or to the unit: the following Tab. 2.4 lists number of P.I.B. boards number of the unit (column 1), the arrangement inside the transmitter (column 2), the reference on TX wiring digaram (column 3) and the part number of the board (column 4).

Tab. 2.4 − P.I.B.s arrangement within TX

PIB	arrangement	REFERENCE ON TX WIRING DIAGRAM	p/n.
1	left side wall of the cabinet (*from the rear*)	PIB SC6	4010002313
2		MEX II Multimode Exciter unit 1	4050010610
3		MEX II Multimode Exciter unit 2	4050010610
4	TX *Water Cooling unit*	*ONLY for liquid cooled TXs (Northia line)*	
5	right side wall of the cabinet (*from the rear*)	PIB CORE PARALLEL I/O INTERFACE	4010000510
6		*only TX with HPA ≥ 6* SC14	4010002313

Fig. 2.9 − Transmitter/Cooling menu (only Northia line TX)

Northia line

Transmitter/Cooling

The window allows monitoring and controlling the cooling system units (pumps and heat exchangers).

It is possible *setting* operative pump (1 or 2).

When a *command* button is pushed a pop−up window is displayed which asks a confirmation of the command.

The current setup is also shown on *information bar*.

Fig. 2.10 − Exciter A (B) menu

Exciter A (B)

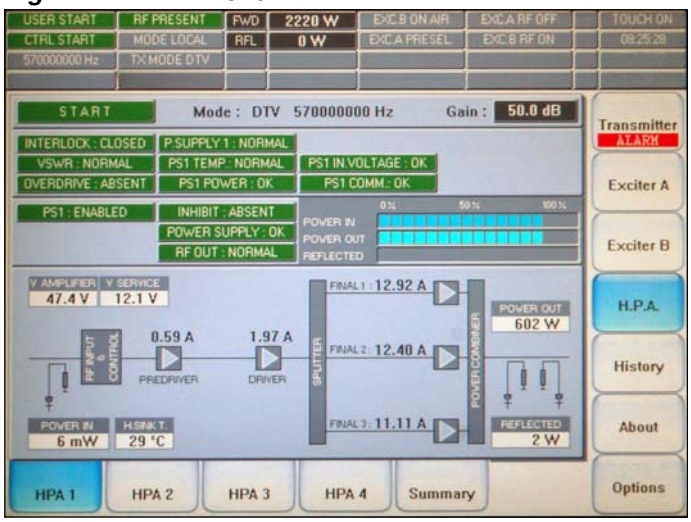
The window allows *strating/stopping* the exciter (RF ON/RF OFF command buttons) and monitoring the operating conditions of the exciter that is:

- *MUTING:* absent/present
- *STATUS:* normal/fault
- *OPERATION MODE:* local/remote
- *MOD* connected/not conn
- *RF:* present/absent
- *MODE:* ATV/DTV
  sets the type of switch−over,

When a *command* button is pushed a pop−up window is displayed which asks a confirmation of the command.

The current setup is also shown on *information bar*.

Fig. 2.11 − HPA menu



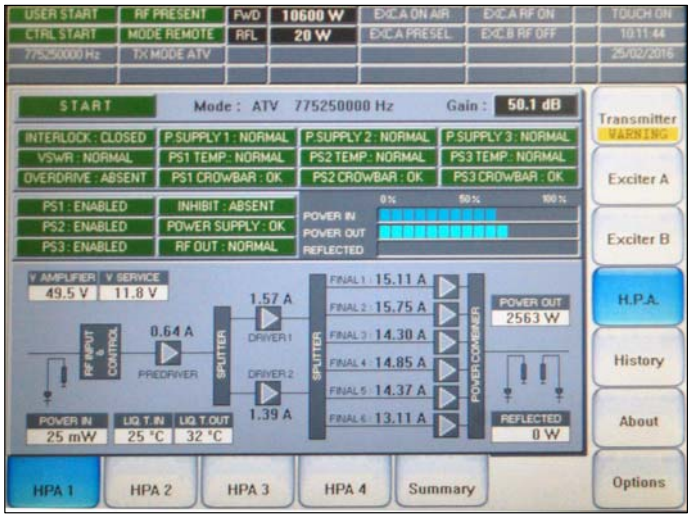
Thalna line

HPA x *(for THALNA TXs)*

The window allows monitoring the operating conditions of the relevant HPA module.

