

# NTC/2142

## IF/L-BAND FREQUENCY AGILE UP/DOWNCONVERTER INDOOR UNIT



# User Manual

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**TO WHOM IT MAY CONCERN**

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**EC DECLARATION OF CONFORMITY**

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We,

**NEWTEC n.v.**

declare that our products

**IF/L-BAND FREQUENCY AGILE UP/DOWNCONVERTER INDOOR UNIT**

to which this declaration relates are in conformity with :

the requirements of the R&TTE Directive 1999/5/EC

in accordance with the harmonised standards listed below :

For the essential EMC requirements contained in Directive 89/336/EEC

EN 55022:1998 Radio disturbance characteristics of information technology equipment

EN 61000-3-2:2000	Limits for harmonic current emissions
EN 61000-3-3:1995	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems

EN 55024:1998 Immunity characteristics of information technology equipment

EN 61000-4-2:1995+A2:2000	Electro Static Discharge
EN 61000-4-3:1995	Radiated Susceptibility
EN 61000-4-4:1995	Electrical Fast Transient/Burst immunity
EN 61000-4-5:1995	Surge immunity
EN 61000-4-6:1996	Immunity to conduct disturbances
EN 61000-4-11:1994	Voltage dips, short interruptions and voltage variations immunity

For the safety requirements contained in Directive 73/23/EEC

EN 60950:92 incl. A1-A4 and A11:97

Safety of information technology equipment

Done at Sint-Niklaas, on February 12<sup>th</sup>, 2004

Dirk Breynaert,  
Managing Director

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## **Relevant EMC information**

(to FCC rules)

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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## Safety

Please read this chapter before installation and use of the equipment

To ensure operator safety, the equipment has been designed to comply with the following safety standard:

IEC 60950 Safety of Information Technology Equipment

Prior to installation and operation, please ensure that the following points are observed:

The equipment described in this manual is designed to be used by properly trained personnel only. Only qualified personnel who are aware of hazards involved shall carry out adjustment, maintenance and repair of the exposed equipment.

No operator serviceable parts inside. Refer servicing to qualified personnel. To prevent electrical shock, do not remove covers.

For the correct and safe use of the equipment, it is essential that both operating and servicing personnel follow generally accepted safety procedures in addition to the safety precautions specified in this manual. Warning and caution statements and/or symbols are marked on the equipment when necessary.

Whenever it is likely that safety protection is impaired, the equipment must be made inoperative and secured against unintended operation. The appropriate servicing authority must be informed. For example, safety is likely to be impaired if the equipment fails to perform the intended measurements or shows visible damage.

### Caution:

FOR CONTINUED PROTECTION AGAINST FIRE, REPLACE LINE FUSES ONLY WITH SAME TYPE AND RATING ( 5 X 20mm T3.15 A/250v TYPE T or slow-blow)

## Environmental

Operating the equipment in an environment other than that stated in the specifications will also invalidate the safety compliance

The equipment must not be operated in an environment in which the unit is exposed to:

- Un-pressurised altitudes higher than 2000 metres
- Extremes of temperature outside the stated operating range
- Operating temperature range 0 to + 40 C
- Excessive dust
- Moisture or humidity atmosphere above 95% RH
- Excessive vibration
- Flammable gases
- Corrosive or explosive atmospheres
- Never place the equipment in direct sunlight

The outside of the equipment may be cleaned using a lightly dampened cloth. Do not use any cleaning liquids containing alcohol, methylated spirit or ammonia etc.

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## **Installation:**

### **AC power supply**

This equipment is provided with a protective earthing ground incorporated in the power cord. The mains plug shall only be inserted in a socket outlet provided with a protective earth contact (TN type power supply). Any interruption of the protective conductor, inside or outside the equipment, is likely to make the equipment dangerous. Intentional interruption is prohibited.

The installation of the equipment and the connection of the mains power supply system must be made in compliance to local or national wiring installation standards. The positioning of the equipment must be such that the mains supply socket outlet for the equipment should be near the equipment and easily accessible or that there should be another suitable means of disconnection from the mains supply.

The power supply is set to operate from 100 to 240Vac to 47-63Hz.

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## **Cable distribution system**

The equipment shall be installed in accordance with the applicable provisions of NEC Article 810 for US and with CEC section 54 for Canada

Before connecting the coax to the equipment make sure that equipment is properly grounded. The screen of the used coax cable should be bonded to the earth at the building entrance.

## **Technical Earth**

On the rear panel of the equipment is a technical earth available (An unmarked terminal, on the right side of the equipment)

It is provided to:

- Ensure all equipment chassis fixed within a rack are at the same technical earth potential. This is done by connecting a wire between the technical earth terminal and a suitable point on the rack
- Eliminate the migration of stray charges when connecting between equipment.

## **Rack mounting**

The equipment is designed to operate in a static 19-inch rack system conforming to IEC 60297

When mounted in a standard 19-inch equipment rack, the device must be sustained by L-profiles. Fixing the device with 4 front panel screws only will damage it and could result in injury.

Operation of the equipment in transportable installations and vehicles equipped with the means of providing a stable environment is permissible. Operation of the equipment on vehicles, ships or aircraft without the means of environmental conditioning may invalidate the safety compliance.

Mounting of the equipment in the rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

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## **Laser Safety Statement**

(when ASI optical plug-in is installed)

This product is a class 1 laser product in accordance with:

IEC 60825-1, amendment 2, 2001  
"Radiation safety of laser products"

This product is a Class 1 laser product in accordance with:

FDA 21CFR Ch.1 §1040: 1988  
(US department of Health and Human Service, Code of Federal Regulations).

### ***Instruction for safe use:***

To avoid possible exposure to hazardous laser radiation, connect cable to laser output or put protective plastics on laser output, prior to powering up the product.

### ***Caution:***

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure

### ***Label:***

**CLASS 1 LASER PRODUCT  
(per CDRH, 21 CFR 1040)  
(per IEC 60825-1 amendment 2, 2001)**

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## **Additional safety requirements for Finland, Norway and Sweden**

### **Telecommunication connections and cable distribution system**

Special conditions apply to the use of this equipment in Finland, Sweden and Norway due to unusual earthing arrangements in those countries. Therefore it is essential that the installation is done by authorized personnel and according to the national requirements.

This equipment is specified for use only in a restricted access location where equipotential bonding has been applied and which has provision for a permanently connected protective earthing conductor.

A protective earthing conductor must be installed by a Service Person.

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## Table of contents

<b>SAFETY</b> .....	<b>4</b>
<b>Environmental</b> .....	<b>4</b>
<b>Installation:</b> .....	<b>5</b>
AC power supply .....	5
Cable distribution system .....	6
Technical Earth .....	6
Rack mounting .....	6
<b>Laser Safety Statement</b> .....	<b>7</b>
<b>Additional safety requirements for Finland, Norway and Sweden</b> .....	<b>8</b>
<b>TABLE OF CONTENTS</b> .....	<b>9</b>
<b>HISTORY</b> .....	<b>12</b>
<b>1 FRONT PANEL DESCRIPTION</b> .....	<b>13</b>
<b>2 DISPLAY</b> .....	<b>13</b>
<b>3 KEYPAD</b> .....	<b>13</b>
<b>4 LEADS</b> .....	<b>14</b>
<b>5 BACK PANEL DESCRIPTION</b> .....	<b>14</b>
<b>5.1 PSU, M&amp;C + external 10.0 MHz input</b> .....	<b>14</b>
5.1.1 Power socket:.....	14
5.1.2 Serial Monitor and Control via RS485/RS232 .....	15
5.1.2.1 RS485 serial interface: .....	15
5.1.2.2 RS232 serial interface: .....	15
5.1.3 Contact closure alarm outputs: .....	16
5.1.4 10.0 MHz reference input .....	16
5.1.5 Ethernet connection.....	16
<b>5.2 RF Interface</b> .....	<b>17</b>
5.2.1 Standard L-band – IF interface.....	17
5.2.2 NTC/3750/Ax Outdoor unit – LNB conditioner + active 2 input/4 output combiner/splitter.....	17
<b>6 BLOCK DIAGRAM</b> .....	<b>18</b>
<b>7 HOW TO READ THIS MANUAL</b> .....	<b>19</b>

---

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<b>8</b>	<b>OPERATION</b>	<b>20</b>
<b>8.1</b>	<b>User</b>	<b>20</b>
8.1.1	UsrMenu - UsrMenu	20
<b>8.2</b>	<b>Unit</b>	<b>20</b>
8.2.1	Setup	20
8.2.1.1	Device mode - SyDevMode	20
8.2.1.2	RMCP version - SyDevRmcpVer	21
8.2.1.3	System time - SyDevRtc	21
8.2.1.4	User menu - UsrMenuConf	22
8.2.1.5	Serial port settings	22
8.2.1.6	Ethernet settings	23
8.2.1.7	Display settings	24
8.2.1.8	SNMP settings	25
8.2.2	Control	27
8.2.2.1	Device sleep mode - SyDevSleepMode	27
8.2.2.2	Device reset - SyDevRst	27
8.2.2.3	Reference clock selection - SyRefClock	28
8.2.2.4	10 MHz operator frequency adjust - SyRef10MTuning	29
8.2.2.5	10 MHz reference frequency calibration factory default - SyRef10MCalib	29
8.2.2.6	10 MHz reference calibration control - SyRef10MCtrl	30
8.2.2.7	Up converter	30
8.2.2.8	LBand conditioner up	31
8.2.2.9	Down converter	36
8.2.2.10	LBand conditioner down	37
8.2.3	Monitor	39
8.2.3.1	Device internal temperature - SyIntTemp	39
8.2.3.2	Device +3V3 power supply - SyDevPowP3V3	39
8.2.3.3	Device +5V power supply - SyDevPowP5V	39
8.2.3.4	Device +12V power supply - SyDevPowP12V	39
8.2.3.5	Device -12V power supply - SyDevPowM12V	40
8.2.3.6	10 MHz reference input level measurement - SyRef10MLevel	40
8.2.3.7	Up converter	40
8.2.3.8	Down converter	41
8.2.4	Architecture	41
8.2.4.1	General	41
8.2.5	Diagnostics	45
8.2.5.1	Generate diagnostics report - SyTSRapport	45
8.2.6	Board selftest results	45
<b>8.3</b>	<b>Converter</b>	<b>45</b>
8.3.1	Control	45
8.3.1.1	Up converter	45
8.3.1.2	LBand conditioner up	48
8.3.1.3	Down converter	49
8.3.1.4	LBand conditioner down	51
8.3.2	Monitor	52
8.3.2.1	Up converter	52
8.3.2.2	LBand conditioner up	52
8.3.2.3	Down converter	55
8.3.2.4	LBand conditioner down	55
8.3.3	Actionkeys	57
8.3.3.1	Action keys - SyActKeyActivate	57
8.3.4	Test	57
8.3.4.1	Up converter	57
8.3.4.2	LBand conditioner up	58

---

---

8.3.4.3	Down converter.....	59
8.3.4.4	LBand conditioner down.....	61
<b>8.4</b>	<b>Alarm .....</b>	<b>62</b>
8.4.1	List of alarms.....	62
8.4.1.1	Device .....	62
8.4.2	Board alarms.....	67
<b>8.5</b>	<b>Config .....</b>	<b>67</b>
8.5.1	Load - SyConfigLoadFlash.....	67
8.5.2	Save - SyConfigSaveFlash .....	67
8.5.3	Name - SyCfgName.....	68
<b>9</b>	<b>REMOTE MONITOR AND CONTROL .....</b>	<b>69</b>
<b>10</b>	<b>CONNECTING TO THE DEVICE .....</b>	<b>69</b>
<b>11</b>	<b>SERIAL INTERFACE - LINE SETTINGS.....</b>	<b>69</b>
<b>12</b>	<b>RMCP OVER ETHERNET.....</b>	<b>70</b>
<b>13</b>	<b>PROTOCOL .....</b>	<b>70</b>
<b>14</b>	<b>MESSAGE FORMAT .....</b>	<b>70</b>
<b>15</b>	<b>HTML INTERFACE.....</b>	<b>71</b>
<b>16</b>	<b>SNMP .....</b>	<b>75</b>
<b>APPENDIX A:</b>	<b>ACTI ONKEYS.....</b>	<b>76</b>
<b>APPENDIX B:</b>	<b>USER DEFINED MENU.....</b>	<b>78</b>
<b>APPENDIX D:</b>	<b>DIAGNOSTI CS REPORT .....</b>	<b>79</b>
<b>APPENDIX E:</b>	<b>ALARM LOGGI NG.....</b>	<b>80</b>

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## History

Usermanual Version	Date	Details
v1.0	February 2004	First release
v1.09, Edit1	July 20, 2005	Version of manual is now concurrent with M&C software release version
v1.09, Edit2	January 2006	Safety instructions added confirm UL regulation
V1.09, Edit3	April 2006	- Safety caution added confirm UL regulation - Web interface description

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## 1 Front panel description



## 2 Display

The display consists of a 2 x 40 characters LCD screen. The top row indicates the path in the menu structure while the bottom row displays the item selected. If the value is not indicated push enter to bring up the submenu.

## 3 Keypad



The 16-frontpanel keys allow the operator to navigate in the menus and change parameters.

The **?** key is used for a pop-up help screen with more info on the selected item; press the **ESC** arrow to exit this help screen.

