



# User Manual

UNIVERSE

Ref. 8600



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# CONTENTS

<b>1. INTRODUCTION .....</b>	<b>4</b>
Product description .....	4
Package contents .....	4
Mounting.....	4
Typical installation.....	5
Safety Instructions .....	7
<b>2. INSTALLATION OF THE HARDWARE.....</b>	<b>8</b>
Module overview .....	8
Connecting the power supply .....	9
<b>3. CONFIGURATION OF THE MODULE .....</b>	<b>10</b>
3.1. Minimal system requirements.....	10
3.2. Starting up the module .....	10
3.2.1. Device Information.....	12
3.2.2. Device Configuration .....	12
3.2.3. Inputs - RF.....	16
3.2.4 CAM .....	20
3.2.5 Output Settings .....	21
<b>4. TECHNICAL SPECIFICATIONS .....</b>	<b>29</b>
<b>5. CONDITIONS OF WARRANTY .....</b>	<b>31</b>
<b>6. APPENDIX.....</b>	<b>32</b>
6.1. VHF Frequency table .....	32
6.2. UHF Frequency table.....	33
6.3. Power Conversion Table .....	34

# 1. INTRODUCTION

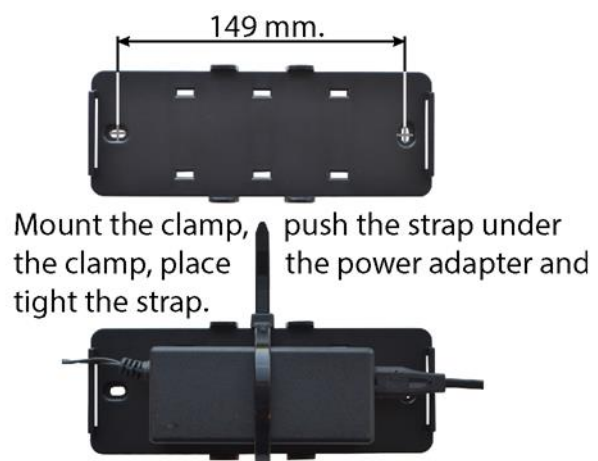
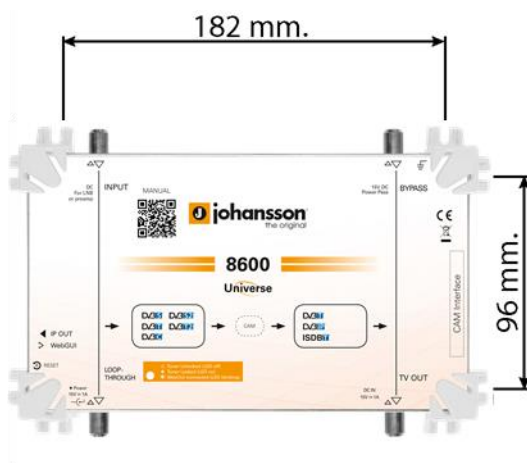
## Product description

- Receives 1 transponder from any DVB source (satellite, terrestrial or cable)
- Decrypts the PayTV channels, when a professional CAM is inserted
- Puts the demodulated transponder on your private coaxial and IP network
- Can work standalone to insert channels in your existing network
- More products can be combined to make a complete headend:
  - Cascadable inputs and outputs
  - Remote powering capabilities
- Supports LCN and HD LCN
- Compatible with SD and HD, with MPEG2 and MPEG4
- Perfect picture quality thanks to a MER, comparable to premium headend equipment
- Plug&Play thanks to a built-in WebGUI

## Package contents

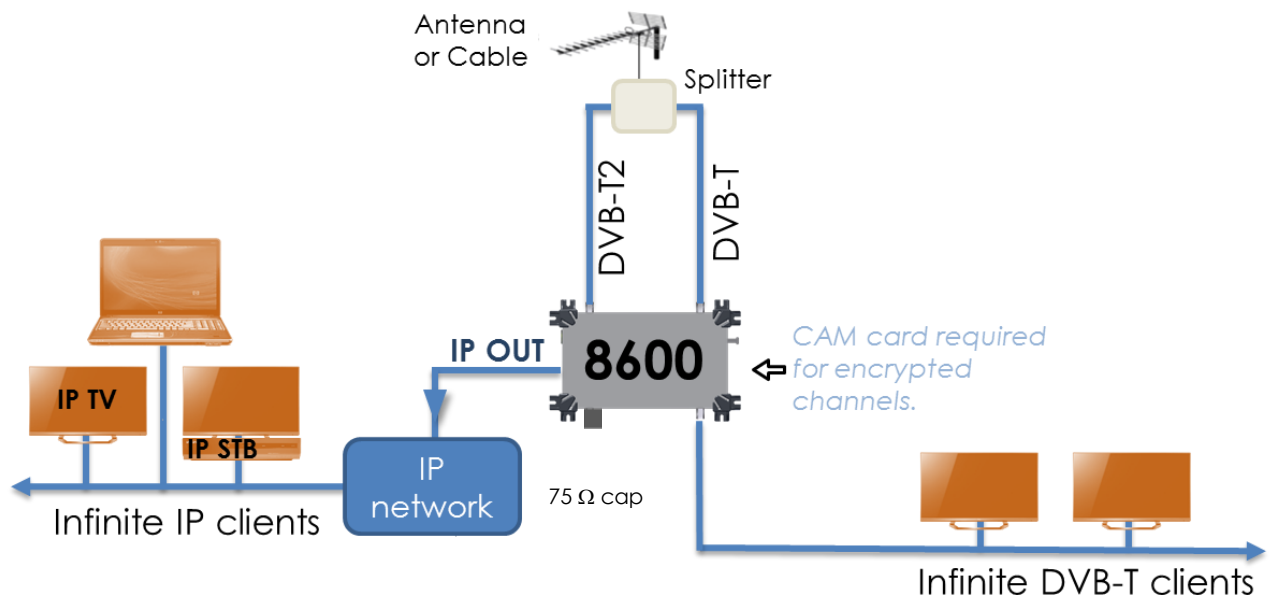
- 1x Universe (ref.8600)
- 1x Power adaptor (including mounting plate with tie-wrap)
- 1x Ethernet cable