A block diagram of the HPA shows the values of voltages and currents along with alarm conditions (if any).

Heat sink temperature of the RF stages is also displayed.



Northia line

HPA x *(for NORTHIA TXs)*

The window allows monitoring the operating conditions of the relevant HPA module.

A block diagram of the HPA shows the values of voltages and currents along with alarm conditions (if any).

Water in/out temperature are also displayed.

A fault occurred on an RF stage cuses the relevant symbol turns red as follows:

pre−driver *or* ***driver stage*** *in failure conditions*

1 transistor of ***final stage*** *in failure conditions*

2 transistors of ***final stage*** *in failure conditions*

max. current absorption of ***final stage***

Fig. 2.12 − HPA/Summary menu

Thalna line

HPA/Summary *(for THALNA TXs)*

The window displays a summary of the operating conditions. For each HPA are displayed:

- *VOLTAGES:* bias and service
- *HETASINK:* temperature (°C) of heatsink RF stages
- *POWER:* input, output and reflected
- *CURRENT:* predriver, driver and final stages.

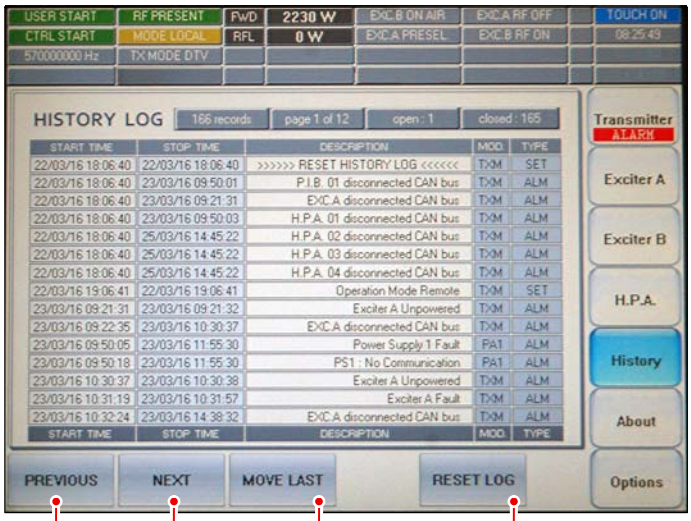
Northia line

HPA/Summary *(for NORTHIA TXs)*

The window displays a summary of the operating conditions. For each HPA are displayed:

- *VOLTAGES:* bias and service
- *LIQ. TEMP IN:* temperature (°C) of input cooling liquid
- *LIQ. TEMP OUT:* temperature (°C) of output cooling liquid
- *POWER:* input, output and reflected
- *CURRENT:* predriver, driver and final stages.

Fig. 2.13 − History menu



History

The window displays any alarm occurred and the settings operated.

For each event is displayed:

- start and stop time
- description
- unit involved (TXM = transmitter; PA = power amp.)
- type of event (ALM = alarm 1st level; WRN = warning 2nd level; SET = setting)

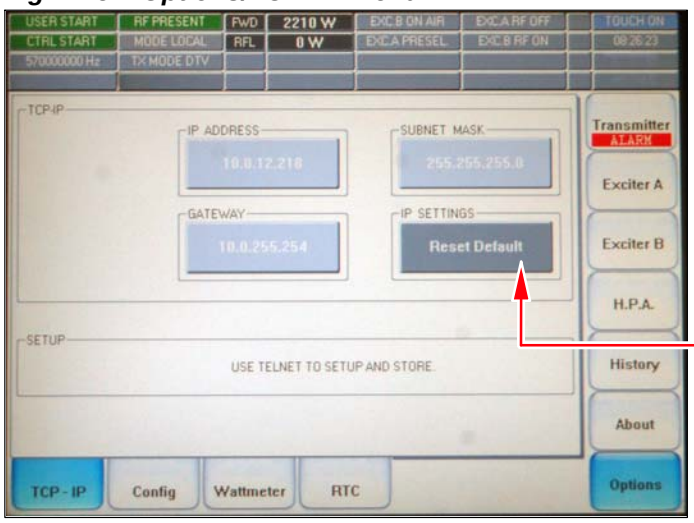
The CCU is able to store more than 10.000 alarms.