The **←** and **→** keys are used to highlight a menu item, press the **Ok** key to go one level deeper in the menu tree. Once arrive at the desired level, use **Ok** again to select the desired item.

The **ESC** key is used to move back up in the menu tree

The **CLR-key**, (clear), empties the numerical input fields (backspace).

The **digit keys 0 up to 9** are used for the input of numerical values. Whenever there is a need for hexadecimal characters pressing the **A - F** key two times will bring up the desired hexadecimal character.

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## 4 LEDs



There are 6 LEDs on the frontpanel indicating:

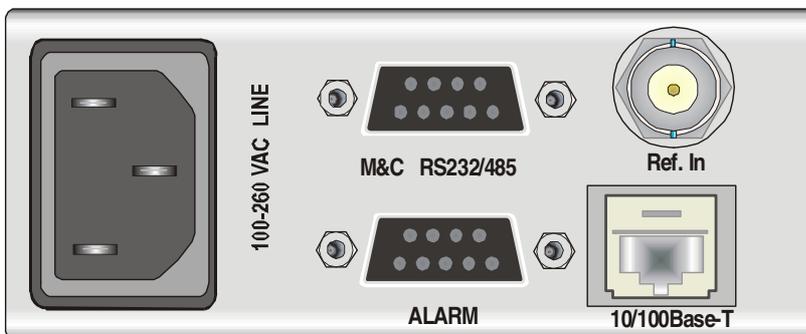
IF out: **green:** IF transmit is on  
L-band out: **green:** L-band transmit is on  
RF out: **green:** RF transmit on (in case of installed RF upconverter)

Act. Alm: **red:** actual alarm(s) present  
Mem. Alm: **red:** memorised alarm(s) present  
Test: **orange:** on if the device is in test mode

## 5 Back panel description

The back panel consist of several modules depending on the hardware that is installed.

### 5.1 PSU, M&C + external 10.0 MHz input



#### 5.1.1 Power socket:

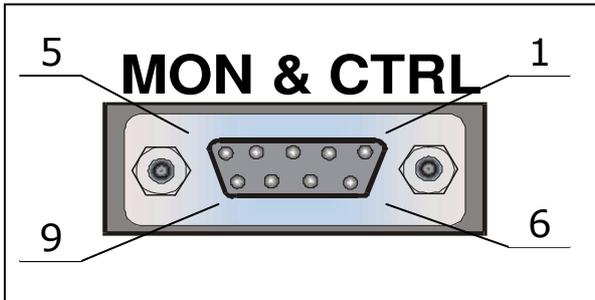
This equipment is provided with a protective earthing ground incorporated in the power cord. The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor, inside or outside the instrument, is likely to make the instrument dangerous.

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## 5.1.2 Serial Monitor and Control via RS485/ RS232

The device contains the hardware for the RS485 and RS232 interface. The operator can select the type of serial interface via frontpanel or Ethernet, not via the serial port itself.



### 5.1.2.1 RS485 serial interface:

Pin	Name	Function
1	GND	Shield ground
2		Not connected
3	Tx-A	Send Data A (input)
4	Rx-A	Receive Data A (output)
5	GND	Signal ground.
6	Rx-B	Receive Data B (output)
7		Not connected
8		Not connected
9	Tx-B	Send Data B (input)

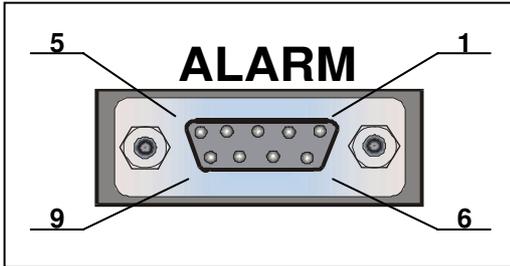
### 5.1.2.2 RS232 serial interface:

Pin	Name	Function
1	GND	Shield ground
2	Rx-D	Receive Data (input)
3	Tx-D	Transmit Data (output)
4	DTR	Data Terminal Ready (output)
5	GND	Signal ground.
6		Not connected
7	RTS	Request To Send (output)
8	CTS	Clear To Send (input)
9		Not connected

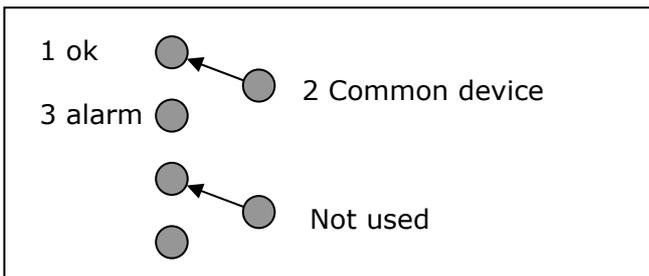
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### 5.1.3 Contact closure alarm outputs:



The contact closure alarm contacts can be used to drive external alarm indicators (sirens, flashlight..) or can be used to connect to redundancy switching systems.



### 5.1.4 10.0 MHz reference input

This input is used when a reference with enhanced stability is needed or when several modulators need to be synchronised to the same clock source. The level should be 0 dBm nominally. This input is only valid if the device is equipped with a NTC/3462 10 MHz reference frequency module.

### 5.1.5 Ethernet connection

A standard RJ-45 connector provides connection to an Ethernet HUB in a LAN (10/100Base T). Setting of the IP address and mask is possible from the frontpanel while in expert mode.

RMCP commands can be sent to the device using the Ethernet interface. The commands are sent as data in a TCP/IP stream. The used socket number is 5933. The RMCP protocol is exactly the same as for the serial interface, with one small exception: The RMCP address of the device (that is present in an RMCP command) will be ignored by the receiving device.

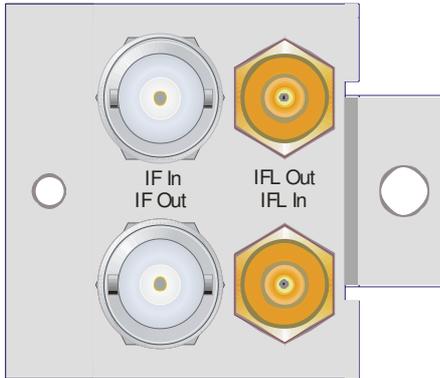
To enable the device to communicate over Ethernet, the Ethernet interface needs to be configured. This is done by setting the IP address and net mask using the keyboard interface.

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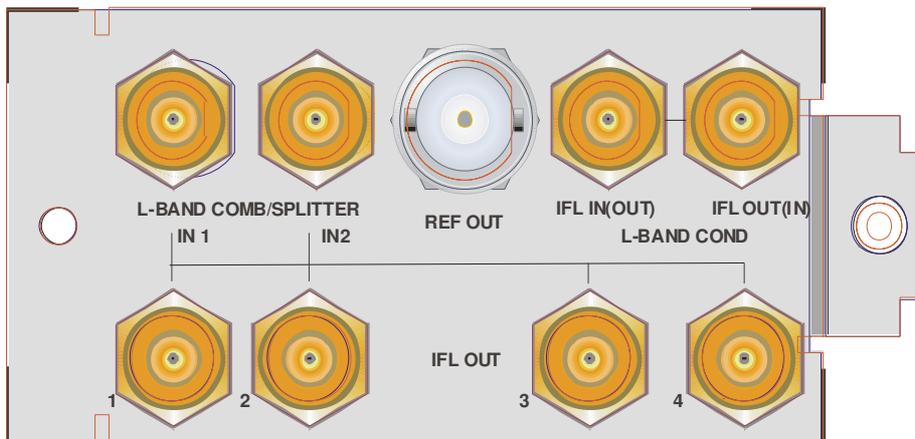
## 5.2 RF Interface

### 5.2.1 Standard L-band – IF interface



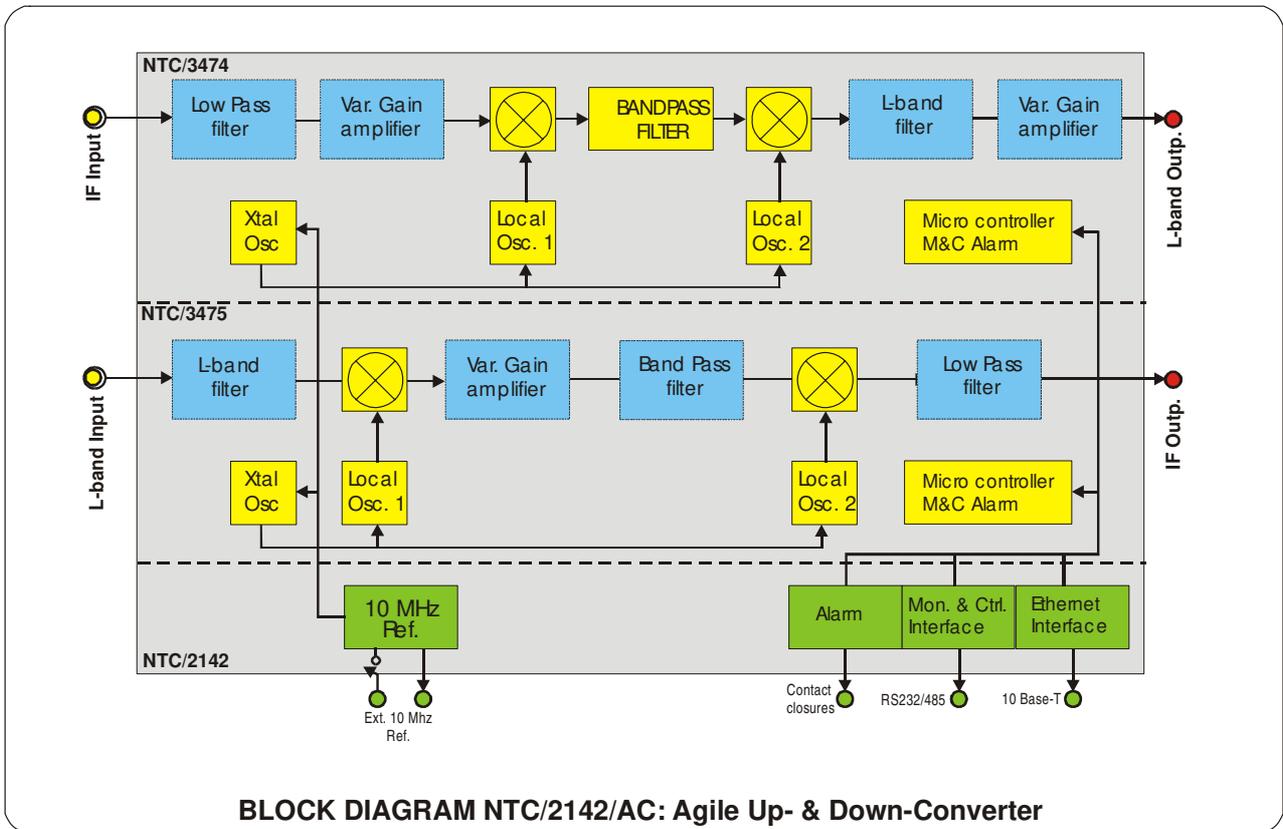
- IF (In/Out) : BNC (f), 75 Ohm
- IFL (In/Out): SMA (f), 50 Ohm

### 5.2.2 NTC/ 3750/ Ax Outdoor unit – LNB conditioner + active 2 input/ 4 output combiner/ splitter



- 10/100 MHz reference injection on L-band.
  - 13/18 VDC power supply, 22 kHz high/low band selection.
  - Active 2 input / 4 output L-band splitter.
  - Conditioning for usage of the NTC/2505 outdoor unit converter.
  - All connectors SMA (f), 50 Ohm except REF OUT, BNC (f), 50 Ohm
-

## Block diagram



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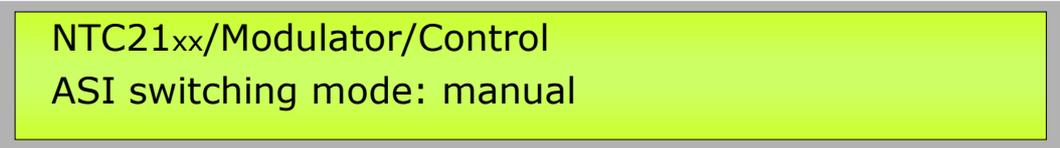
## 7 How to read this manual

The parameters described in the operation section of this manual are organised in a similar way the menu-tree of the device is built. Depending on hardware installed and software capabilities, a number of menu items may not be present in your device. The menu structure of any Newtec device is dynamically built depending on its configuration.

### Variable name – Newtec Mnemonic

The Newtec Mnemonic name is a unique name that is given to each parameter in any Newtec device. It is used as a reference to the variable definition in the Newtec database. It is also used as a link to the remote monitor and control parameters and as a target for the hyperlinks in this document.