## Mounting

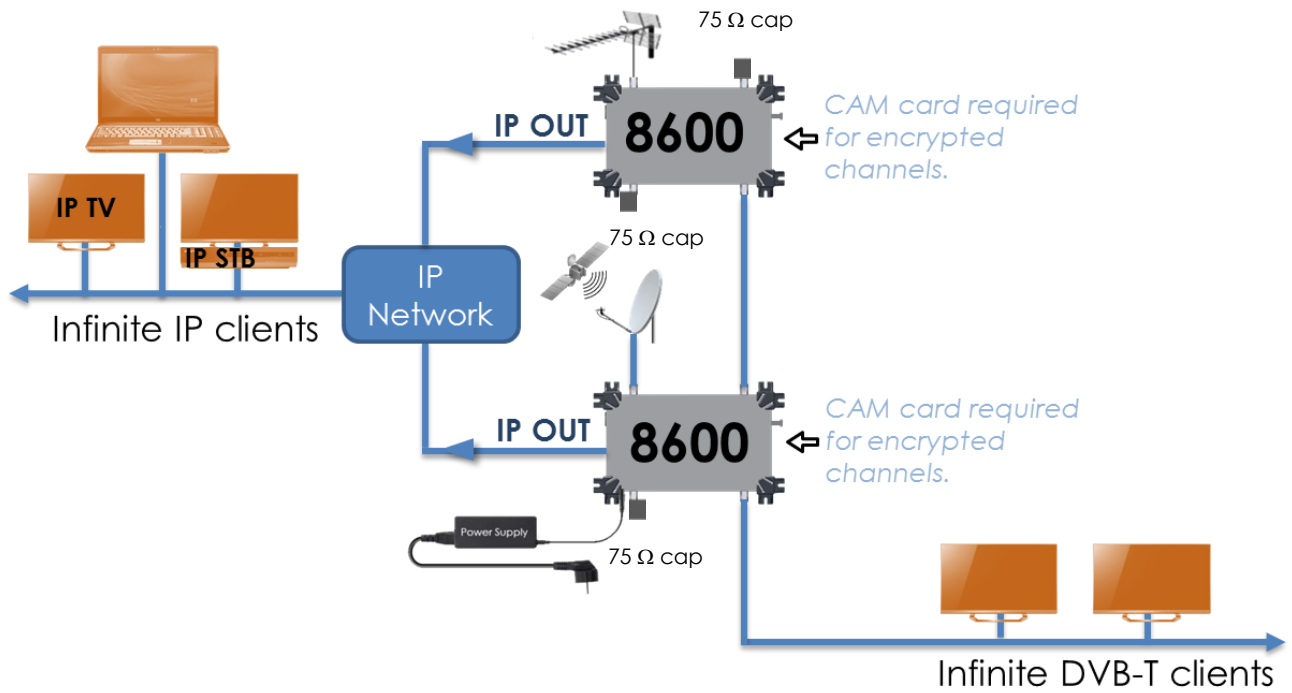


## Typical installation

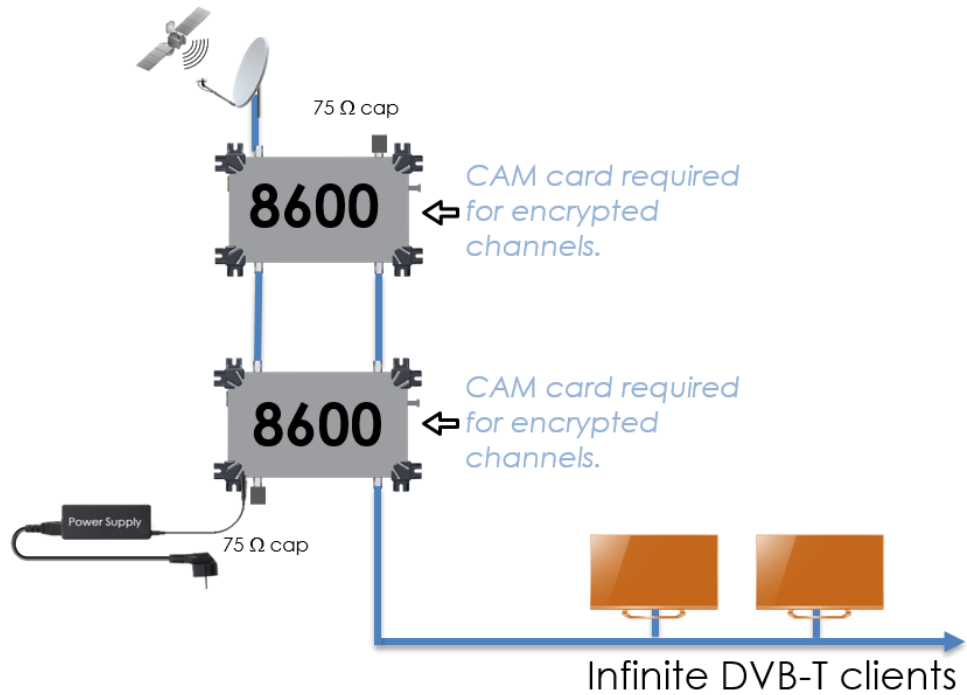
- Perfect when your TV installation does not have satellite tuners, but you wish to receive satellite TV.
- Perfect when your TV installation does not support DVB-T2 tuners, but you wish to receive the newest DVB-T2 signals. See figure 1.
- In existing installation where you want to add a few extra channels from different sources.
- New installations, where you can use one or multiple Universes to setup a complete network of TV and radio channels. See figures 2 and 3.
- In some countries, the operator does not support CAMs with business-to-business (B2B) subscriptions. However, if that operator allows professional installations, you can use multiple Universes with business-to-consumer (B2C) subscriptions without driving the costs too high.



**FIGURE 1: DVB-T2 CONVERTED TO DVB-T SIGNALS AND ADDED TO THE DVB-T BROADCAST**



**FIGURE 2: DVB-T AND DVB-S2 CONVERTED TO DVB-T AND IP CHANNELS**



**FIGURE 3: DVB-S2 CONVERTED TO DVB-T**

## Safety Instructions



**Read these instructions carefully before connecting the unit**

- ⚠ To prevent fire, short circuit or shock hazard:
  - Do not expose the unit to rain or moisture.
  - Install the unit in a dry location without infiltration or condensation of water.
  - Do not expose it to dripping or splashing.
  - Do not place objects filled with liquids, such as vases, on the apparatus.
  - If any liquid should accidentally fall into the cabinet, disconnect the power plug.
  
- ⚠ To avoid any risk of overheating:
  - Install the unit in a well aired location and keep a minimum distance of 15 cm around the apparatus for sufficient ventilation
  - Do not place any items such as newspapers, table-cloths, curtains, on the unit that might cover the ventilation holes.
  - Do not place any naked flame sources, such as lighted candles, on the apparatus
  - Do not install the product in a dusty place
  - Use the apparatus only in moderate climates (not in tropical climates)
  - Respect the minimum and maximum temperature specifications
  
- ⚠ To avoid any risk of electrical shocks:
  - Connect apparatus only to socket with protective earth connection.
  - The mains plug shall remain readily operable
  - Pull out power plug to make the different connections of cables
  - To avoid electrical shock, do not open the housing of adapter.