Fig. 2.14 − About menu

About

The window displays *software* and *hardware* version of the peripherals along with their address.

Fig. 2.15 − Options/TCP−IP menu



Options/TCP−IP

Options menu displays the settings of the parameters relevant to *ethernet* connection and associated protocols.

- IP Address
- Subnet Mask
- Gateway

A new set−up of these parameters requires the opening of a *telnet session*.

If during the new set−up, *CCU* blocks or looses data, pushing "Reset Default" restores default factory settings as follows:

- IP Address : 10.0.12.244
- Subnet Mask : 255.0.0.0
- Gateway : 10.0.255.254

After a *reset* a new *telnet session* must be opened for the set−up.

Pushing a field displays a pop−up keyboard for entering data or *enabling/disabling* DHCP (refer to Fig. 2.19).

Fig. 2.16 − Options/Configuration menu

Options/Configuration

Config tab of *Option* menu allows setting CCU unit according the transmitter configuration. In detail it is possible to set:

- **MODEL**: sets TX line *Thalna* (air cooled) or *Northia* (liquid cooled). *Changing this paramter causes the reset of CCU.*
- **DUAL DRIVE CHANGEOVER**: enaables/disables the *dual drive* configuration. *Changing this paramter causes the reset of CCU.*
- **NUMBER OF HPA**: sets the number of the amplifier modules used. *Changing this paramter causes the reset of CCU.*
- **FWD ALARM TH REFER (W)**: sets the reference value of the operative forward power of TX. The forward alarm threshold is referred to this value. The alarm threshold is set in *Option/Wattmeter* window, in "FWD Alarm TH (dB)" frame (Fig. 2.17).

  Example: TX operating at nominal output pwr of 5KW and fwd alarm threshold set at −3dB (fwd alarm triggered at 2.5KW). Under this condition the value to be set in "FWD ALARM TH REFER (W)" field is "5".

  TX derated at 3KW and fwd alarm threshold again set at −3dB (fwd alarm triggered at 1.5KW). Under this condition the value to be set in "FWD ALARM TH REFER (W)" field is "3".
- **RESREVE AUTO MODE**: holds stand−by exciter switched−on/off on dummy load.
- **NUMBER OF HPA PALLETS**: sets the number of the pallets of the amplifier module used. *Changing this paramter causes the reset of CCU.*
- **FREQUENCIY (HZ)**: for ATV and DTV modes, to be sent to amplifiers modules. If dual−exciter configuration is used, the transmission frequency must be the same for both exciters.
- **CHANGEOVER DELAY (S)**: sets *delay time* for the change−over of the exciters.
- **MODE**: the setting is allowed only if Tx is in *stop* conditions otherwise a popup message is diplayed which calls for stopping TX. When TX has been set in *stop* conditions, a popup menu is diplayed which allows setting *ATV* or *DTV* mode. Pushing "OK" field the changing of modulator is operative. *Changing this paramter causes the reset of CCU.*
- **REMOTE PARALLEL I/O**: sets the presence/absence (*enabled/disabled*) of the remote paralel interface. *Changing this paramter causes the reset of CCU.*
- **ACTIVE PERIPHERALS CONFIG**: shows the peripherals present (marked with "#"), the ones absent (marked with NU), the number of the the amplifier modules used and the type of wattmeter used (peak/rms).

Fig. 2.17 − Options/Wttmeter menu

Options/Wattmeter

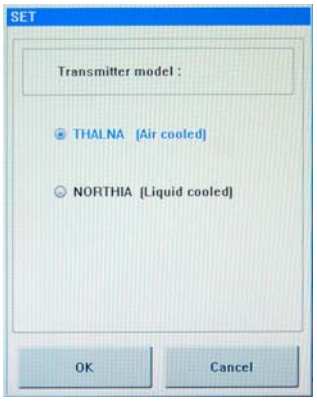
Wattmeter menu is under *password* and no setting is allowed. The setting of the *offset* value for 'Wattmeter' measurements of forward and reflected output power both for ATV and DTV are factory set.