The first line of the display always shows the current location in the menu-tree of the device. The second line is the label name and the default value.



```
NTC21xx/Modulator/Control
ASI switching mode: manual
```

- description:** An explanation about the menu item.
- applicability:** If a menu item is only applicable when certain hardware is installed, the related hardware will be listed here.
- access level:** If a menu item is only accessible in "expert mode", a mode where additional non-frequently used parameters will become available, this will mention "expert only", activate expert mode by going to [../Unit/Setup/Device mode](#).
- selections:** A bulleted list will all possible selections of a menu item
- range:** The range of a parameter in a menu item, this range is the maximum range and can be limited dependant of installed software and hardware capabilities.
-

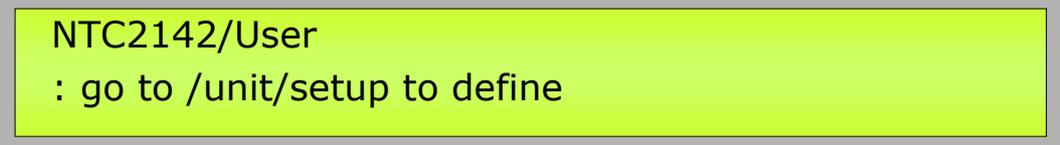
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## 8 Operation

### 8.1 User

The user menu can be completely configured by the user. It allows quickly accessing the control, monitoring and testing parameters that are of interest to the user. The goal is that an operator can configure "his" device with quick access to parameters that he needs to change or monitor regularly. Also the order in which the menu items are presented can be arranged to meet the specific demands of the operator. This is a very useful feature in for example the DSNG applications, where the general parameters are pre-configured and stored in the default boot-configuration and where the relevant parameters that need a quick change (during link setup) are made available as a group in the user menu. The device can then be operated by the operator without having to go through all the different menus.

#### 8.1.1 UsrMenu - UsrMenu



NTC2142/User  
: go to /unit/setup to define

**description:** Enter this menu to access the commands grouped by the operator. Go to ../Unit/Setup/User menu to add or remove commands from the user defined menu.

### 8.2 Unit

This section of the menu allows setup, monitor and control of general unit parameters that are common to all Azimuth platform devices. The control parameters are generally once set during installation but are not changed on an operational basis.

#### 8.2.1 Setup

This section of the menu allows configuration of the general unit parameters, most of them being parameters that define how to communicate with the device.

##### 8.2.1.1 Device mode - SyDevMode



NTC2142/Unit/Setup  
Device mode: Expert

---

**description:**

The following device operating modes are defined:

Normal mode: This is the standard operating mode which enables the default set of parameters that are most frequently used.

Expert mode: This mode gives an "expert" operator access to an additional set of more advanced parameters.

A password is required to switch to expert mode. This password is the model number of the device (e.g. 2180 for a NTC/2180 DVB L-band modulator) or the software identification number in case of a board (e.g. 6161 for a DVB-S modulator board).

Commands that can only be changed in expert mode are indicated in this user manual by "access level: expert only".

### 8.2.1.2 RMCP version - SyDevRmcpVer

```
NTC2142/Unit/Setup
RMCP version: v2.0
```

**description:**

This variable holds the current RMCP version, it allows controlling devices to distinguish between RMCP versions and adapt their functionality accordingly. RMCP v1.0 is an emulation of the older 20xx series version of the device and is 100% downward compatible. A device of the 20xx series, controlled by a management system, can therefore be replaced by its successor in the 21xx series if it is set to RMCP version v1.0.

RMCP v2.0 is the new enhanced protocol that can be used when designing new management systems. Contact Newtec to obtain a copy of the separate RMCP user manual.

**selections:**

- v1.0
- v2.0

### 8.2.1.3 System time - SyDevRtc

```
NTC2142/Unit/Setup
System time: 16:24:53 14/05/2003
```

**description:**

Read or modify the real time clock. The format is hh:mm:ss dd/mm/yyyy.

---

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#### 8.2.1.4 User menu - `UsrMenuConf`

```
NTC2142/Unit/Setup
User menu: <press OK, ESC when done>
```

**description:** This menu-entry allows configuration of the user-specific menu

#### 8.2.1.5 Serial port settings

This section of the menu allows controlling all settings for the serial management interface of the unit.

##### 8.2.1.5.1 Serial M&C interface type - `SyDevSerl fType`

```
NTC2142/Unit/Setup/Serial port settings
Serial interf. type: RS485
```

**description:** M&C serial port interface type, RS485 (default) or RS232.

RS232 is used for M&C of a single device , RS485 is typically used for multiple devices on a single bus.

**access level:** expert only

**selections:**

- RS485
- RS232

##### 8.2.1.5.2 Device address for serial interface - `SyDevRs485Addr`

```
NTC2142/Unit/Setup/Serial port settings
Device RMCP address: 50
```

**description:** The device address, used in the messages for remote serial M&C, is a single byte with a value in the range 49 (31 hex - ASCII "1") up to 110 (6E hex - ASCII "n"). It identifies the device that has to handle the message from the remote control unit.

When the multi-user RS485 bus is used, each device on the bus must have a different address, unique in the system.

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Address 111 (6F hex - ASCII "o") is the "broadcast" address. This can be used when only one device is connected to a COM-port of a PC to address the device without knowing its exact address.

**range:** 49/110

#### 8.2.1.5.3 Serial interface baudrate - SyDevBaudrate

NTC2142/Unit/Setup/Serial port settings  
Serial baudrate: 115200

**description:** Interface baudrate for serial monitor and control via the RMCP protocol.

**selections:**

- 4800
- 9600
- 19200
- 38400
- 57600
- 115200

#### 8.2.1.6 Ethernet settings

This section of the menu allows controlling the settings for the Ethernet management interface of the unit.

##### 8.2.1.6.1 Device IP address - SyDevIPAddr

NTC2142/Unit/Setup/Ethernet settings  
Device IP address: 192.168.254.1

**description:** Device IP address.

##### 8.2.1.6.2 Device IP mask - SyDevIPMask

NTC2142/Unit/Setup/Ethernet settings  
Device IP mask: 255.255.255.0

**description:** Device IP mask.

---

---

#### 8.2.1.6.3 Default gateway IP address - SyDevIPGateWay

NTC2142/Unit/Setup/Ethernet settings  
Default gateway: 192.168.254.206

**description:** IP address of default gateway.

#### 8.2.1.6.4 Ethernet M&C interface type - SyEthTransType

NTC2142/Unit/Setup/Ethernet settings  
Ethernet interface: TCP

**description:** Selection of the Ethernet interface transport layer, TCP (default) uses acknowledges to confirm reception of messages while UDP does not.

UDP has the advantage of being faster since it does not require the "wait for acknowledge". Furthermore RMCP over Ethernet already has protection on the RMCP layer by means of the CRC so there is no need for the extra protection provided by the TCP-type layer.

**access level:** expert only

**selections:**

- TCP
- UDP

#### 8.2.1.6.5 Device MAC address - SyDevMacAddr

NTC2142/Unit/Setup/Ethernet settings  
Device MAC address: 00:06:39:00:10:5D

**description:** Device MAC address.

#### 8.2.1.7 Display settings

This menu allows controlling settings with respect to the display of the device.

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#### 8.2.1.7.1 Display contrast - SyDevDispContrast

NTC2142/Unit/Setup/Display settings  
Display contrast: 50 units

**description:** Display contrast adjustment. Use the +/- keys to adjust.

#### 8.2.1.7.2 Screensaver delay - SyScreenSaveDly

NTC2142/Unit/Setup/Display settings  
Screensaver delay: 10 min

**description:** The number of minutes of inactivity that is needed before the screensaver is displayed. The screensaver is disabled if this time is set to 0.

#### 8.2.1.7.3 Screensaver message - SyScreenSaveMsg

NTC2142/Unit/Setup/Display settings  
Screensaver message: Screensaver

**description:** Text to be displayed when the screensaver is active, typically a device or channel identification is used (e.g. MOD\_1, BBC1, HB\_9, CH1,...). The maximum length of this text is 40 characters. When the screensaver is activated the display will show this text and the last configuration that has been loaded.

#### 8.2.1.8 SNMP settings

This menu allows controlling settings of the SNMP.

##### 8.2.1.8.1 SNMP read only community - SyROCommunity

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NTC2142/Unit/Setup/SNMP settings  
Read community: public

**description:** The SNMP community name with read-only access

**access level:** expert only

#### 8.2.1.8.2 SNMP read-write community - SyRWCommunity

NTC2142/Unit/Setup/SNMP settings  
Read-write community: public

**description:** The SNMP community name with read-write access

**access level:** expert only

#### 8.2.1.8.3 Trap IP address 1 - SyTrapIPAddr1

NTC2142/Unit/Setup/SNMP settings  
Trap IP address 1: 000.000.000.000

**description:** SNMP trap IP address 1.

#### 8.2.1.8.4 Trap IP address 2 - SyTrapIPAddr2

NTC2142/Unit/Setup/SNMP settings  
Trap IP address 2: 000.000.000.000

**description:** SNMP trap IP address 2.

#### 8.2.1.8.5 Trap community 1 - SyTrapCommunity1

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NTC2142/Unit/Setup/SNMP settings  
Trap community 1: public

**description:** SNMP trap community 1.

#### 8.2.1.8.6 Trap community 2 - SyTrapCommunity2

NTC2142/Unit/Setup/SNMP settings  
Trap community 2: public

**description:** SNMP trap community 2.

### 8.2.2 Control

This section of the menu allows changing the unit control parameters that are common to all Azimuth platform devices. The control parameters are generally once set during installation and are not changed on an operational basis.

#### 8.2.2.1 Device sleep mode - SyDevSleepMode

NTC2142/Unit/Control  
Device sleep mode: operational

**description:** The "sleep mode" control allows the user to power-down the device without actually removing the power or using a power switch.

operational: The device is fully operational and responds to keyboard and RMCP.

sleep mode: The device is put in a low power-consumption (power down) state and ignores all M&C from RMCP. It can be "awakened" by pressing a frontpanel key, after which it will perform a boot-cycle.

**selections:**

- operational
- sleep

#### 8.2.2.2 Device reset - SyDevRst

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---

NTC2142/Unit/Control  
Device reset: none

**description:** Performs a device reset.

A soft reset will send the reset command to all boards.

A hard reset will power-cycle the device. After a reset, the device initially starts up the bootloader code, waits for 2 seconds and then activates the application code. Consequently, the unit performs a number of initialisation routines, loads its default configuration from permanent memory and performs a self test.

A factory reset results in the deletion of all saved configurations (including the last active configuration) followed by a reboot to factory default settings.

A data-path reset is used for hard resetting all sub-modules handling the data flowing through the device (i.e. all boards except the M&C related hardware). This can be useful to recover from corrupted firmware on such sub-modules without having to do a full hard reset of the complete device.

The selection upgrade is used whenever an upgrade through "bucket-files" is performed; refer to the Appendices for details on the upgrade procedure.

**selections:**

- none
- soft
- factory
- hard
- data-path
- upgrade

### 8.2.2.3 Reference clock selection - SyRefClock

NTC2142/Unit/Control  
Reference clock sel.: internal

**description:** The 10 MHz reference clock can be either internally generated (default) or taken from an external source for enhanced stability and/or synchronisation.

**applicability:** 10 MHz reference board

**selections:**

- internal
  - external
-

---

#### 8.2.2.4 10 MHz operator frequency adjust - SyRef10MTuning

NTC2142/Unit/Control  
10 MHz oper. adjust: 0 units

**description:** Internal 10MHz operator adjustment value, this setting controls the frequency of the internal 10 MHz reference oscillator and can be used, by the operator, to re-calibrate the internal 10 MHz.

If this calibration value needs to be used, the "10 MHz reference control" must be set to "by operator". Otherwise when set to "by factory" the default tuning value of the in-factory calibration will be used.

The tuning range is normalized to a range from -50 to +50. The actual range (ppm or Hz) depends on the type of oscillator used.

**applicability:** 10 MHz reference board

**access level:** expert only

**range:** -50/50 units

#### 8.2.2.5 10 MHz reference frequency calibration factory default - SyRef10MCalib

NTC2142/Unit/Control  
10 MHz factory default: 0 units

**description:** Internal 10MHz reference frequency calibration factory default. This is the factory-calibrated tuning value for the internal 10 MHz reference oscillator. This value is determined during factory calibration and is hard-coded into the reference board. It can not be changed by the operator.

This value will be used when the "internal 10 MHz reference control" is set to "by factory". Other when set to "by operator" the value entered in the "10 MHz reference frequency adjust" will be used to adjust the 10 MHz internal reference frequency.

**applicability:** 10 MHz reference board

**access level:** expert only

**range:** -50/50 units

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---

### 8.2.2.6 10 MHz reference calibration control - SyRef10MCtrl

NTC2142/Unit/Control  
10 MHz cal. control: by factory

**description:** Internal 10MHz reference calibration control.

The internal 10MHz reference frequency can be controlled by either the factory-calibrated value or the operator-controlled tuning value.

**applicability:** 10 MHz reference board

**access level:** expert only

**selections:**

- by factory
- by operator

### 8.2.2.7 Up converter

#### 8.2.2.7.1 Ext. conv. LO - ExtLOFreq1

NTC2142/Unit/Control/Up converter  
Ext. conv. LO: 12450 MHz

**description:** When using the device with a non-Newtec external up- or down converter, the LO frequency of this converter can be entered here. This allows the operator to enter the RF frequency directly without having to recalculate the frequency to L-band or IF. Use the external spectral inversion menu to indicate if LO frequency is above or below the RF frequency.