**Maintenance**

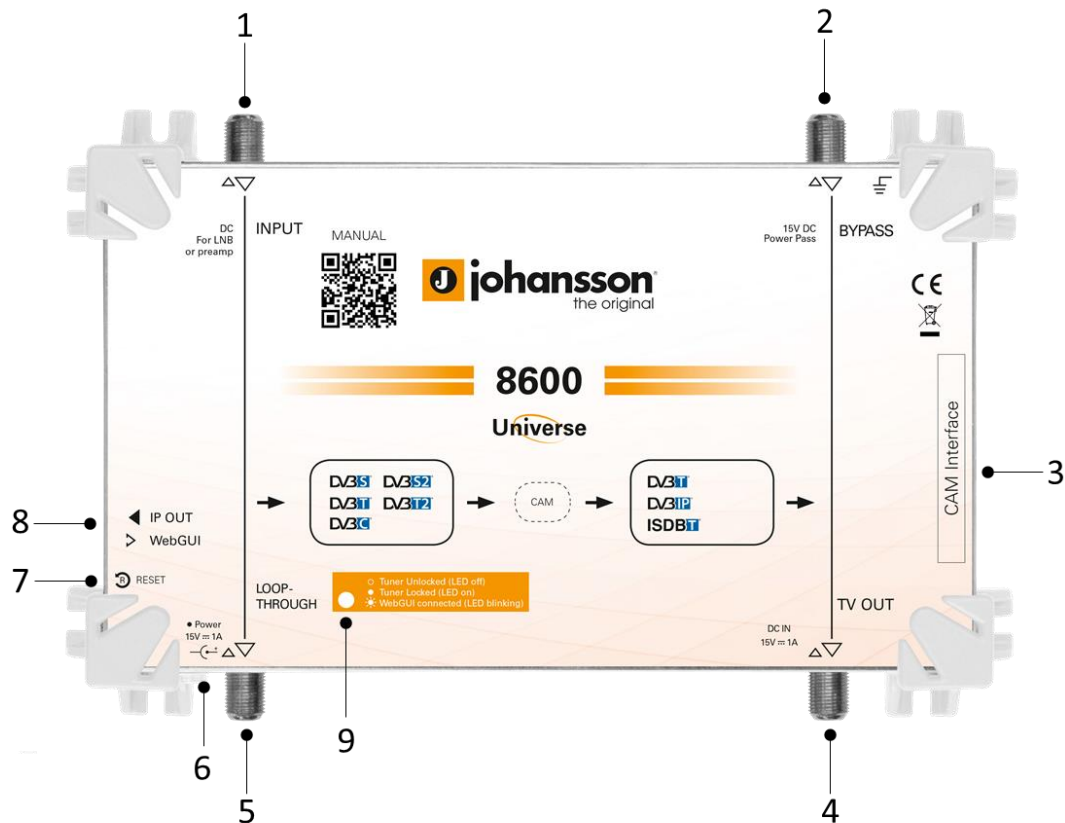
- ⚠ Only use a dry soft cloth to clean the cabinet.
- ⚠ Do not use solvent
- ⚠ For repairing and servicing refer to qualified personnel.



**Dispose according your local authority's recycling processes**

## 2. INSTALLATION OF THE HARDWARE

### Module overview



1. INPUT: DVB-S/S2, DVB-T/T2, DVB-C
2. BYPASS: to insert a network of existing TV channels (should be blocked with a 75Ω DC-blocked resistor when not used)
3. CAM INTERFACE
4. TV OUT: DVB-T or ISDB-T
5. LOOP-THROUGH: to connect to the next Universe INPUT (should be blocked with a 75Ω DC-blocked resistor when not used)
6. 15 VDC INPUT + POWER LED
7. RESET BUTTON
8. ETHERNET CONNECTOR: WebGUI + IP OUT
9. TUNER LOCK LED: indicates if the tuner is locked. If the LED is blinking, that means the WebGUI is connected.

For typical applications, see figure 1, 2 and 3 on page 5 and next.



## **Connecting the power supply**

The Universe works with the supplied adaptor of 15V DC. The power supply can be connected via the inlet (6) but the Universe can also be powered via the TV OUT (4).

The 15V DC is also being supplied to the BYPASS (2), which enables 1 power supply to feed more than 1 unit. Up to 3 Universes can be powered from the same adaptor.

## 3. CONFIGURATION OF THE MODULE

### 3.1. Minimal system requirements

The WebGUI is supported by the following web browsers (and newer versions of these browsers):

- Chrome 4
- Safari 3.1
- Firefox 3.6
- Explorer 9
- Opera 10.6

When using a different browser, we cannot guarantee a correct functioning of the interface.

### 3.2. Starting up the module

Connect all cables needed for your installation. (See p.8 Installation of the Hardware.) For the first set-up, it is advised to connect the Ethernet cable (RJ45) directly to your PC (without using a switch).

- After powering the Universe, wait until the power led turns green (this can take up to about 2 minutes). Once the power led is green, the unit can be accessed through the WebGUI. The unit uses 192.168.50.50 as the default static IP address. Therefore, you will need to set-up a static IP in your PC that matches the subnet of the device. For example 192.168.50.25.

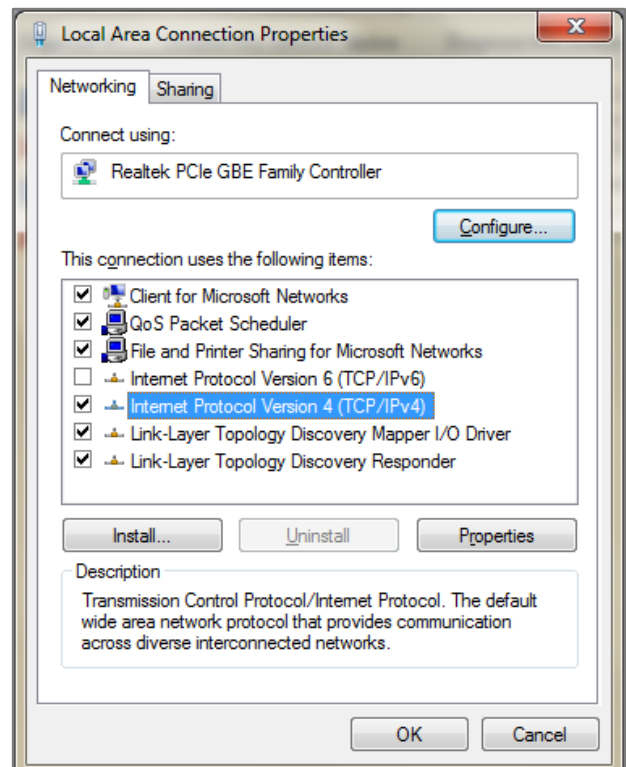
#### Windows 7

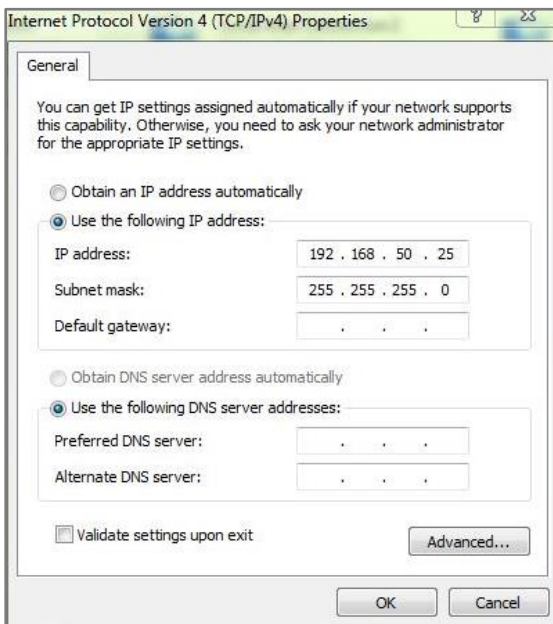
Go to start → Control Panel → Network and Internet → Network and Sharing Center → Change Adapter Settings. Right-click on "Local Area Connection" and then on "Properties".