Fig. 2.18 − Options/ RTC menu

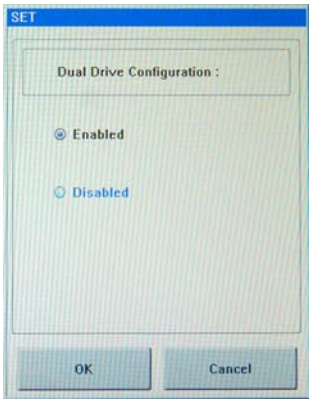
Options/RTC

The window allows setting *date* (dd/mm/yy) and *time* (HH:MM:SS) of the real time clock. Pushing "Date" or "Time" fields displays a pop−up keyboard for entering data (refer to Fig. 2.19)

Fig. 2.19 − Pop−up keyboards

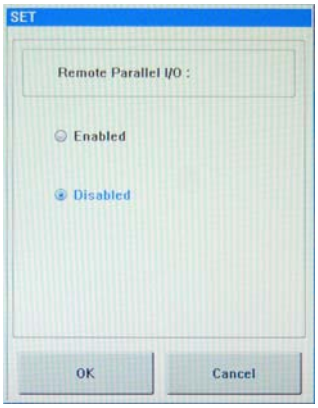


MODEL (Thalna/Northia) set up



DUAL DRIVE CONFIGURATION (Enabled/Disabled) set up

MODE SELECTION (ATV/DTV) set up



REMOTE PARALLEL I/O (Enabled/Disabled) set up

FIELDS with NUMERICAL VALUE set up

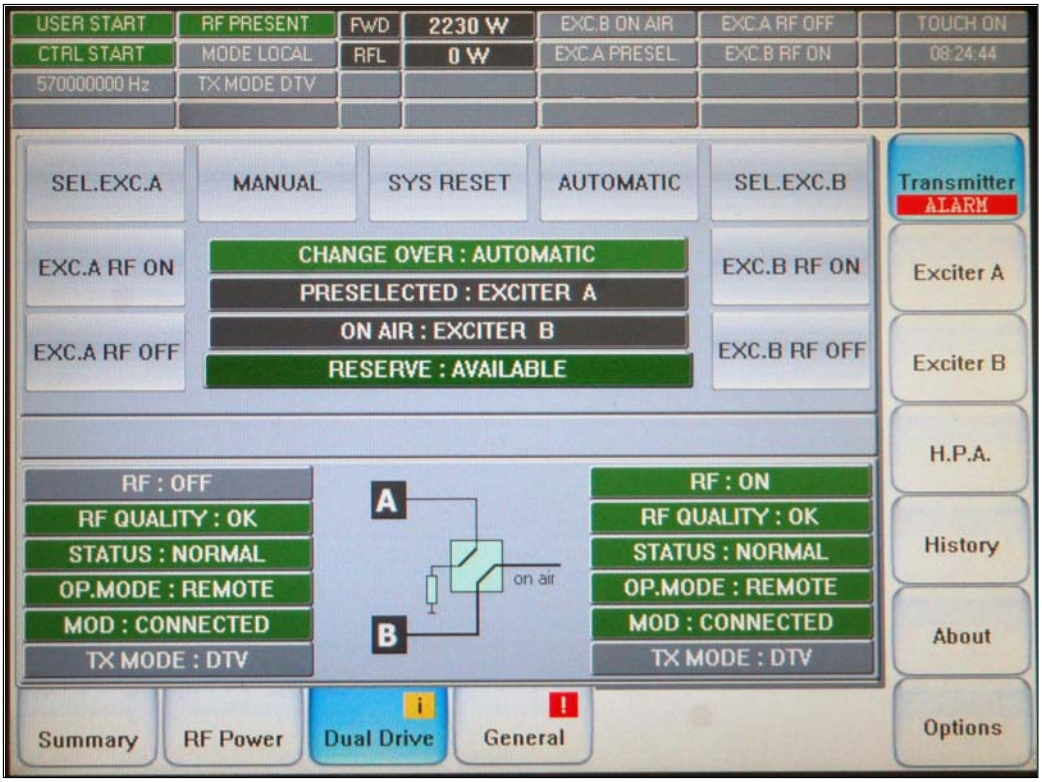
2.5 OPERATIONS

2.5.1 Switching−on/off the unit

CCU is switched on closing the relevant breaker on *Mains Distribution* unit arranged inside the transmitter cabinet.