**applicability:** up converter

**access level:** expert only

#### 8.2.2.7.2 Ext. conv. spect. - ExtLOPoIVa1

NTC2142/Unit/Control/Up converter  
Ext. conv. spect.: direct spectrum

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---

**description:** External converter spectrum polarity. When spectrum is direct the formula is:

$$f(\text{RF}) = f(\text{LO}) + f(\text{L-band})$$

Use inverted whenever the LO frequency is above the RF frequency, yielding in a formula where:

$$f(\text{RF}) = f(\text{LO}) - f(\text{L-band})$$

**applicability:** up converter

**access level:** expert only

**selections:**

- direct spectrum
- inverted spectrum

#### 8.2.2.7.3 Gain offset - CvTXGainOffset

NTC2142/Unit/Control/Up converter  
Gain offset: 0 dB

**description:** The gain offset can be used to enter a gain or attenuation in the transmit path (cables, splitters, combiners, HPA). This will give the operator the opportunity to set a gain on the converter that will correspond to a gain at a certain point in the transmit chain. The factory default gain is the attenuation of the cable between the output of the converter board or installed converter and the connector on the chassis. Typical applications would be to take into account losses of cross-site cabling and/or the gain of the HPA and antenna. The level offset can also be used to realign (calibrate) the modulator output level.

**applicability:** up converter

**range:** -999.9/999.9 dB

#### 8.2.2.8 LBand conditioner up

##### 8.2.2.8.1 Outdoor cur. limit 1 - ODCurLimits11

NTC2142/Unit/Control/LBand conditioner up  
Min. outdoor current: 0 mA

**description:** Sets the current limit of the outdoor current alarm.

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---

**applicability:** L-band conditioner up

**access level:** expert only

**range:** 0/2000 mA

#### 8.2.2.8.2 Outdoor cur. limit 2 - ODCurLimits12

NTC2142/Unit/Control/LBand conditioner up  
Max. outdoor current: 0 mA

**description:** Sets the current limit of the outdoor current alarm.

**applicability:** L-band conditioner up

**access level:** expert only

**range:** 0/2000 mA

#### 8.2.2.8.3 ODU 100 MHz reference - MoODU1001

NTC2142/Unit/Control/LBand conditioner up  
ODU 100 MHz reference: disabled

**description:** Control of the 100 MHz ODU reference signal when an outdoor unit conditioning module is used (e.g. NTC/3750/Ax). This 100 MHz reference signal is needed whenever a Newtec outdoor unit is used (e.g. NTC/2505/xL) and is used as a reference for the LO of the upconverter.

**applicability:** L-band conditioner up

**selections:**

- disabled
- enabled

#### 8.2.2.8.4 Outdoor unit

This section of the menu allows to control relevant settings of the ODU (if connected) otherwise this menu will not be present.

##### 8.2.2.8.4.1 ODU communication control - MoODUCommCtrl1

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NTC2142/Unit/Control/LBand conditioner up/Outdoor  
unit  
ODU communication control: disabled

**description:** A Newtec outdoor upconverter unit (ODU, e.g. NTC/2505/xL) can be controlled and monitored via the indoor unit (NTC/3750/ax installed in modulator, L-band combiner, upconverter). This is done via an RMCP interface between the indoor unit controller and the outdoor unit controller (FSK over the L-band signal at 3.75 and 6.25 MHz). The ODU communication control needs to be enabled when using a Newtec ODU. When non-Newtec outdoor units are used, which do not support the RMCP protocol, the outdoor unit communication control must be disabled.

Upon delivery ODU communication is disabled!

**applicability:** L-band conditioner up

**access level:** expert only

**selections:**

- disabled
- enabled

#### 8.2.2.8.4.2 ODU power supply - MoODUPow1

NTC2142/Unit/Control/LBand conditioner up/Outdoor  
unit  
ODU power supply: disabled

**description:** A Newtec outdoor upconverter unit (ODU, e.g. NTC/2505/xL) can be powered with 23V (1.5 A max.) via the indoor unit (NTC/3750/ax installed in modulator, L-band combiner, upconverter). The ODU power control needs to be enabled when using a Newtec ODU.

To prevent damage to a non-Newtec ODU this powers supply voltage can be disabled.

Upon delivery the ODU power supply is disabled!

**applicability:** L-band conditioner up

**access level:** expert only

**selections:**

- disabled
- enabled

#### 8.2.2.8.4.3 Outdoor power supply - ODPow1

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NTC2142/Unit/Control/LBand conditioner up/Outdoor unit  
Outdoor power supply: disabled

- description:** On/off control of the outdoor power supply as delivered by the NTC/3750/Ax outdoor unity & LNB controller unit.
- applicability:** L-band conditioner up
- access level:** expert only
- selections:**
- disabled
  - enabled

#### 8.2.2.8.4.4 Outdoor power ctrl - ODCtrl11

NTC2142/Unit/Control/LBand conditioner up/Outdoor unit  
Outdoor power ctrl: power off

- description:** Voltage and/or tone selection present at the L-band in/output.
- applicability:** L-band conditioner up
- selections:**
- power off
  - 13V/0KHz
  - 13V/22KHz
  - 18V/0KHz
  - 18V/22KHz
  - 24V

#### 8.2.2.8.4.5 HPA RMCP address - SyDevHPAAddr1

NTC2142/Unit/Control/LBand conditioner up/Outdoor unit  
HPA RMCP address: 48

- description:** Address for remote monitor and control via serial communication of an HPA, refer to the usermanual of the Newtec NTC/2505 outdoor unit converter for details of which HPAs support serial communication.
- applicability:** L-band conditioner up
- access level:** expert only
-

---

**range:** 48/111

#### 8.2.2.8.4.6 SSPA selection - ODUSSPAsel1

NTC2142/Unit/Control/LBand conditioner up/Outdoor  
unit  
SSPA selection: no SSPA

**description:** Selects one of the HPA types that are supported for M&C by the outdoor unit. Refer to the usermanual of the NTC/2505/xL outdoor unit for more details.

**applicability:** L-band conditioner up

**access level:** expert only

**selections:**

- no SSPA
- AWSA
- AWPA
- AWMA - serial
- AWMA - discrete
- AWSA - reduced
- Microwave
- Xicom SSPB
- Xicom TWTA
- Xicom SSPA
- Discrete

#### 8.2.2.8.4.7 Save ODU Upconv. arch. - ConvArchSave1

NTC2142/Unit/Control/LBand conditioner up/Outdoor  
unit  
Save ODU Upconv. arch.: <press OK>

**description:** Saves the ODU upconverter fingerprint/calibration-table to internal memory.

Each time the device (modulator, combiner, upconverter) boots, it will check the hardware of the connected ODU. If this hardware differs from the one previously stored in memory an ODU architecture alarm will be raised. In that case, use this menu to save the detected hardware in the device internal memory and re-boot. This will allow the device to boot faster because it will check if the detected hardware is the same as the one stored in internal memory instead of downloading the complete architecture after each re-boot.

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---

**applicability:** L-band conditioner up

**access level:** expert only

### 8.2.2.9 Down converter

#### 8.2.2.9.1 Ext. conv. LO - ExtLOFreq2

NTC2142/Unit/Control/Down converter  
Ext. conv. LO: 12450 MHz

**description:** When using the device with a non-Newtec external up- or down converter, the LO frequency of this converter can be entered here. This allows the operator to enter the RF frequency directly without having to recalculate the frequency to L-band or IF. Use the external spectral inversion menu to indicate if LO frequency is above or below the RF frequency.

**applicability:** down converter

**access level:** expert only

#### 8.2.2.9.2 Ext. conv. spect. - ExtLOPolVal2

NTC2142/Unit/Control/Down converter  
Ext. conv. spect.: direct spectrum

**description:** External converter spectrum polarity. When spectrum is direct the formula is:

$$f(\text{RF}) = f(\text{LO}) + f(\text{L-band})$$

Use inverted whenever the LO frequency is above the RF frequency, yielding in a formula where:

$$f(\text{RF}) = f(\text{LO}) - f(\text{L-band})$$

**applicability:** down converter

**access level:** expert only

**selections:**

- direct spectrum
- inverted spectrum

---

---

### 8.2.2.9.3 Gain offset - CvRXGainOffset

NTC2142/Unit/Control/Down converter  
Gain offset: 0 dB

**description:** The gain offset can be used to enter a gain or attenuation in the transmit or receive path (cables, splitters, combiners, HPA). This will give the operator the opportunity to set a gain on the convertor that will correspond to a gain a certain point in the transmit chain. The factory default gain is the attenuation of the cable between the output of the convertor board or installed converter and the connector on the chassis. Typical applications would be to take into account losses of cross-site cabling and/or the gain of the HPA and antenna.

**applicability:** down converter

**range:** -999.9/999.9 dB

### 8.2.2.10 LBand conditioner down

#### 8.2.2.10.1 Outdoor cur. limit 1 - ODCurLimits21

NTC2142/Unit/Control/LBand conditioner down  
Min. outdoor current: 0 mA

**description:** Sets the current limit of the outdoor current alarm.

**applicability:** L-band conditioner down, MASK\_COND\_2

**access level:** expert only

**range:** 0/2000 mA

#### 8.2.2.10.2 Outdoor cur. limit 2 - ODCurLimits22

NTC2142/Unit/Control/LBand conditioner down  
Max. outdoor current: 0 mA

**description:** Sets the current limit of the outdoor current alarm.

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**applicability:** L-band conditioner down, MASK\_COND\_2

**access level:** expert only

**range:** 0/2000 mA

#### 8.2.2.10.3 ODU 100 MHz reference - MoODU1002

NTC2142/Unit/Control/LBand conditioner down  
ODU 100 MHz reference: disabled

**description:** Control of the 100 MHz ODU reference signal when an outdoor unit conditioning module is used (e.g. NTC/3750/Ax). This 100 MHz reference signal is needed whenever a Newtec outdoor unit is used (e.g. NTC/2505/xL) and is used as a reference for the LO of the upconverter.

**applicability:** L-band conditioner down, MASK\_COND\_2

**selections:**

- disabled
- enabled

#### 8.2.2.10.4 Outdoor unit

This section of the menu allows to control relevant settings of the ODU (if connected) otherwise this menu will not be present.

##### 8.2.2.10.4.1 Outdoor power supply - ODPow2

NTC2142/Unit/Control/LBand conditioner  
down/Outdoor unit  
Outdoor power supply: disabled

**description:** On/off control of the outdoor power supply as delivered by the NTC/3750/Ax outdoor unit & LNB controller unit.

**applicability:** L-band conditioner down, MASK\_COND\_2

**access level:** expert only

**selections:**

- disabled
- enabled

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## 8.2.3 Monitor

This section of the menu allows to change monitor parameters of the unit that are common to all NTC/21xx series equipment.

### 8.2.3.1 Device internal temperature - SyIntTemp

NTC2142/Unit/Monitor  
Device temperature: 40 C

**description:** The internal temperature of the device must be within +10 and +70° C. Typically, this temperature should be around 40°C ( $\pm 10^{\circ}\text{C}$ ).

### 8.2.3.2 Device +3V3 power supply - SyDevPowP3V3

NTC2142/Unit/Monitor  
+3V3 power supply: 3.3 V

**description:** +3.3V power supply monitor. A power supply alarm is triggered when this voltage is outside the range of +2.5/+4.1 volt.

### 8.2.3.3 Device +5V power supply - SyDevPowP5V

NTC2142/Unit/Monitor  
+5V power supply: 5 V

**description:** +5V power supply monitor. A power supply alarm is triggered when this voltage is outside the range of +4.0/+5.9 volt.

### 8.2.3.4 Device +12V power supply - SyDevPowP12V

NTC2142/Unit/Monitor  
+12V power supply: 12 V

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**description:** +12V power supply monitor. A power supply alarm is triggered when this voltage is outside the range of +10.0/+14.0 volt.

#### 8.2.3.5 Device -12V power supply - SyDevPowM12V

NTC2142/Unit/Monitor  
-12V power supply: -12 V

**description:** -12V power supply monitor. A power supply alarm is triggered when this voltage is outside the range of -10.0/-14.0 volt.

#### 8.2.3.6 10 MHz reference input level measurement - SyRef10MLevel

NTC2142/Unit/Monitor  
10 MHz input level: 2950 mV mV

**description:** 10 MHz reference input level estimation, as derived from the monitored AGC level. For optimal operation (conform to specifications) the level should be within the range of 2.4 and 3.7 V. A level lower than 1 V (lower than - 5 dBm) will trigger the reference clock alarm. Following table shows the measured voltage and the corresponding level in dBm:

2.4 ± 0.5 V => - 3 dBm  
3.0 ± 0.5 V => - 0 dBm  
3.4 ± 0.5 V => + 3 dBm  
3.7 ± 0.5 V => + 7 dBm  
4.0 ± 0.5 V => +10 dBm

**access level:** expert only

#### 8.2.3.7 Up converter

##### 8.2.3.7.1 RF freq. formula - SyRFFCalcForm 1

NTC2142/Unit/Monitor/Up converter  
RF freq. formula: RF Freq = LO freq [+ -] L-band freq

**description:** RF calculation formula

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**applicability:** up converter

**access level:** expert only

### 8.2.3.8 Down converter

#### 8.2.3.8.1 RF freq. formula - SyRFCalcForm2

NTC2142/Unit/Monitor/Down converter  
RF freq. formula: RF Freq = LO freq [+ -] L-band freq

**description:** RF calculation formula

**applicability:** down converter

**access level:** expert only

## 8.2.4 Architecture

The architecture menu gives information about all modules, boards and pug-ins that are installed in the unit. The same 9 parameters are available for all modules. Only the general architecture is described here. Depending on the installed boards and options, other architecture sub-menus will become available giving all the details about those modules in detail.

### 8.2.4.1 General

These parameters will be found in every NTC/21xx device. They describe the details of the complete unit. They are needed when Newtec is contacted for support or upgrade.