#### Windows 8

Open the windows 8 start screen by pressing the start button. Type "Control Panel" and press enter. Then go to "Network and Internet" → "Network and Sharing Center" → "Change Adapter Settings". Right-click on "Local Area Connection" and then on "Properties".

Double click on "Internet Protocol Version 4 (TCP/IPv4)" to enter the IP settings of your adaptor.





Check the radio button "Use the following IP address" and enter an IP and subnet mask.

You can leave the Default gateway and DNS settings empty.

Open your browser and surf to the website <http://192.168.50.50>.

If everything went fine you will see the following webpage, if not check your network settings and try again.

Alternatively, the webpage can default also be accessed via <http://start> but also in this case your PC needs to be in the same subnet.

**johansson**

**Device**

- Information
- Preferences
- Network configuration
- Login configuration
- Update
- Download settings
- Upload Settings
- Factory Reset
- Reboot

**Inputs**

- RF

**CAM**

- CAM configuration

**Outputs**

- IP
- RF

**General information**

Hardware		Software	
Serial number:	1520010000887	Version:	2.0.0.TST-8
Version:	2.0.0	Release date:	Wed Feb 7 08:28:22

**Monitoring information**

Runtime	
Uptime:	0 days, 00:04

After you have changed the IP address of your device (See page 12.) you can unplug the direct cable and add the device to your installation. Do not forget to change the IP settings of your PC back to its previous settings.

### Resetting the device

Reboot the device by shortly pressing the reset button 1 second. When the button is released, the power led will turn red until the device is rebooted.

Reset the device to factory default settings by pressing the reset button for more than 10 seconds. When the button is released, the power led will turn red until the reset is done. The device will be restored to factory default settings and the IP of the device will be changed to 192.168.50.50. You can also reset the device in the WebGUI.

## 3.2.1. Device Information

General information		Monitoring information	
<b>Hardware</b>		<b>Software</b>	
<i>Serial number:</i>	1520010000887	<i>Version:</i>	2.0.0.TST-8
<i>Version:</i>	2.0.0	<i>Release date:</i>	Wed Feb 7 08:28:22
		<b>Runtime</b>	
		<i>Uptime:</i>	0 days, 00:04

Device Information gives some basic information about the device. Here you can find the uptime, the serial number, firmware version, the release date of the firmware and the hardware version. This is useful for checking if your device is up-to-date.

## 3.2.2. Device Configuration

### Preferences

General	
<i>Level unit</i>	<input checked="" type="radio"/> dBm <input type="radio"/> dB $\mu$ V

Here you can choose between dBm and dB $\mu$ V as your default level unit.

## Login

**Password protection**

*Enabled*

*Username*

*Password*

*Confirm Password*

Here you can set up a user and password to secure the WebGUI. After pressing the "Apply" button you will be asked to reboot the device. Press "OK" to confirm the reboot.

**Authentication Required** ×

The server http://192.168.50.50:80 requires a username and password. The server says: Web Server Authentication.

User Name:

Password:

The next time you want to access the configuration pages you will be asked to login. The device information page remains accessible without authenticating.

If you have forgotten your password you will need to reset the Universe to its default settings by pressing the reset button (see p. 12).

## Network

Go to "Device Configuration" → "Network" to change your network settings. After changing the IP settings you will need to reconnect to the new IP.

You can choose to obtain an IP address automatically. This requires a DHCP server, which is available on most home and professional IP networks. You can find the IP address of your device in the DHCP client list of your DHCP server.

Alternatively, you can keep the Universe in static IP 192.168.50.50 or any other address of your choice.

→ **Remark:** The "Apply" button starts blinking if you change the settings of the Universe so you will not forget to press it.

Default the Universe webpage can be accessed via <http://start>. In this example, the hostname was changed to 8600, which means the webpage can now be found on <http://8600>.

**General settings**

**Hostname**

**Network interface settings**

**Management interface**

Obtain automatically

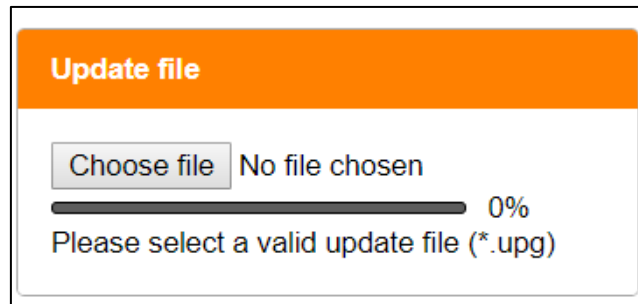
IP address

Subnet mask

Gateway

DNS

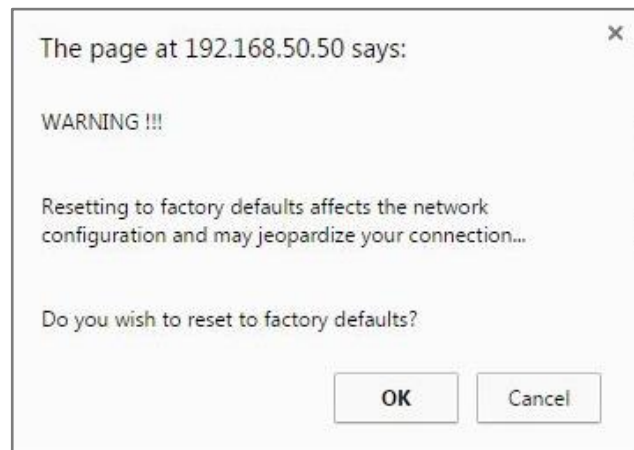
## Firmware Update



If you want to update the firmware, click on "Choose File" and select the update file. The firmware file ends with the \*.upg extension. Then click the "Upload" button and wait until the file is uploaded and the device is rebooted (this can take a while).

## Factory Reset

To reset the Universe to its factory default settings click on "Factory Reset" and confirm with "OK". You can also reset the Universe by pressing the reset button for 10 seconds (see p. 12).



## Reboot

Click on "Reboot" to restart your device. This is useful when you don't have physical access to the Universe and you need to restart the device.