2.5.2 Setting the dual exciter configuration

CCU is also able to manage the Dual Exciter configuration if the transitter is equipped with this option. The managing is allowed through "*Dual Drive*" page of "*Transmitter*" menu:



The following set−up are allowed:

- FUNCTIONING MODE

  AUTOMATIC — automatic changeover of faulty exciter with the standby one is enabled: CCU performs the changeover without any intervention of the operator.

  MANUAL — any type of automatic changeover is inhibited and therefore all the unit functions (changeover of the faulty exciter with the standby one, switching on of standby exciter) must be carried out by the operator.

- SETUP OF ON AIR EXCITER
  Setup of the on−air exciter is is done pushing "SEL.EXC.A" or "SEL.EXC.B" button.

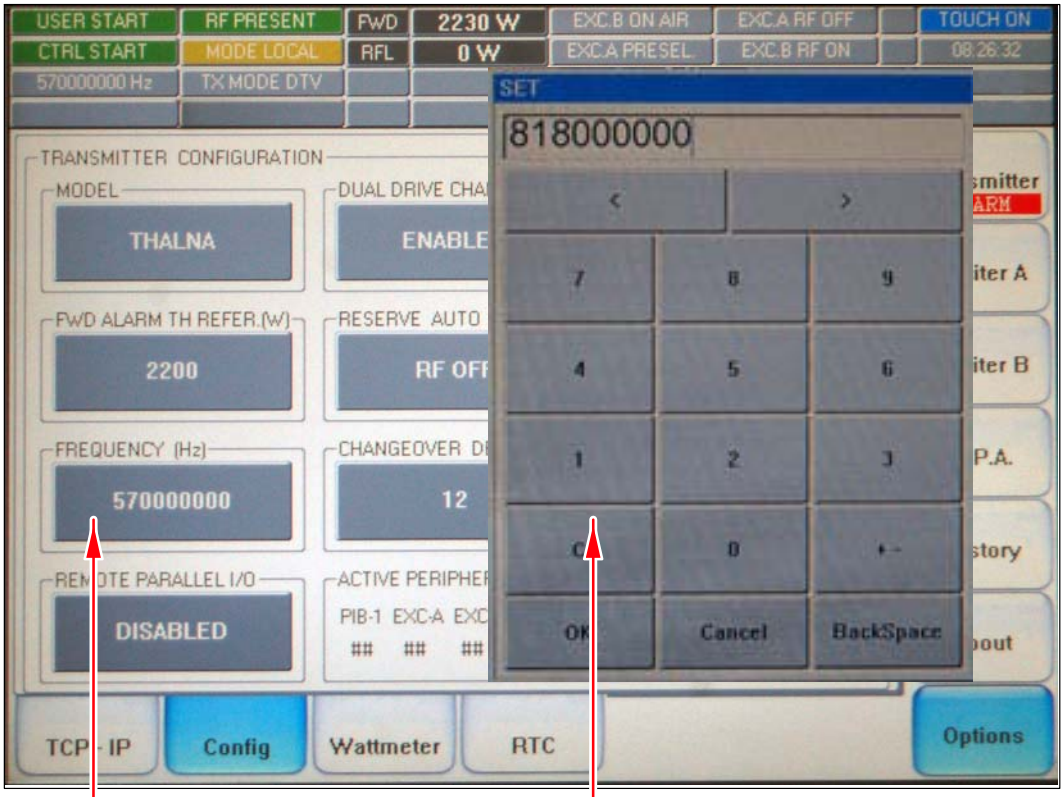
- SWITCHING−ON/OFF EXCITERS
  Switching−on/off exciters is achieved pushing "EXCA RF ON" or "EXCA RF OFF" button.

- SYSTEM RESET
  The system is reset to the last configuration set and the counter of the change−over alarms is reset too.

2.5.3 Setting the transmission frequency of the transmitter

The transmission frequency of the transmitter must be set in *Option/Config* window in “FREQUENCY (Hz)” field. This setting is needed to communicate to the HPAs the ferquency at which they must operate, since each HPA has stored different precorrection tables.

Operate as follows:



1. touch on “FREQENCY (Hz)” field to set or to change the frequency

2. a pop−up keyboard is displayed. Digit the frequency to be set (in Hz) then push “OK”.