#### 8.2.4.1.1 Device serial number - SyDevSn

NTC2142/Unit/Architecture/General  
Device serial number: 03051439

**description:** The serial number of the device as known by the firmware. This number should be the same as the serial number on the backpanel label (for rack mounted units) or as the serial number of the PCB (for boards).

Format : "yymmddnn" with:

- yy : last 2 digits of year

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- 
- mm : month of year
  - dd : day of month
  - nn : unit number of day

#### 8.2.4.1.2 Device hardware identification - SyDevHwId

NTC2142/Unit/Architecture/General  
Hardware Id: <press OK>

**description:** Device type (NTC-number) and sub-type (alphanumeric suffix) and short description identifying the hardware.

#### 8.2.4.1.3 Device hardware version - SyDevHwVer

NTC2142/Unit/Architecture/General  
Hardware version: <press OK>

**description:** Device hardware version.

#### 8.2.4.1.4 Device hardware capability - SyDevHwCapab

NTC2142/Unit/Architecture/General  
Hardware capability: 0

**description:** Hardware configuration of the device. It can only be changed by installing or removing hardware modules.

Capability = 0 corresponds to full device definition.

Capability = 255 corresponds to an illegal capability (="blocked" mode).

#### 8.2.4.1.5 Device software identification - SyDevSwId

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NTC2142/Unit/Architecture/General  
Software Id: <press OK>

**description:** Device software identification (NTC number + short description).

#### 8.2.4.1.6 Device software version - SyDevSw Ver

NTC2142/Unit/Architecture/General  
Software version: <press OK>

**description:** Device software version and release date.

#### 8.2.4.1.7 Device software capability - SyDevSw Capab

**description:** Active device software capability number to indicate software variants of the device. In order to increase device functionality (= changing software capability), a device-specific software key can be obtained from Newtec.

#### 8.2.4.1.8 Device capability - SyDevCapab

NTC2142/Unit/Architecture/General  
Device capability: <press OK>

**description:** Device software capability. Set function requires a software license key specific to the device.

**access level:** expert only

#### 8.2.4.1.9 Product identification number - SyDevProdId

NTC2142/Unit/Architecture/General  
Product Id: <press OK>

**description:** Device type (NTC-number) and sub-type (alphanumeric suffix) and short description identifying the product.

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**8.2.4.1.10 Operating system version - SyOSVer**

NTC2142/Unit/Architecture/General  
OS version: <press OK>

**description:** Operating System version and release date.

**8.2.4.1.11 RAM disk version - SyRamDiskVer**

NTC2142/Unit/Architecture/General  
RAM disk version: <press OK>

**description:** RAM disk version and release date.

**8.2.4.1.12 PPC boot version - SyPPCVer**

NTC2142/Unit/Architecture/General  
PPC boot version: <press OK>

**description:** PPCBoot version and release date.

**8.2.4.1.13 SNMP daemon version - SySnmpVer**

NTC2142/Unit/Architecture/General  
SNMP daemon version: <press OK>

**description:** SNMP daemon version and release date.

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## 8.2.5 Diagnostics

### 8.2.5.1 Generate diagnostics report - SyTSRapport

NTC2142/Unit/Diagnostics  
Diagnostics report: generate

**description:** Generate a diagnostics report. Then point your browser at [http://ip\\_address/diagnostics.html](http://ip_address/diagnostics.html) to display a detailed diagnostics report. This page can be sent to customer support in case of problems.

**access level:** expert only

**selections:**

- generate

## 8.2.6 Board selftest results

Depending on the type and number of boards installed the results of the individual board tests during start-up can be consulted.

## 8.3 Converter

### 8.3.1 Control

#### 8.3.1.1 Up converter

##### 8.3.1.1.1 Centre IF input - MoIFInputFreq

NTC2142/Converter/Control/Up converter  
Centre IF input: 70 MHz

**description:** Controls the centre IF input frequency.

**applicability:** up converter

**selections:**

- 70 MHz
- 140 MHz

##### 8.3.1.1.2 Tx spectrum inversion - MoSpectIn v

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NTC2142/Converter/Control/Up converter  
Tx spectrum inversion: direct

**description:** The spectrum inversion off mode, or direct spectrum, corresponds with the INTELSAT specification IESS-308 (Rev.8 - pgs 18 & 69) and with the DVB standard ETS 300 421 (December 1994).

The spectrum at IFL and at RF is coupled by the installed upconverter module. This can be deduced from the frequency conversion formula. If the L-band frequency is subtracted from the LO, then the spectrum is inverted in the converter module. If a direct spectrum is required in this case, the spectrum must also be inverted at IFL.

**applicability:** up converter

**selections:**

- direct
- inverted

#### 8.3.1.1.3 Input gain - CvTxInpGain

NTC2142/Converter/Control/Up converter  
Input gain: 0 dB

**description:** Controls the IF input gain.

**applicability:** up converter

**range:** -20/30 dB

#### 8.3.1.1.4 Output gain - CvOutputGain

NTC2142/Converter/Control/Up converter  
Output gain: 0 dB

**description:** Converter output gain in dB.

**applicability:** up converter

**range:** -23/22 dB

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#### 8.3.1.1.5 RF converter sel. - CvSelection

NTC2142/Converter/Control/Up converter  
RF converter sel.: RF converter 1

**description:** Selects the RF converter to be used.

**applicability:** 2nd RF converter

**selections:**

- RF converter 1
- RF converter 2

#### 8.3.1.1.6 Operational output frequency - MoOpOutputFreq

NTC2142/Converter/Control/Up converter  
Output frequency: 1450.000000 MHz

**description:** Operational output frequency.

**applicability:** up converter

**range:** -1e+38/1e+38 MHz

#### 8.3.1.1.7 Internal L-band transmit - CvLbandTx

NTC2142/Converter/Control/Up converter  
Internal L-band Tx: disabled

**description:** Controls the internal L-band transmit.

**applicability:** up converter

**selections:**

- disabled
- enabled

#### 8.3.1.1.8 Input Bandwidth selection - CvInputBwSel

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NTC2142/Converter/Control/Up converter  
Input BW selection: 40 MHz

**description:** In case the input frequency is set to 70 MHz, a 40 MHz bandwidth is automatically selected, when the input frequency is set to 140 MHz a 80 MHz bandwidth will be selected. The operator can override this automatic bandwidth selection and limit the input bandwidth to 40 MHz in case of a 140 MHz IF input selection.

**applicability:** up converter

**access level:** expert only

**selections:**

- 40 MHz
- 80 MHz

### 8.3.1.2 LBand conditioner up

#### 8.3.1.2.1 RF transmit - CvRfoutTx1

NTC2142/Converter/Control/LBand conditioner up  
RF transmit: disabled

**description:** The RF output transmit control enables or disables the RF output of the installed converter module.

**applicability:** RF converter, MASK\_COND, L-band conditioner up

**selections:**

- disabled
- enabled

#### 8.3.1.2.2 Ext. L-band input - MoExtInp1

NTC2142/Converter/Control/LBand conditioner up  
Ext. L-band input: disabled

**description:** The external L-band transmit control enables or disables the signal path from the external L-band input to the L-band combiner in the installed converter or conditioner module.

**applicability:** RF converter, MASK\_COND, L-band conditioner up

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**selections:**

- disabled
- enabled

**8.3.1.3 Down converter**

**8.3.1.3.1 Receive frequency - CvRxRfFreq**

NTC2142/Converter/Control/Down converter  
Receive frequency: 1170.000000 MHz

**description:** Controls the RF input frequency of the converter.

**applicability:** down converter

**range:** 950/2150 MHz

**8.3.1.3.2 Receive gain - RxGain**

NTC2142/Converter/Control/Down converter  
Receive gain: 20 dB

**description:** Controls the receive gain.

**applicability:** down converter

**range:** 0/50 dB

**8.3.1.3.3 Centre IF output - RxIFFreq**

NTC2142/Converter/Control/Down converter  
Centre IF output: 70 MHz

**description:** Controls the centre IF output frequency.

**applicability:** down converter

**selections:**

- 70 MHz
  - 140 MHz
-

---

#### 8.3.1.3.4 Rx spectrum inversion - DmSpecInV

NTC2142/Converter/Control/Down converter  
Rx spectrum inversion: direct

**description:** The selection of the auto mode allows the device to solve the spectrum ambiguity when the status of the received spectrum is unknown. When the status of the received spectrum is known (spectrum inversion on or off), do not use the auto mode since it will increase the acquisition time. In a converter the auto mode is not available and spectral inversion has to be set manually.

**applicability:** down converter

**selections:**

- direct
- inverted

#### 8.3.1.3.5 Downconverter IF output - CvIFOutput

NTC2142/Converter/Control/Down converter  
Downconv. IF output: enabled

**description:** Controls the IF output.

**applicability:** down converter

**selections:**

- disabled
- enabled

#### 8.3.1.3.6 Output Bandwidth selection - CvOutBwSel

NTC2142/Converter/Control/Down converter  
Output BW selection: 40 MHz

**description:** In case the output frequency is set to 70 MHz, a 40 MHz bandwidth is automatically selected, when the output frequency is set to 140 MHz a 80 MHz bandwidth will be selected. The operator can override this automatic bandwidth selection and limit the output bandwidth to 40 MHz in case of a 140 MHz IF output selection.

---

---

**applicability:** down converter

**access level:** expert only

**selections:**

- 40 MHz
- 80 MHz

#### 8.3.1.4 LBand conditioner down

##### 8.3.1.4.1 Ext. L-band input - MoExtInp2

NTC2142/Converter/Control/LBand conditioner down  
Ext. L-band input: disabled

**description:** The external L-band transmit control enables or disables the signal path from the external L-band input to the L-band combiner in the installed converter or conditioner module.

**applicability:** 2nd RF converter, MASK\_COND\_2, L-band conditioner down

**selections:**

- disabled
- enabled

##### 8.3.1.4.2 Outdoor power ctrl - ODCtrl21

NTC2142/Converter/Control/LBand conditioner down  
Outdoor power ctrl: power off

**description:** Voltage and/or tone selection present at the L-band in/output.

**applicability:** L-band conditioner down, MASK\_COND\_2

**selections:**

- power off
- 13V/0KHz
- 13V/22KHz
- 18V/0KHz
- 18V/22KHz
- 24V

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## 8.3.2 Monitor

### 8.3.2.1 Up converter

#### 8.3.2.1.1 Upconv. IF level - CvTxInpLvlStruct

NTC2142/Converter/Monitor/Up converter  
Upconv. IF level: - 20.0 dBm

**description:** Detected level at the IF input.

**applicability:** up converter

#### 8.3.2.1.2 Intermediate level - CvTxIntLvlStruct

NTC2142/Converter/Monitor/Up converter  
Intermediate level: - 10.0 dBm

**description:** Detected intermediate level (mixer output after IF stage). For optimal operation (best performance) a level of - 10 dBm is advised. Use the input gain and/or the input level of the IF signal to optimise this level.

**applicability:** up converter

#### 8.3.2.1.3 Upconv. LBand level - MoOutputLevelStruct

NTC2142/Converter/Monitor/Up converter  
Upconv. LBand level: - 15.0 dBm

**description:** Detected level at RF output.

**applicability:** up converter

### 8.3.2.2 LBand conditioner up

#### 8.3.2.2.1 Converter LO - CvFreqConv1

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---

NTC2142/Converter/Monitor/LBand conditioner up  
Converter LO: 12.800 MHz

- description:** Frequency of the LO of the installed upconverter. Can be used to calculate the output frequency from the input frequency.
- applicability:** RF converter, L-band conditioner up
- access level:** expert only

#### 8.3.2.2.2 Upconv. DRO lock voltage - MoDroVolt1

NTC2142/Converter/Monitor/LBand conditioner up  
Upconv. DRO lock voltage: 3,6 Volt

- description:** The DRO lock voltage is the tuning voltage for the voltage controlled DRO locals oscillator in the installed upconverter module. It defines the RF phase lock DRO alarm.
- applicability:** RF converter, L-band conditioner up

#### 8.3.2.2.3 ODU temperature - ODUTemp1

NTC2142/Converter/Monitor/LBand conditioner up  
ODU temperature: 40 °C

- description:** Outdoor unit (NTC/2505/xL) internal temperature.
- applicability:** L-band conditioner up

#### 8.3.2.2.4 HPA output power - ODUTxMeasPow1

NTC2142/Converter/Monitor/LBand conditioner up  
HPA output power: 0 dBm

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---

**description:** The transmit power in dBm, as measured by the outdoor unit upconverter. This menu item will only be visible when an HPA is connected that supports this functionality. Refer to the usermanual of the NTC/2505/xL ODU for more information.

**applicability:** L-band conditioner up

#### 8.3.2.2.5 HPA Tx power voltage - ODUTxPowVolt1

NTC2142/Converter/Monitor/LBand conditioner up  
HPA Tx power voltage: 2.5 Volt

**description:** The transmit power voltage, in volt, as measured by the outdoor unit (NTC/2505/xL) on the discrete interface of the HPA. The translation to actual output power level depends on the type of HPA used; refer to the manual of the HPA for more detailed information.