### 3.2.3. Inputs - RF

**LNA / LNB settings**

**Input 1**

*Power*

*Mode*

The pre-amplifier is being powered from another device (disable power)

Choose the mode you want to use and if required the type of LNB. The following settings depends on the Mode and LNB used. If you select the Universal or C-Band LNB the LO Frequency and Band / Tone settings will not be shown because those settings are filled in automatically.

#### LNB / Multiswitch

Choose this mode if you are using a regular LNB or a multiswitch.

**Input 1**

*Power*

*Mode*

*LNB type*

*LO Frequency (kHz) \*\*:*

The LNB / Multiswitch is being controlled by another device

*Polarisation / Voltage*

*Band / Tone*

*Sat.*

\*\* LO frequency should be set to 0 when intermediate frequencies (IF) are used for tuning...



- LO Frequency (kHz): The LO Frequency used in the LNB. Set this to 0 when intermediate frequencies (IF from 950 to 2150MHz) are used for tuning. This setting will be filled in automatically when choosing the Universal or C-Band LNB type. *(only available if LNB type is manual)*
- The LNB / Multiswitch is being controlled by another device: Enable this setting if you are using another device to control and power the LNB or multiswitch e.g. another Universe.
- Polarisation / Voltage: The polarisation or voltage you want to use.
- Band / Tone: The band / tone you want to use. *(only available if LNB type is manual)*
- Sat.: The satellite (A, B, C, D) used.
- Apply: Save your current settings!

### Single Cable (EN 50494) and (EN 50607)

Input 1

Power

Mode

LNB type

LO Frequency (kHz)\*\*:

User Band (UB)

UB Frequency (kHz)

Polarisation / Voltage

Band / Tone

Sat.

\*\* LO frequency should be set to 0 when intermediate frequencies (IF) are used for tuning...

- LO Frequency (kHz): The LO Frequency used in the LNB. Set this to 0 when intermediate frequencies (IF) are used for tuning. This setting will be filled in automatically when choosing the Universal or C-Band LNB type. *(only available if LNB type is manual)*
- User Band (UB)\*: The user band the Universe should receive.
- UB Frequency (kHz)\*: The user band frequency the Universe should receive.
- Polarisation / Voltage: The polarisation or voltage you want to use.
- Band / Tone: The band / tone you want to use. *(only available if LNB type is manual)*
- Sat.: The satellite (A, B, C, D) used.
- Apply: Save your current settings!

\*: You can find the desired User Band and User Band frequency in the manual of your SCR LNB or multiswitch.

### DC for Pre-amplifier

**Input 1**

*Power*

*Mode* DC for Pre-amplifier ▼

The pre-amplifier is being powered from another device (disable power)

*Voltage* 12V ▼

Apply

- The pre-amplifier is being powered from another device (disable power): Enable this option if you use another device to power the pre-amplifier.
- Voltage: Choose the desired voltage 12V or 24V.
- Apply: Save your current settings!

The LNA/LNB is now powered and configured. Next, we will configure the tuner.

**Tuner settings**

**Tuner 1**

*Lock*

*IF Frequency* 546 MHz

*Bitrate*  25 Mbps

*Level*  -49 dBm

*SNR*  33 dB

*PER*  0 %

*CAM Inserted*

*Type* DVB-T ▼

*Frequency (kHz)* 546000

*Bandwidth* 8 MHz ▼

Apply

Change your input type to the DVB source you are using. Select the frequency and symbol rate or bandwidth to match the transponder you want to receive and click on "Apply". To know the transponder go to <http://www.lyngsat.com> or <http://kingofsat.net>. If all settings are correct, the lock icon will turn green.