2.6 SOFTWARE UOPGARDE

2.6.1 General Information and application

Itelco **F**irmware **U**pgrade **U**tility v.1.0 (*IFWU1.0*) allows a complete firmware upgrade of the transmitter cabinet microprocessor units, micro−controller units, DSP and FPGA. *The interfacing to transmitter cabinet take place through just one RJ45 10/100 Ethernet interface connector and just one IP address.*

The firmware operation upgrade is controlled by a user friendly **g**raphical **u**ser **i**nterface (*GUI*) application running over Microsoft Windows operative systems 32 and 64 bit (from Window 7 up to the last Windows 10 release (2017).

IFWU1.0 GUI allows executing a selective upgrade of the devices and, after the begin of the operation, it follows its progress until the end of the process, allowing to check the procedure results.

2.6.2 Connection parameters

- Host . . . . . use this edit box to set the IP address of the transmitter (it is the address of the Central Control Unit (CCU) and performs the unique IP interface for the IP management and control of the whole transmitter.
- Port . . . . . TCP−IP port used for transfer protocol.
- User . . . . . User ID (it must be related to the administrator level).
- Password . . . . . User password to log−in the system.
- Connect/Disconnect . Button to activate (log−in) / deactivate (log−out) the job session.

2.6.3 Interface window

The picture below (Fig. 2.20) shows a *"Target"* and *"File type"* selection ready for the upload

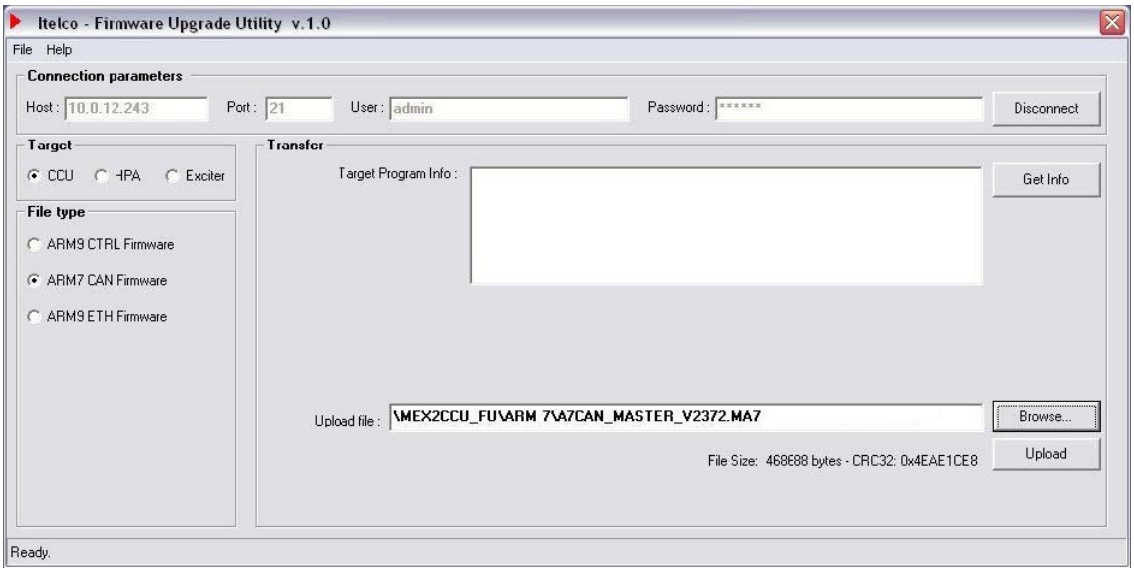


Fig. 2.20 − Typical view of a *"Target"* and *"File type"* selection ready for the upload

Below you will find information about the "Target" and "File Type" frames.