**applicability:** L-band conditioner up

**range:** 0/5 Volt

#### 8.3.2.2.6 Outdoor current - ODCur1

NTC2142/Converter/Monitor/LBand conditioner up  
Outdoor current: 1238 mA

**description:** Monitored outdoor unit current consumption.

**applicability:** L-band conditioner up

**range:** 0/2500 mA

#### 8.3.2.2.7 +24 volt power supply - CvPow24V1

NTC2142/Converter/Monitor/LBand conditioner up  
+24 volt power supply: + 23,6 Volt

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**description:** Monitored value of the +24 Volt power supply to power the outdoor unit. If the measured voltage is below +21V, the control command to enable/disable the outdoor unit power supply will be suppressed.

**applicability:** L-band conditioner up, MASK\_COND

**range:** 0/26 Volt

#### 8.3.2.2.8 RF gain - CvRfGain

NTC2142/Converter/Monitor/LBand conditioner up  
RF gain: 1,1 dB

**description:** Gain of the installed converter module and optional RF amplifier as read from the fingerprint of the converter. This gain is dependent on the used frequency and will be taken into account to set the output power that is requested.

**applicability:** RF converter, L-band conditioner up

**access level:** expert only

#### 8.3.2.3 Down converter

##### 8.3.2.3.1 Downconv. IF level - CvRxOutpLvIStruct

NTC2142/Converter/Monitor/Down converter  
Downconv. IF level: - 15.0 dBm

**description:** Detected level at the IF output.

**applicability:** down converter

#### 8.3.2.4 LBand conditioner down

##### 8.3.2.4.1 Converter LO - CvFreqConv2

NTC2142/Converter/Monitor/LBand conditioner down  
Converter LO: 12.800 MHz

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---

**description:** Frequency of the LO of the installed upconverter. Can be used to calculate the output frequency from the input frequency.

**applicability:** 2nd RF converter

**access level:** expert only

#### 8.3.2.4.2 Upconv. DRO lock voltage - MoDroVolt2

NTC2142/Converter/Monitor/LBand conditioner down  
Upconv. DRO lock voltage: 3,6 Volt

**description:** The DRO lock voltage is the tuning voltage for the voltage controlled DRO locals oscillator in the installed upconverter module. It defines the RF phase lock DRO alarm.

**applicability:** 2nd RF converter

#### 8.3.2.4.3 Outdoor current - ODCur2

NTC2142/Converter/Monitor/LBand conditioner down  
Outdoor current: 1238 mA

**description:** Monitored outdoor unit current consumption.

**applicability:** L-band conditioner down, MASK\_COND\_2

**range:** 0/2500 mA

#### 8.3.2.4.4 +24 volt power supply - CvPow24V2

NTC2142/Converter/Monitor/LBand conditioner down  
+24 volt power supply: + 23,6 Volt

**description:** Monitored value of the +24 Volt power supply to power the outdoor unit. If the measured voltage is below +21V, the control command to enable/disable the outdoor unit power supply will be suppressed.

**applicability:** L-band conditioner down, MASK\_COND\_2

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---

**range:** 0/26 Volt

### 8.3.3 Actionkeys

#### 8.3.3.1 Action keys - SyActKeyActivate

```
NTC2142/Converter/Actionkeys  
Action keys: press <OK>
```

**description:** This command represents a key-press when in the ActionKey menu. An expert user can program the actions taken when such a key is pressed.

### 8.3.4 Test

#### 8.3.4.1 Up converter

##### 8.3.4.1.1 Input overload alarm - CvCtrlInpOverload

```
NTC2142/Converter/Test/Up converter  
Input overload alarm: disabled
```

**description:** Alarm enable/disable for input overload warning.

**applicability:** up converter

**access level:** expert only

**selections:**

- disabled
- enabled

##### 8.3.4.1.2 Input overload threshold - CvThrlInpOverload

```
NTC2142/Converter/Test/Up converter  
Input overload threshold: -5 dBm
```

**description:** Alarm threshold for input overload alarm.

**applicability:** up converter

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**access level:** expert only

**range:** -30/0 dBm

#### 8.3.4.1.3 Input underload alarm - CvCtrlInpPowLow

NTC2142/Converter/Test/Up converter  
Input underload alarm: disabled

**description:** Alarm enable/disable for input power underload indication.

**applicability:** up converter

**access level:** expert only

**selections:**

- disabled
- enabled

#### 8.3.4.1.4 Input underload threshold - CvThrlInpPowLow

NTC2142/Converter/Test/Up converter  
Input underload threshold: -30 dBm

**description:** Alarm threshold for input power underload indication.

**applicability:** up converter

**access level:** expert only

**range:** -40/5 dBm

#### 8.3.4.2 LBand conditioner up

##### 8.3.4.2.1 HPA power alarm setpoint - ODUSSPAARfAITrippoint1

NTC2142/Converter/Test/LBand conditioner up  
HPA power alarm setpoint: 0 W

**description:** HPA RF alarm level setpoint.

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---

**applicability:** L-band conditioner up  
**access level:** expert only  
**range:** 0/9999 W

#### 8.3.4.2.2 HPA attenuation - ODUSSPAAttenuation1

NTC2142/Converter/Test/LBand conditioner up  
HPA attenuation: 0 dB

**description:** HPA attenuation control.  
**applicability:** L-band conditioner up  
**access level:** expert only  
**range:** 0/99.9 dB

#### 8.3.4.2.3 Eng. string - ODUI nfoReq1

NTC2142/Converter/Test/LBand conditioner up  
Eng. string: <press OK>

**description:** This is a general command for requesting the engineering string data from the outdoor unit NTC/2505/xL. The engineering string is additional information about the ODU that is not needed on an operational basis but can be accessed for troubleshooting purposes.  
**applicability:** L-band conditioner up  
**access level:** expert only

#### 8.3.4.3 Down converter

##### 8.3.4.3.1 Output overload alarm - CvCtrlOutOverload

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---

NTC2142/Converter/Test/Down converter  
Output overload alarm: disabled

**description:** Alarm enable/disable for output overload warning.

**applicability:** down converter

**access level:** expert only

**selections:**

- disabled
- enabled

#### 8.3.4.3.2 Output overload threshold - CvThrOutOverload

NTC2142/Converter/Test/Down converter  
Output overload threshold: -5 dBm

**description:** Alarm threshold for output overload alarm.

**applicability:** down converter

**access level:** expert only

**range:** -30/0 dBm

#### 8.3.4.3.3 Output underload alarm - CvCtrlOutPow Low

NTC2142/Converter/Test/Down converter  
Output underload alarm: disabled

**description:** Alarm enable/disable for output power underload indication.

**applicability:** down converter

**access level:** expert only

**selections:**

- disabled
- enabled

#### 8.3.4.3.4 Output underload threshold - CvThrOutPow Low

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---

NTC2142/Converter/Test/Down converter  
Output underload threshold: -30 dBm

**description:** Alarm threshold for output power underload indication.  
**applicability:** down converter  
**access level:** expert only  
**range:** -40/5 dBm

#### 8.3.4.4 LBand conditioner down

##### 8.3.4.4.1 HPA power alarm setpoint - ODUSSPAARfAlTrippoint2

NTC2142/Converter/Test/LBand conditioner down  
HPA power alarm setpoint: 0 W

**description:** HPA RF alarm level setpoint.  
**applicability:** L-band conditioner down  
**access level:** expert only  
**range:** 0/9999 W

##### 8.3.4.4.2 HPA attenuation - ODUSSPAAttenuation2

NTC2142/Converter/Test/LBand conditioner down  
HPA attenuation: 0 dB

**description:** HPA attenuation control.  
**applicability:** L-band conditioner down  
**access level:** expert only  
**range:** 0/99.9 dB

---

---

#### 8.3.4.4.3 Eng. string - ODUI nfoReq2

NTC2142/Converter/Test/LBand conditioner down  
Eng. string: <press OK>

**description:** This is a general command for requesting the engineering string data from the outdoor unit NTC/2505/xL. The engineering string is additional information about the ODU that is not needed on an operational basis but can be accessed for troubleshooting purposes.

**applicability:** L-band conditioner down

**access level:** expert only

## 8.4 Alarm

### 8.4.1 List of alarms

Following is a list of all possible alarms.

#### 8.4.1.1 Device

##### 8.4.1.1.1 Device has been reset - AIResFlag

**description:** Reports that the main-controller has had a reset. This can indicate that all the parameters in the device are changed.

##### 8.4.1.1.2 Self test - AISelfTest

**description:** After power-on or reset, the device performs an internal self test. If this self test fails it will trigger this alarm.

##### 8.4.1.1.3 Incompatibility - All ncompat

**description:** The device asserts the incompatibility alarm if a new control setting was attempted that would result in a conflict with one or more of the other present settings. The new control setting is accepted but not activated (the device remains operational in the last state).

By changing one or more of the conflicting parameters, the incompatibility condition can be removed. Only when this occurs, the new "compatible" state is activated and the incompatibility alarm is de-asserted.

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Under RMCP, details on the type of incompatibility that occurred can be obtained using the "Incompatibility Identification" command.

#### **8.4.1.1.4 General device - AIGenDev**

**description:** An alarm is indicated if at least one of the alarms is active (logical-OR of the alarm indications).

#### **8.4.1.1.5 Interface - All interface**

**description:** The interface alarm is a combined alarm indicating a missing or invalid input signal at the selected interface. (this alarm does not include further signal processing related alarms).

#### **8.4.1.1.6 Reference clock - AIRefClock**

**description:** Selected 10 MHz reference clock absent or level too low.

#### **8.4.1.1.7 Device temperature - AIDevTemp**

**description:** A device temperature alarm indicates that the device internal temperature exceeds the +10° C and +70° C limits.

#### **8.4.1.1.8 Power supply voltage - AIPowSup**

**description:** Summarises the four power supply alarms, an alarm is generated if at least one of the monitored power supply voltages is out of range.

#### **8.4.1.1.9 Out of lock LO1 upconv. - AICvLockDetLO11**

**description:** Out of lock detection for LO1 (610MHz to 890MHz)

**applicability:** up converter

#### **8.4.1.1.10 Out of lock LO1 downconv. - AICvLockDetLO12**

**description:** Out of lock detection for LO1 (610MHz to 890MHz)

**applicability:** down converter

#### **8.4.1.1.11 Out of lock LO2 upconv. - AICvLockDetLO21**

**description:** Out of lock detection for LO2 (1700MHz to 2500MHz)

**applicability:** up converter

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**8.4.1.1.12 Out of lock LO2 downconv. - AICvLockDetLO22**

**description:** Out of lock detection for LO2 (1700MHz to 2500MHz)

**applicability:** down converter

**8.4.1.1.13 Input overload warning - AICvInpOverload**

**description:** Input overload warning

**applicability:** up converter

**8.4.1.1.14 Input power underload indication - AICvInpPowLow**

**description:** Input power underload indication

**applicability:** up converter

**8.4.1.1.15 Output overload warning - AICvOutOverload**

**description:** Output overload warning

**applicability:** down converter

**8.4.1.1.16 Output power underload indication - AICvOutPowLow**

**description:** Output power underload indication

**applicability:** down converter

**8.4.1.1.17 RF DRO 1 - AIMoRfPlo1**

**description:** The RF phase lock DRO alarm indicates a malfunction of the hardware which generates the RF carrier frequency. This alarm is not applicable when RF transmit is disabled. The presence of this alarm suppresses transmit at RF.

**applicability:** RF converter, L-band conditioner up

**8.4.1.1.18 RF DRO 2 - AIMoRfPlo2**

**description:** The RF phase lock DRO alarm indicates a malfunction of the hardware which generates the RF carrier frequency. This alarm is not applicable when RF transmit is disabled. The presence of this alarm suppresses transmit at RF.

**applicability:** 2nd RF converter, L-band conditioner down

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#### 8.4.1.1.19 ODU comm. cond. up - AIMoODUComm1

**description:** This alarm is used to signal the status of the communication between the indoor unit and the outdoor unit over the RMCP-interface between these devices. An alarm is indicated if the indoor unit does not receive a response from the outdoor unit on twelve successive messages (about 5 seconds). This can indicate that the outdoor unit is not connected, does not receive DC-power or has a malfunction.

This alarm is not applicable if the IDU - ODU communication is disabled. The presence of this alarm suppresses transmit at RF.

**applicability:** L-band conditioner up

#### 8.4.1.1.20 ODU arch. cond. up - AIODUConvArch1

**description:** This alarm is asserted when the outdoor unit upconverter fingerprint/calibration-table does not match the internally-stored ODU upconverter image. It will become active when another ODU is connected that has not been read and stored yet by the device (modulator, converter or combiner). Refer to ../Unit/Control/Outdoor unit/Save ODU architecture to lift the alarm condition.

**applicability:** L-band conditioner up

#### 8.4.1.1.21 ODU summary cond. up - AIODUSummary1

**description:** Logical OR of the alarms in the ODU.

**applicability:** L-band conditioner up

#### 8.4.1.1.22 OD current cond. up - AIODCurrent1

**description:** LNB current consumption or ODU current consumption is out of spec

**applicability:** L-band conditioner up

#### 8.4.1.1.23 OD current cond. down - AIODCurrent2

**description:** LNB current consumption or ODU current consumption is out of spec

**applicability:** L-band conditioner down, MASK\_COND\_2

#### 8.4.1.1.24 Amplifier current [ 1 - 2 ] - AIAmpliCurrent1

**description:** Amplifier current consumption is out of spec.

**applicability:** RF converter, MASK\_COND, L-band conditioner up

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#### 8.4.1.1.25 Amplifier current [ 1 - 2 ] - AIAmpliCurrent2

**description:** Amplifier current consumption is out of spec.

**applicability:** 2nd RF converter, MASK\_COND\_2, L-band conditioner down

#### 8.4.1.1.26 Internal M&C module - AIMcModule

**description:** Indicates an alarm internal to the M&C board.  
For detailed information the alarms of the M&C module should be consulted.