▼ Satpositiesat, Satelliet - Frequentie, Polarisatie - Transponder - Beam				Standaard	Modulation	Symbol Rate - FEC - Provider, Bitrate - Network ID -				
Naam	Land	Category	Packages	Codering	SID	VPID	Audio			
19.2°E	Astra 1M	10714.25 H 49	Astra 1M	DVB-S2	QPSK	22000				
Occasional Feeds, data or inactive frequency										
19.2°E	Astra 1KR	10729.00 V 50	Astra 1KR	DVB-S2	8PSK	22000	3	ASTRA 1, 42.6 Mbps		
AXN Spain HD	Spain	Sport	Series	Canal+ (Astra)	Nagravision 3	30800	160	HD	80 esp 81 vsp	
Canal+ Comedia HD	Spain	Movies		Canal+ (Astra)	Nagravision 3	30801	161	HD	80 esp 81 vsp 82 t1 esp 83 t2 esp 84 t3 esp 85 t4 esp 86 t5 esp 87 t6 esp 88 t7 esp 89 t8 esp 90 t9 esp 91 t10 esp 92 t11 esp 93 t12 esp 94 t13 esp 95 t14 esp 96 t15 esp 97 t16 esp 98 t17 esp 99 t18 esp 100 t19 esp 101 t20 esp 102 t21 esp 103 t22 esp 104 t23 esp 105 t24 esp 106 t25 esp 107 t26 esp 108 t27 esp 109 t28 esp 110 t29 esp 111 t30 esp 112 t31 esp 113 t32 esp 114 t33 esp 115 t34 esp 116 t35 esp 117 t36 esp 118 t37 esp 119 t38 esp 120 t39 esp 121 t40 esp 122 t41 esp 123 t42 esp 124 t43 esp 125 t44 esp 126 t45 esp 127 t46 esp 128 t47 esp 129 t48 esp 130 t49 esp 131 t50 esp 132 t51 esp 133 t52 esp 134 t53 esp 135 t54 esp 136 t55 esp 137 t56 esp 138 t57 esp 139 t58 esp 140 t59 esp 141 t60 esp 142 t61 esp 143 t62 esp 144 t63 esp 145 t64 esp 146 t65 esp 147 t66 esp 148 t67 esp 149 t68 esp 150 t69 esp 151 t70 esp 152 t71 esp 153 t72 esp 154 t73 esp 155 t74 esp 156 t75 esp 157 t76 esp 158 t77 esp 159 t78 esp 160 t79 esp 161 t80 esp 162 t81 esp 163 t82 esp 164 t83 esp 165 t84 esp 166 t85 esp 167 t86 esp 168 t87 esp 169 t88 esp 170 t89 esp 171 t90 esp 172 t91 esp 173 t92 esp 174 t93 esp 175 t94 esp 176 t95 esp 177 t96 esp 178 t97 esp 179 t98 esp 180 t99 esp 181 t100 esp 182 t101 esp 183 t102 esp 184 t103 esp 185 t104 esp 186 t105 esp 187 t106 esp 188 t107 esp 189 t108 esp 190 t109 esp 191 t110 esp 192 t111 esp 193 t112 esp 194 t113 esp 195 t114 esp 196 t115 esp 197 t116 esp 198 t117 esp 199 t118 esp 200 t119 esp 201 t120 esp 202 t121 esp 203 t122 esp 204 t123 esp 205 t124 esp 206 t125 esp 207 t126 esp 208 t127 esp 209 t128 esp 210 t129 esp 211 t130 esp 212 t131 esp 213 t132 esp 214 t133 esp 215 t134 esp 216 t135 esp 217 t136 esp 218 t137 esp 219 t138 esp 220 t139 esp 221 t140 esp 222 t141 esp 223 t142 esp 224 t143 esp 225 t144 esp 226 t145 esp 227 t146 esp 228 t147 esp 229 t148 esp 230 t149 esp 231 t150 esp 232 t151 esp 233 t152 esp 234 t153 esp 235 t154 esp 236 t155 esp 237 t156 esp 238 t157 esp 239 t158 esp 240 t159 esp 241 t160 esp 242 t161 esp 243 t162 esp 244 t163 esp 245 t164 esp 246 t165 esp 247 t166 esp 248 t167 esp 249 t168 esp 250 t169 esp 251 t170 esp 252 t171 esp 253 t172 esp 254 t173 esp 255 t174 esp 256 t175 esp 257 t176 esp 258 t177 esp 259 t178 esp 260 t179 esp 261 t180 esp 262 t181 esp 263 t182 esp 264 t183 esp 265 t184 esp 266 t185 esp 267 t186 esp 268 t187 esp 269 t188 esp 270 t189 esp 271 t190 esp 272 t191 esp 273 t192 esp 274 t193 esp 275 t194 esp 276 t195 esp 277 t196 esp 278 t197 esp 279 t198 esp 280 t199 esp 281 t200 esp 282 t201 esp 283 t202 esp 284 t203 esp 285 t204 esp 286 t205 esp 287 t206 esp 288 t207 esp 289 t208 esp 290 t209 esp 291 t210 esp 292 t211 esp 293 t212 esp 294 t213 esp 295 t214 esp 296 t215 esp 297 t216 esp 298 t217 esp 299 t218 esp 300 t219 esp 301 t220 esp 302 t221 esp 303 t222 esp 304 t223 esp 305 t224 esp 306 t225 esp 307 t226 esp 308 t227 esp 309 t228 esp 310 t229 esp 311 t230 esp 312 t231 esp 313 t232 esp 314 t233 esp 315 t234 esp 316 t235 esp 317 t236 esp 318 t237 esp 319 t238 esp 320 t239 esp 321 t240 esp 322 t241 esp 323 t242 esp 324 t243 esp 325 t244 esp 326 t245 esp 327 t246 esp 328 t247 esp 329 t248 esp 330 t249 esp 331 t250 esp 332 t251 esp 333 t252 esp 334 t253 esp 335 t254 esp 336 t255 esp 337 t256 esp 338 t257 esp 339 t258 esp 340 t259 esp 341 t260 esp 342 t261 esp 343 t262 esp 344 t263 esp 345 t264 esp 346 t265 esp 347 t266 esp 348 t267 esp 349 t268 esp 350 t269 esp 351 t270 esp 352 t271 esp 353 t272 esp 354 t273 esp 355 t274 esp 356 t275 esp 357 t276 esp 358 t277 esp 359 t278 esp 360 t279 esp 361 t280 esp 362 t281 esp 363 t282 esp 364 t283 esp 365 t284 esp 366 t285 esp 367 t286 esp 368 t287 esp 369 t288 esp 370 t289 esp 371 t290 esp 372 t291 esp 373 t292 esp 374 t293 esp 375 t294 esp 376 t295 esp 377 t296 esp 378 t297 esp 379 t298 esp 380 t299 esp 381 t300 esp 382 t301 esp 383 t302 esp 384 t303 esp 385 t304 esp 386 t305 esp 387 t306 esp 388 t307 esp 389 t308 esp 390 t309 esp 391 t310 esp 392 t311 esp 393 t312 esp 394 t313 esp 395 t314 esp 396 t315 esp 397 t316 esp 398 t317 esp 399 t318 esp 400 t319 esp 401 t320 esp 402 t321 esp 403 t322 esp 404 t323 esp 405 t324 esp 406 t325 esp 407 t326 esp 408 t327 esp 409 t328 esp 410 t329 esp 411 t330 esp 412 t331 esp 413 t332 esp 414 t333 esp 415 t334 esp 416 t335 esp 417 t336 esp 418 t337 esp 419 t338 esp 420 t339 esp 421 t340 esp 422 t341 esp 423 t342 esp 424 t343 esp 425 t344 esp 426 t345 esp 427 t346 esp 428 t347 esp 429 t348 esp 430 t349 esp 431 t350 esp 432 t351 esp 433 t352 esp 434 t353 esp 435 t354 esp 436 t355 esp 437 t356 esp 438 t357 esp 439 t358 esp 440 t359 esp 441 t360 esp 442 t361 esp 443 t362 esp 