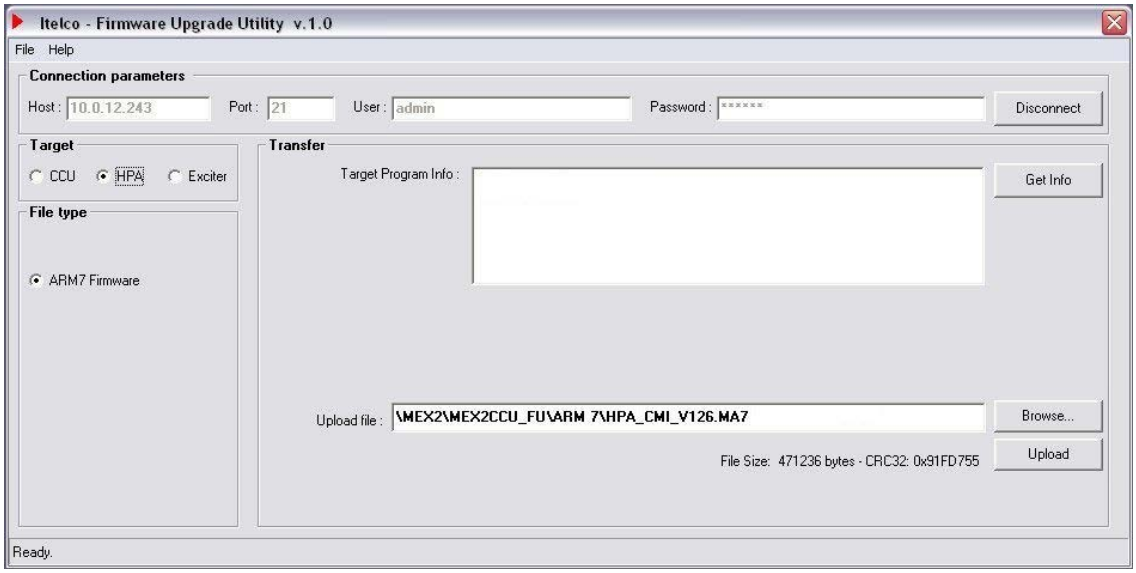


Fig. 2.21 − *"HPA Target"* selection

Target

Target (frame) use the option buttons of this frame to select the target sub−module:

CCU: Central Control unit and Peripherals Board Interfaces;

HPA: High Power Amplifier units;

Exciter: Multimode Exciter units.

File type

To each target, a list of possible *"File type"* (programs) is related.

Target CCU: the related firmware file type list is the following:

ARM9 CTRL: Transmitter Controller firmware.

ARM7 CAN: CAN bus peripherals firmware.
CCU CAN bus master or slave peripherals firmware.
Th specific CAN bus unit and address selection is directly managed through the file selection (CA bus unit and address is specified inside the firmware file header that will be provided by Itelco).

ARM9 ETH: Transmitter Ethernet Interface firmware.

Target HPA: the related firmware file type list is the following:

ARM7: HPA Controller firmware.

Target Exciter: the related firmware file type list is the following:

ARM9: Exciter Controller firmware.

ARM7: Modulator Setup Controller firmware.

DSP: DSP and Pre−distorter/Equalizer firmware.

FPGA: Modulation firmware. When selected, the operator must select one of the followingFPGA Program List:

FPGA Program List: select device to be upgraded:

- ***DVB−T/H***
- ***ATV***
- ***DVB−T2 (Xilink FPGA)***
- ***DVB−T2 (Altera FPGA)***

The picture below shows an *Exciter target → DSP program* selection

Fig. 2.22 − *"Exciter Target → DSP"* selection

Transfer

Target Program Info when connected, by pressing ***'Get Info'*** button, the operator can obtain information about the target file system (flash memory slot, file size, firmware load status etc.).

Upload file

Target Program Info when connected, by pressing ***'Browse'*** button, the operator can obtain a dialogue box to select the **firmware file** to be upload to the previous selected **Target** and **Program file Type**.

The IFWUv1.0 application checks and validates the file by comparing its header with the target destination. If this file is valid, its size and CRC computing result will be shown on the botton right side of the application form.