#### 8.4.1.1.27 Upconverter module - AILCUUpModule

**description:** Indicates an alarm in the upconverter function/module.

**applicability:** up converter

#### 8.4.1.1.28 Downconverter module - AILCUDownModule

**description:** Indicates an alarm in the downconverter function/module.

**applicability:** down converter

#### 8.4.1.1.29 Cond. up module - AIUpconvModule1

**description:** Indicates an alarm internal to the upconverter function/module. This can be an alarm in the upconverter, converter controller or in the optional RF/IF amplifier.

**applicability:** RF converter, MASK\_COND, L-band conditioner up

#### 8.4.1.1.30 Cond. down module - AIUpconvModule2

**description:** Indicates an alarm internal to the upconverter function/module. This can be an alarm in the upconverter, converter controller or in the optional RF/IF amplifier.

**applicability:** 2nd RF converter, MASK\_COND\_2, L-band conditioner down

#### 8.4.1.1.31 Device architecture - AIArchitecture

**description:** The architecture alarm indicates that the detected device architecture (modules/interconnect) does not match the expected architecture.

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## 8.4.2 Board alarms

Depending on the type and number of boards installed the results of the individual board the status of the individual board alarms can be consulted.

## 8.5 Config

In the configuration menu the operator can save and load up to 48 different operational configurations in permanent memory. A configuration can be defined as the group of all device configuration parameters that can be set in the device. Only global system parameters are not saved in a configuration since they are written in permanent memory at the moment that they are set (changed). They are parameters that are common to all configurations such as: Device mode, RMCP version, Display contrast. Serial interface type, Device RMCP address, Serial baudrate. Device IP address, Device IP mask, Default gateway, Ethernet interface Alarm mode (normal, masked, forced). All other parameters are configuration parameters that can differ in the different stored configurations.

### 8.5.1 Load - SyConfigLoadFlash



NTC2142/Config  
Load: <0> 1 2 3 4 5 6 7 8 9 10

#### description:

Loads a configuration from permanent memory. Up to 30 different configurations can be loaded, however only valid configurations that have been previously saved by the operator can be loaded. The default boot configuration must always be stored in configuration "0" since this is the one that is loaded when the device (re)-boots. The last loaded configuration is also shown.

Specific for modulator(boards): Only the default boot configuration can store the status of L-band (IF) transmit, since it is required that transmission resumes if there was an (accidental) power outage, remember that in that case the default configuration "0" is loaded. The other configurations will save with transmit set to "off" and the operator will have to verify all parameters before enabling transmit to go "on-air".

On the LCD display, the top row will indicate the name the operator has given to that configuration number.

### 8.5.2 Save - SyConfigSaveFlash

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NTC2142/Config

Save: <0> 1 2 3 4 5 6 7 8 9 10

**description:** Saves a configuration to permanent memory. Up to 48 different configurations can be saved. Remember that the default boot configuration has to be saved in configuration "0" since this is the one that is loaded when the device (re)-boots.

### 8.5.3 Name - SyCfgName

NTC2142/Config

Name: default boot configuration

**description:** Declare a name to configuration, this name will be displayed on the frontpanel in order to allow easier identification of a certain saved configuration.

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## 9 Remote monitor and control

Remote monitor and control (RMCP) is possible via the serial interface (RS232/485) or through RMCP over Ethernet. The commands are described in a separate usermanual. Contact technical support at [techsupport@newtec.be](mailto:techsupport@newtec.be) to obtain a copy.

## 10 Connecting to the device

The device is set to RS485 by factory default, if RS232 control is preferred go to Menu/Unit/Setup/Serial port settings.

Otherwise use a RS232 to RS485 converter to connect the M&C port to a serial comm. port of a PC. Pinout on the converter can differ depending on the brand and type of the converter, check with usermanual to make an appropriate cable.

When using RS232, construct the following null-modem cable

PC	Device	Signal
9 Pin D-Type	9 Pin D-Type	
2	3	TxD
3	2	RxD
5	5	GND

## 11 Serial Interface - Line Settings

The main line settings for this serial interface are :

asynchronous data transfer 1 start bit (logic "0") 7 data bits (LSB first on line) even parity 1 stop bit (logic "1") 4800, 9600, 19200, 38400, 57600 or 115200 baud
---

To set the serial interface baudrate go to Menu/Unit/Setup/Serial port settings.

There is no flow control on the serial interface. Next to correct formatted messages, the only significant character is the SYNC-character (value 16<sub>hex</sub>), which is sent by the device to indicate that it is busy executing the command and preparing the response. This prevents other devices from taking control of the bus if the response cannot be given immediately.

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## 12 RMCP over Ethernet

RMCP commands can be sent to the device using the Ethernet interface. The commands are sent as data in a TCP/IP stream. The used socket number is 5933. The RMCP protocol is exactly the same as for the serial interface, with one small exception: The RMCP address of the device (that is present in an RMCP command) will be ignored by the receiving device.

To enable the device to communicate over Ethernet, the Ethernet interface needs to be configured. This is done by setting the IP address and net mask using the keyboard interface.

## 13 Protocol

The control unit sends a "request" message to a device, identified by its unique address. The addressed device interprets the message, performs the requested action and sends back a "response" message.

The receiving device rejects all messages with transmission errors without any further action. Transmission errors are: no stop bit, parity error, LRC-error and message receive buffer overflow.

All correct formatted messages, except some special system messages, are responded by the addressed device with an acknowledge message. Only in a few restricted cases, the device does not respond to a request from the control unit. This is for example the case when a general device reset is requested.

Correctly received messages, which can not be handled by the device, are refused via a no-acknowledge "error" message, containing the reason why the message is rejected.

A device never sends messages on its own initiative. It only responds to a request from the control unit. The total transmit time of a complete message may not exceed 250 ms. If the message is not completed within this time it is discarded.

## 14 Message Format

The general syntax for all messages is :

- start byte
- address byte
- message header
- message data
- end of text byte
- checksum byte

For more info or a copy of the separate RMCP usermanual describing all commands, contact Newtec technical support at [techsupport@newtec.be](mailto:techsupport@newtec.be).

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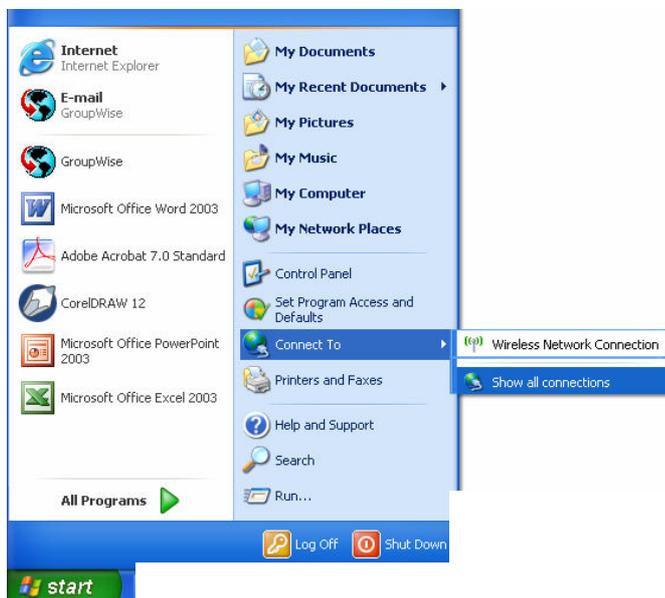
## 15 HTML interface

The Azimuth platform is equipped with a powerful and easy to use web interface (GWIG) which allows customers to remotely monitor and control their equipment through a web browser.

To use the web interface, the TCP/IP properties of the computer have to be adapted in order to set an IP address manually that is within the range of the devices IP address. For example: take as IP address 168.0.0.1 on the computer and 168.0.0.2 on the device. Make sure that that no pop-up blockers or firewall are active !

To adapt the TCP/IP properties:

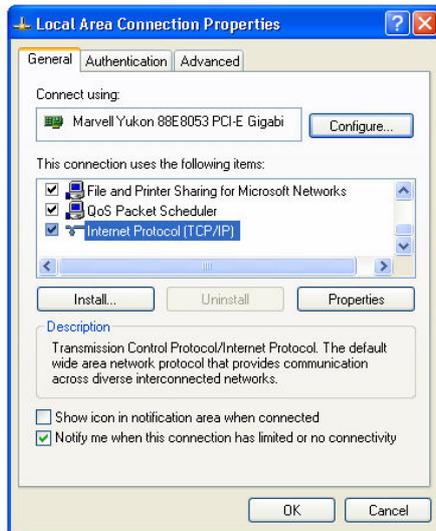
- 1) Go to Start < connect to < show all connections:



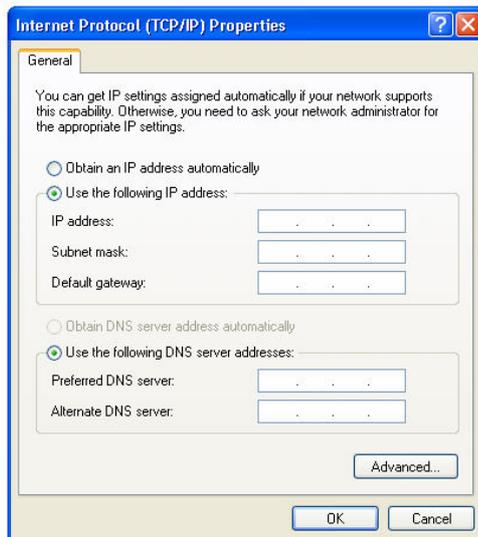
And click on show all connections



- 2) Click with the Right Mouse button on Local Area Connection and select properties
-



3) Scroll down and click on Internet Protocol (TCP/IP) then click on Properties



Change the IP address field to for example 168.0.0.1  
And the Subnet mask to for example 255.255.0.0

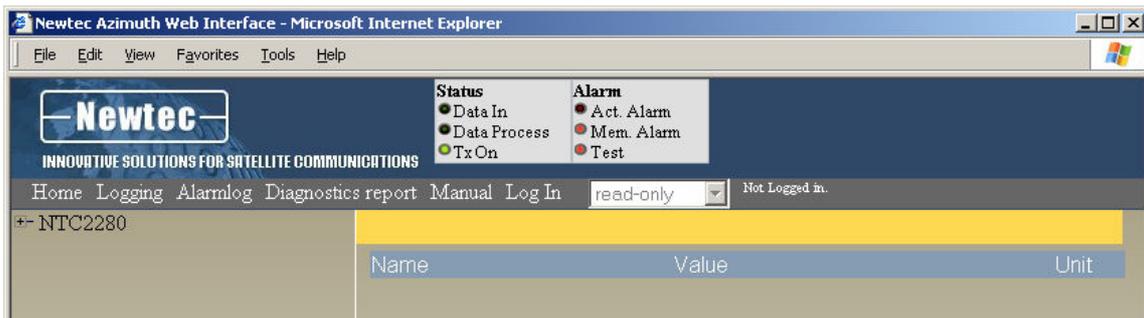
The Ethernet port of the device has to be connected with the Ethernet port of a computer by a crossed network cable.

Use a web browser (Internet explorer 5.5 or later, Mozilla, ...) to open the web interface of the modulator by typing the following address in the address balk: `http://ip_address_device`. The `ip_address_device` can be found by going to the following menu: `../unit/Setup/Ethernet settings` with the keypad on the front panel of the device. By default the IP address of all Newtec devices is 192.168.254.3

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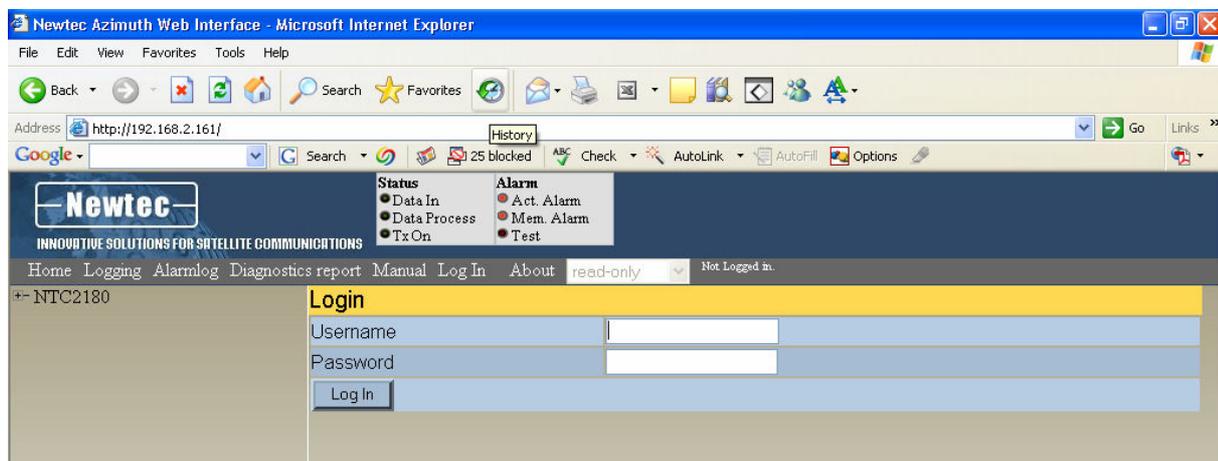
NTC2142/Unit/Setup/Ethernet settings  
Device IP address: 192.168.254.3

The following page will be displayed:



In this mode, one can have an overview of all the parameters on the device by clicking on the name of the device in the left side of the screen.