444 t363 esp 445 t364 esp 446 t365 esp 447 t366 esp 448 t367 esp 449 t368 esp 450 t369 esp 451 t370 esp 452 t371 esp 453 t372 esp 454 t373 esp 455 t374 esp 456 t375 esp 457 t376 esp 458 t377 esp 459 t378 esp 460 t379 esp 461 t380 esp 462 t381 esp 463 t382 esp 464 t383 esp 465 t384 esp 466 t385 esp 467 t386 esp 468 t387 esp 469 t388 esp 470 t389 esp 471 t390 esp 472 t391 esp 473 t392 esp 474 t393 esp 475 t394 esp 476 t395 esp 477 t396 esp 478 t397 esp 479 t398 esp 480 t399 esp 481 t400 esp 482 t401 esp 483 t402 esp 484 t403 esp 485 t404 esp 486 t405 esp 487 t406 esp 488 t407 esp 489 t408 esp 490 t409 esp 491 t410 esp 492 t411 esp 493 t412 esp 494 t413 esp 495 t414 esp 496 t415 esp 497 t416 esp 498 t417 esp 499 t418 esp 500 t419 esp 501 t420 esp 502 t421 esp 503 t422 esp 504 t423 esp 505 t424 esp 506 t425 esp 507 t426 esp 508 t427 esp 509 t428 esp 510 t429 esp 511 t430 esp 512 t431 esp 513 t432 esp 514 t433 esp 515 t434 esp 516 t435 esp 517 t436 esp 518 t437 esp 519 t438 esp 520 t439 esp 521 t440 esp 522 t441 esp 523 t442 esp 524 t443 esp 525 t444 esp 526 t445 esp 527 t446 esp 528 t447 esp 529 t448 esp 530 t449 esp 531 t450 esp 532 t451 esp 533 t452 esp 534 t453 esp 535 t454 esp 536 t455 esp 537 t456 esp 538 t457 esp 539 t458 esp 540 t459 esp 541 t460 esp 542 t461 esp 543 t462 esp 544 t463 esp 545 t464 esp 546 t465 esp 547 t466 esp 548 t467 esp 549 t468 esp 550 t469 esp 551 t470 esp 552 t471 esp 553 t472 esp 554 t473 esp 555 t474 esp 556 t475 esp 557 t476 esp 558 t477 esp 559 t478 esp 560 t479 esp 561 t480 esp 562 t481 esp 563 t482 esp 564 t483 esp 565 t484 esp 566 t485 esp 567 t486 esp 568 t487 esp 569 t488 esp 570 t489 esp 571 t490 esp 572 t491 esp 573 t492 esp 574 t493 esp 575 t494 esp 576 t495 esp 577 t496 esp 578 t497 esp 579 t498 esp 580 t499 esp 581 t500 esp 582 t501 esp 583 t502 esp 584 t503 esp 585 t504 esp 586 t505 esp 587 t506 esp 588 t507 esp 589 t508 esp 590 t509 esp 591 t510 esp 592 t511 esp 593 t512 esp 594 t513 esp 595 t514 esp 596 t515 esp 597 t516 esp 598 t517 esp 599 t518 esp 600 t519 esp 601 t520 esp 602 t521 esp 603 t522 esp 604 t523 esp 605 t524 esp 606 t525 esp 607 t526 esp 608 t527 esp 609 t528 esp 610 t529 esp 611 t530 esp 612 t531 esp 613 t532 esp 614 t533 esp 615 t534 esp 616 t535 esp 617 t536 esp 618 t537 esp 619 t538 esp 620 t539 esp 621 t540 esp 622 t541 esp 623 t542 esp 624 t543 esp 625 t544 esp 626 t545 esp 627 t546 esp 628 t547 esp 629 t548 esp 630 t549 esp 631 t550 esp 632 t551 esp 633 t552 esp 634 t553 esp 635 t554 esp 636 t555 esp 637 t556 esp 638 t557 esp 639 t558 esp 640 t559 esp 641 t560 esp 642 t561 esp 643 t562 esp 644 t563 esp 645 t564 esp 646 t565 esp 647 t566 esp 648 t567 esp 649 t568 esp 650 t569 esp 651 t570 esp 652 t571 esp 653 t572 esp 654 t573 esp 655 t574 esp 656 t575 esp 657 t576 esp 658 t577 esp 659 t578 esp 660 t579 esp 661 t580 esp 662 t581 esp 663 t582 esp 664 t583 esp 665 t584 esp 666 t585 esp 667 t586 esp 668 t587 esp 669 t588 esp 670 t589 esp 671 t590 esp 672 t591 esp 673 t592 esp 674 t593 esp 675 t594 esp 676 t595 esp 677 t596 esp 678 t597 esp 679 t598 esp 680 t599 esp 681 t600 esp 682 t601 esp 683 t602 esp 684 t603 esp 685 t604 esp 686 t605 esp 687 t606 esp 688 t607 esp 689 t608 esp 690 t609 esp 691 t610 esp 692 t611 esp 693 t612 esp 694 t613 esp 695 t614 esp 696 t615 esp 697 t616 esp 698 t617 esp 699 t618 esp 700 t619 esp 701 t620 esp 702 t621 esp 703 t622 esp 704 t623 esp 705 t624 esp 706 t625 esp 707 t626 esp 708 t627 esp 709 t628 esp 710 t629 esp 711 t630 esp 712 t631 esp 713 t632 esp 714 t633 esp 715 t634 esp 716 t635 esp 717 t636 esp 718 t637 esp 719 t638 esp 720 t639 esp 721 t640 esp 722 t641 esp 723 t642 esp 724 t643 esp 725 t644 esp 726 t645 esp 727 t646 esp 728 t647 esp 729 t648 esp 730 t649 esp 731 t650 esp 732 t651 esp 733 t652 esp 734 t653 esp 735 t654 esp 736 t655 esp 737 t656 esp 738 t657 esp 739 t658 esp 740 t659 esp 741 t660 esp 742 t661 esp 743 t662 esp 744 t663 esp 745 t664 esp 746 t665 esp 747 t666 esp 748 t667 esp 749 t668 esp 750 t669 esp 751 t670 esp 752 t671 esp 753 t672 esp 754 t673 esp 755 t674 esp 756 t675 esp 757 t676 esp 758 t677 esp 759 t678 esp 760 t679 esp 761 t680 esp 762 t681 esp 763 t682 esp 764 t683 esp 765 t684 esp 766 t685 esp 767 t686 esp 768 t687 esp 769 t688 esp 770 t689 esp 771 t690 esp 772 t691 esp 773 t692 esp 774 t693 esp 775 t694 esp 776 t695 esp 777 t696 esp 778 t697 esp 779 t698 esp 780 t699 esp 781 t700 esp 782 t701 esp 783 t702 esp 784 t703 esp 785 t704 esp 786 t705 esp 787 t706 esp 788 t707 esp 789 t708 esp 790 t709 esp 791 t710 esp 792 t711 esp 793 t712 esp 794 t713 esp 795 t714 esp 796 t715 esp 797 t716 esp 798 t717 esp 799 t718 esp 800 t719 esp 801 t720 esp 802 t721 esp 803 t722 esp 804 t723 esp 805 t724 esp 806 t725 esp 807 t726 esp 808 t727 esp 809 t728 esp 810 t729 esp 811 t730 esp 812 t731 esp 813 t732 esp 814 t733 esp 815 t734 esp 816 t735 esp 817 t736 esp 818 t737 esp 819 t738 esp 820 t739 esp 821 t740 esp 822 t741 esp 823 t742 esp 824 t743 esp 825 t744 esp 826 t745 esp 827 t746 esp 828 t747 esp 829 t748 esp 830 t749 esp 831 t750 esp 832 t751 esp 833 t752 esp 834 t753 esp 835 t754 esp 836 t755 esp 837 t756 esp 838 t757 esp 839 t758 esp 840 t759 esp 841 t760 