When the firmware file selection is completed and validated the operator can start the upgrade by a click on ***'Upload'*** button. The application shows the upgrade status with a progress bar. At the end of the procedure a message box will appear with the following final results of the operation:

"FW upgade completed !" or **"FW upgade failed !"**

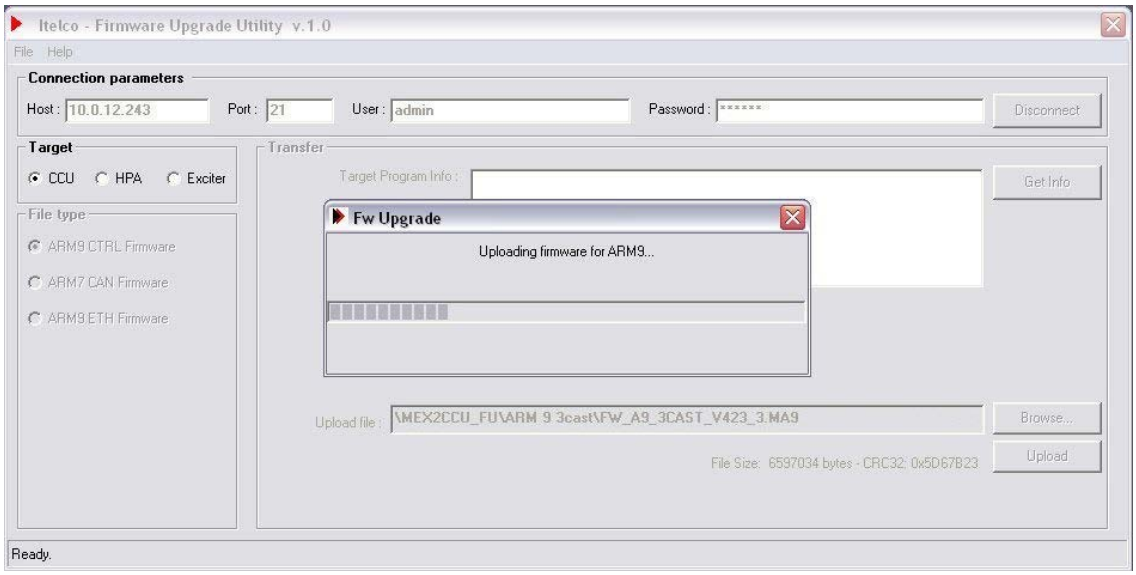


Fig. 2.23 − Procedure progress status management

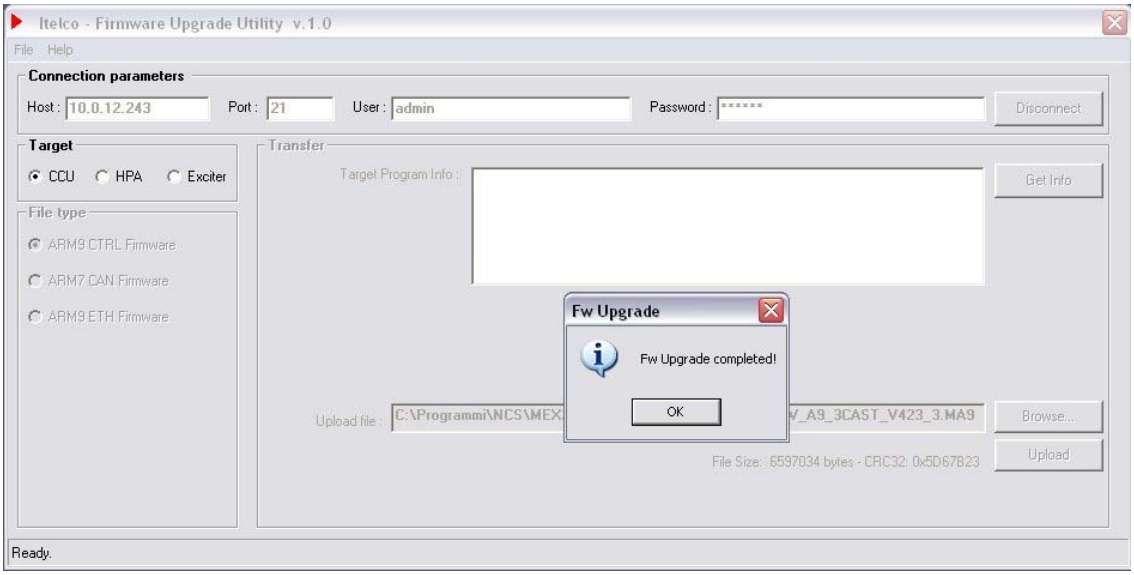


Fig. 2.24 − Procedure result status management

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3. *WIRING DIAGRAMS*

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