To change the parameters of the device, one has to log in into the device, by clicking `Log In`.



Log in with the user name and password that is defined in the `../Unit/Setup/Web` interface menu. By default the login Username and Password `<root>` `<root>` are used.

Once logged in, there are three levels:

- `read-only`: in this mode one can only see (read) the parameters corresponding to the operator mode, they can not be changed.
- `operator`: corresponds with the device Normal mode, enables the default set of parameters that are most frequently used.
- `administrator`: corresponds with the device Expert mode, gives an expert user access to an additional set of more advanced parameters.

All the parameters of the device can now be viewed and changed remotely through the web-interface.

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The web interface displays seven main menus:

- **Home:** This menu allows monitoring and control of all the parameters of the device remotely through the web-interface. All the parameter that can be changed through the keypad can also be changed in the Home menu.
- **Logging:** The menu logging gives of an overview of the most recent events
- **Alarmlog:** In the menu Alarmlog the most recent alarms can be viewed.
- **Diagnostics report:** the menu generates a diagnostic report which gives an overview of the status of the different parameters of the device. This is very useful to have by hand when one contacts support for technical questions.
- **Manual:** the complete manual with RMCP commands of the corresponding device is stored here in HTML format.
- **Log In resp Log out:** this menu is used to log in or to log out when a user is logged in into the device.
- **About:** this menu shows the version number of the GWIG used.

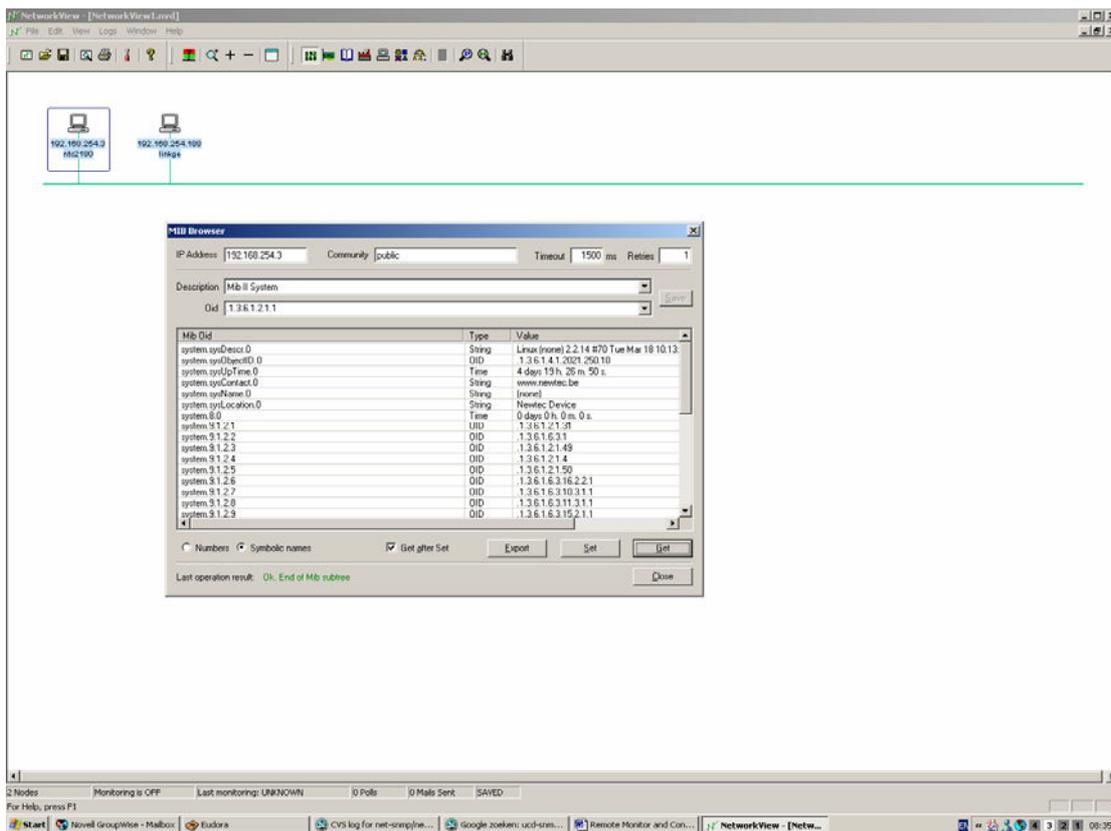
## 16 SNMP

The Newtec MIB is derived from the SEMS device definition database and allows full monitor and control over the complete device using any SNMP browser (HP-OpenView, NetworkView). We support the basic standard MIB (monitor and control of IP interface, versions of the software ...) and above that we have a full proprietary MIB witch can be downloaded from the device using HTTP or FTP and which contains all the OIDs needed to control the device.

We do not support traps nor support multiple managers (traps are a mechanism to trigger the NMS that a change in the device has occurred, after receiving the trap the NMS still has to poll the device to find out the details of the change).

SNMP is not standard implemented on NTC/21xx devices, please contact [techsupport@newtec.be](mailto:techsupport@newtec.be) for details on how to upload SNMP support to the device and further instructions. It involves uploading the NTC/6205 firmware that has the tools and the MIB on-board. The MIB (undocumented) can then be downloaded from the device. A fully documented MIB can be requested via technical support.

Below you will find a screenshot from NetworkView.



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## Appendix A: ActionKeys

The idea behind ActionKeys is that a system integrator can define a group of frequently executed operations to configure the device. The numerical keypad will serve as a selection panel. When a certain number is pressed, a string is displayed that clearly describes the commands that will be executed. The operator can then press <OK> to execute the command(s).

On the contrary to loading complete device configurations by using the load and save configurations option, the system integrator can define group of commands (1-20) that have to be executed when the specific ActionKey is executed.

### Definition of the ActionKeys

#### Define Action Keys - SyActKeyDef

**description:** This command allows the association between a certain key on the keyboard with a certain sequence of commands. When the user navigates to the action-key menu a simple keypress allows executing this sequence of commands.

Example: AKd!2,Pure carrier with reduced power;TMm!0;TLa!1;

This will associate the commands to set the modulation to pure carrier (CW) with reduced power (software 15 dB attenuator enabled) when the action key 2 is selected and executed.

**rmcp header:** AKd (expert: get and set, normal: no access)

#### structure:

get elements: [0SyActionKeyId](#)

get reply elements: [0SyActionKeyId](#) [1SyActionKeyCmds](#)

set elements: [0SyActionKeyId](#) [1SyActionKeyCmds](#)

set reply elements: [0SyActionKeyReply](#)

#### ActionKey Number - SyActionKeyId

**description:** Action-key Identifier identifies a key on the numeric keypad of the frontpanel.

**range:** 0/9

#### Action Key Definition - SyActionKeyCmds

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**description:**

This type of string is used to define the contents of the ActionKey menu, it has the following format: TITLE;CMD1;CMD2;CMD3;... (maximal 20 commands). TITLE can be any text that should appear on the display to describe the set of commands. CMD(n) is a complete RMCP command (see RMCP manual of this device).

**example:**

Pure carrier with reduced power;TMm!0;TLa!1

## Typical example

Download and install RMCPLoader from <http://www.newtec.be/support/download.shtml> and use the option "Grouped Commands" to send following commands in a .txt file to the device.

```
AKd!0,Pure carrier;TMm!0
AKd!5,Modulated;TMm!1
AKd!1,Reduced;TLa!1
AKd!6,Nominal;TLa!0
AKd!2,Low rate QPSK3/4;TRr!8448000;TMx!13
AKd!7,High rate 8PSK 5/6;TRr!21503000;TMx!85
AKd!3,IF transmit off;TTm!0
AKd!8,IF transmit on;TTm!1
```

When entering the ActionKeys menu, pushing the "2" key will display:

```
Action keys: <0-9> or <OK> to execute
2 : Low rate QPSK 3/4
```

When the OK key is pressed the interface rate will be set to 8.448 Mbit/s (TRr!8448000) and QPSK modulation with FEC 3/4 is selected (TMx!13).

Remark: After a reset to factory defaults the ActionKeys are all reset to off (default value).

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## Appendix B: User defined menu

The user menu can be completely configured by the user. It allows to quickly access only those control, monitor and test parameters that are of interest to the user.

The goal is that an operator can configure the menu structure of "his" device for quick access to parameters that he needs to change or monitor regularly. Also the order in which the menu items are presented can be arranged to meet the specific demands of the operator.

This is a very useful feature in for example the DSNG applications, where the general parameters are pre-configured and stored in the default boot-configuration and where the relevant parameters that need a quick change (during link setup) are made available as a group in the user menu. The device can then be operated by the operator without having to go through all the different menus.

A typical example would be to group following parameters: output frequency, output level, L-band transmit, while leaving all other parameters untouched.

### How to define the user menu

Go to ../Unit/Setup/User menu and press <OK>

```
NTC21xx/Unit/Setup
User menu: <press OK, ESC when done>
```

Go to ../Unit/Setup/User menu and press <OK>, this will bring up the first item from the ../modulator/control menu:

```
/Modulator/Control      not present
>Baseband interface     <OK> to add
```

Press the <OK> to add this menu in the list of menu items that will be visible in the user menu or press the → 'right arrow' key to move to the next menu item in the control, monitor and test menu. The available list are all the menu items when the device is in "expert mode".

If you select <OK> then the display changes to:

```
/Modulator/Control      present
>Baseband interface     <OK> to remove
```

indicating that this menu item will be present in the user menu, to remove press <OK> again.

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## Appendix D: Diagnostics report

Go to /Unit/Diagnostics and press <OK> to generate a report that will be available as a webpage that can be found at [http://ip\\_address\\_device/diagnostics.html](http://ip_address_device/diagnostics.html)

For example:

```
##### DIAGNOSTICS REPORT #####
NTC2142/Unit/Setup
  Device mode                1
  RMCP version               v2.0
  System time                14:15:01 12/02/2004
  User menu

NTC2142/Unit/Setup/Serial port settings
  Serial interf. type        RS485
  Device RMCP address        100
  Serial baudrate            115200

NTC2142/Unit/Setup/Ethernet settings
  Device IP address          010.000.000.001
  Device IP mask             255.255.255.0
  Default gateway            000.000.000.000
  Ethernet interface         TCP
  Device MAC address         00:06:39:00:82:21

NTC2142/Unit/Setup/Display settings
  Display contrast           19 units
  Screensaver delay          0 min
  Screensaver message        empty

NTC2142/Unit/Control
  Device sleep mode          operational
  Device reset               none

NTC2142/Unit/Control/Up converter
  Ext. conv. LO              0.000000 MHz
  Ext. conv. spect.          direct spectrum
  Gain offset                 -1.0 dB

NTC2142/Unit/Monitor
  Device temperature         24.0 C
  +3V3 power supply          3.30 V
  +5V power supply           5.00 V
  +12V power supply          12.01 V
  -12V power supply          -12.00 V

NTC2142/Unit/Architecture/General
  Device serial number       90010101
  Hardware Id                NTC/2142 Converter
  Hardware version           v1.00
  Hardware capability        0
  Software Id                NTC/6223 Converter
  Software version           v1.00 Feb 12 2004 15:16:29
  Software capability        0
  Device capability          0
  Product Id                 NTC/2142.xB.A-.A
  OS version                  6 Wed Jun 11 16:36:53 CEST 2003
  RAM disk version           v2.10 Dec 19 2003 09:09:29
  PPC boot version           ppcboot 0.8.3 (Jun 23 2003 - 11:44:20)
```

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## Appendix E: Alarm logging

Connect the device via the Ethernet connector to a PC and point a web-browser to [http://ip\\_address\\_device/alarmlog.html](http://ip_address_device/alarmlog.html) to obtain the log of the last 1000 alarm-events (since power-on) of the device. Update (use F5 in Internet Explorer) to retrieve the actual alarms status.

A typical example is shown below:

```
Start [Thu Oct 16 11:55:36 2003] Device reset flag
Start [Thu Oct 16 11:55:36 2003] Interface
Start [Thu Oct 16 11:55:36 2003] Input framing
Start [Thu Oct 16 11:55:37 2003] Interface
Stop [Thu Oct 16 11:55:37 2003] Device reset flag
Stop [Thu Oct 16 14:13:09 2003] Input framing
Stop [Thu Oct 16 14:13:09 2003] Interface
Start [Thu Oct 16 14:15:31 2003] Interface
Start [Thu Oct 16 14:15:31 2003] Timebase sync.
Start [Thu Oct 16 14:15:31 2003] Interface
Start [Thu Oct 16 14:15:31 2003] LVDS signal detect
Stop [Thu Oct 16 14:15:32 2003] Timebase sync.
Start [Thu Oct 16 14:15:39 2003] ASI code violations
Stop [Thu Oct 16 14:15:39 2003] ASI code violations
Stop [Thu Oct 16 14:15:39 2003] LVDS signal detect
Stop [Thu Oct 16 14:15:41 2003] Interface
##### CURRENT POSITION #####
```