esp 842 t761 esp 843 t762 esp 844 t763 esp 845 t764 esp 846 t765 esp 847 t766 esp 848 t767 esp 849 t768 esp 850 t769 esp 851 t770 esp 852 t771 esp 853 t772 esp 854 t773 esp 855 t774 esp 856 t775 esp 857 t776 esp 858 t777 esp 859 t778 esp 860 t779 esp 861 t780 esp 862 t781 esp 863 t782 esp 864 t783 esp 865 t784 esp 866 t785 esp 867 t786 esp 868 t787 esp 869 t788 esp 870 t789 esp 871 t790 esp 872 t791 esp 873 t792 esp 874 t793 esp 875 t794 esp 876 t795 esp 877 t796 esp 878 t797 esp 879 t798 esp 880 t799 esp 881 t800 esp 882 t801 esp 883 t802 esp 884 t803 esp 885 t804 esp 886 t805 esp 887 t806 esp 888 t807 esp 889 t808 esp 890 t809 esp 891 t810 esp 892 t811 esp 893 t812 esp 894 t813 esp 895 t814 esp 896 t815 esp 897 t816 esp 898 t817 esp 899 t818 esp 900 t819 esp 901 t820 esp 902 t821 esp 903 t822 esp 904 t823 esp 905 t824 esp 906 t825 esp 907 t826 esp 908 t827 esp 909 t828 esp 910 t829 esp 911 t830 esp 912 t831 esp 913 t832 esp 914 t833 esp 915 t834 esp 916 t835 esp 917 t836 esp 918 t837 esp 919 t838 esp 920 t839 esp 921 t840 esp 922 t841 esp 923 t842 esp 924 t843 esp 925 t844 esp 926 t845 esp 927 t846 esp 928 t847 esp 929 t848 esp 930 t849 esp 931 t850 esp 932 t851 esp 933 t852 esp 934 t853 esp 935 t854 esp 936 t855 esp 937 t856 esp 938 t857 esp 939 t858 esp 940 t859 esp 941 t860 esp 942 t861 esp 943 t862 esp 944 t863 esp 945 t864 esp 946 t865 esp 947 t866 esp 948 t867 esp 949 t868 esp 950 t869 esp 951 t870 esp 952 t871 esp 953 t872 esp 954 t873 esp 955 t874 esp 956 t875 esp 957 t876 esp 958 t877 esp 959 t878 esp 960 t879 esp 961 t880 esp 962 t881 esp 963 t882 esp 964 t883 esp 965 t884 esp 966 t885 esp 967 t886 esp 968 t887 esp 969 t888 esp 970 t889 esp 971 t890 esp 972 t891 esp 973 t892 esp 974 t893 esp 975 t894 esp 976 t895 esp 977 t896 esp 978 t897 esp 979 t898 esp 980 t899 esp 981 t900 esp 982 t901 esp 983 t902 esp 984 t903 esp 985 t904 esp 986 t905 esp 987 t906 esp 988 t907 esp 989 t908 esp 990 t909 esp 991 t910 esp 992 t911 esp 993 t912 esp 994 t913 esp 995 t914 esp 996 t915 esp 997 t916 esp 998 t917 esp 999 t918 esp 1000 t919 esp 1001 t920 esp 1002 t921 esp 1003 t922 esp 1004 t923 esp 1005 t924 esp 1006 t925 esp 1007 t926 esp 1008 t927 esp 1009 t928 esp 1010 t929 esp 1011 t930 esp 1012 t931 esp 1013 t932 esp 1014 t933 esp 1015 t934 esp 1016 t935 esp 1017 t936 esp 1018 t937 esp 1019 t938 esp 1020 t939 esp 1021 t940 esp 1022 t941 esp 1023 t942 esp 1024 t943 esp 1025 t944 esp 1026 t945 esp 1027 t946 esp 1028 t947 esp 1029 t948 esp 1030 t949 esp 1031 t950 esp 1032 t951 esp 1033 t952 esp 1034 t953 esp 1035 t954 esp 1036 t955 esp 1037 t956 esp 1038 t957 esp 1039 t958 esp 1040 t959 esp 1041 t960 esp 1042 t961 esp 1043 t962 esp 1044 t963 esp 1045 t964 esp 1046 t965 esp 1047 t966 esp 1048 t967 esp 1049 t968 esp 1050 t969 esp 1051 t970 esp 1052 t971 esp 1053 t972 esp 1054 t973 esp 1055 t974 esp 1056 t975 esp 1057 t976 esp 1058 t977 esp 1059 t978 esp 1060 t979 esp 1061 t980 esp 1062 t981 esp 1063 t982 esp 1064 t983 esp 1065 t984 esp 1066 t985 esp 1067 t986 esp 1068 t987 esp 1069 t988 esp 1070 t989 esp 1071 t990 esp 1072 t991 esp 1073 t992 esp 1074 t993 esp 1075 t994 esp 1076 t995 esp 1077 t996 esp 1078 t997 esp 1079 t998 esp 1080 t999 esp 1081 t1000 esp 1082 t1001 esp 1083 t1002 esp 1084 t1003 esp 1085 t1004 esp 1086 t1005 esp 1087 t1006 esp 1088 t1007 esp 1089 t1008 esp 1090 t1009 esp 1091 t1010 esp 1092 t1011 esp 1093 t1012 esp 1094 t1013 esp 1095 t1014 esp 1096 t1015 esp 1097 t1016 esp 1098 t1017 esp 1099 t1018 esp 1100 t1019 esp 1101 t1020 esp 1102 t1021 esp 1103 t1022 esp 1104 t1023 esp 1105 t1024 esp 1106 t1025 esp 1107 t1026 esp 1108 t1027 esp 1109 t1028 esp 1110 t1029 esp 1111 t1030 esp 1112 t1031 esp 1113 t1032 esp 1114 t1033 esp 1115 t1034 esp 1116 t1035 esp 1117 t1036 esp 1118 t1037 esp 1119 t1038 esp 1120 t1039 esp 1121 t1040 esp 1122 t1041 esp 1123 t1042 esp 1124 t1043 esp 1125 t1044 esp 1126 t1045 esp 1127 t1046 esp 1128 t1047 esp 1129 t1048 esp 1130 t1049 esp 1131 t1050 esp 1132 t1051 esp 1133 t1052 esp 1134 t1053 esp 1135 t1054 esp 1136 t1055 esp 1137 t1056 esp 1138 t1057 esp 1139 t1058 esp 1140 t1059 esp 1141 t1060 esp 1142 t1061 esp 1143 t1062 esp 1144 t1063 esp 1145 t1064 esp 1146 t1065 esp 1147 t1066 esp 1148 t1067 esp 1149 t1068 esp 1150 t1069 esp 1151 t1070 esp 1152 t1071 esp 1153 t1072 esp 1154 t1073 esp 1155 t1074 esp 1156 t1075 esp 1157 t1076 esp 1158 t1077 esp 1159 t1078 esp 1160 t1079 esp 1161 t1080 esp 1162 t1081 esp 1163 t1082 esp 1164 t1083 esp 1165 t1084 esp 1166 t1085 esp 1167 t1086 esp 1168 t1087 esp 1169 t1088 esp 1170 t1089 esp 1171 t1090 esp 1172 t1091 esp 1173 t1092 esp 1174 t1093 esp 1175 t1094 esp 1176 t1095 esp 1177 t1096 esp 1178 t1097 esp 1179 t1098 esp 1180 t1099 esp 1181 t1100 esp 1182 t1101 esp 1183 t1102 esp 1184 t1103 esp 1185 t1104 esp 1186 t1105 esp 1187 t1106 esp 1188 t1107 esp 1189 t1108 esp 1190 t1109 esp 1191 t1110 esp 1192 t1111 esp 1193 t1112 esp 1194 t1113 esp 1195 t1114 esp 1196 t1115 esp 1197 t1116 esp 1198 t1117 esp 1199 t1118 esp 1200 t1119 esp 1201 t1120 esp 1202 t1121 esp 1203 t1122 esp 1204 t1123 esp 1205 t1124 esp 1206 t1125 esp 1207 t1126 esp 1208 t1127 esp 1209 t1128 esp 1210 t1129 esp 1211 t1130 esp 1212 t1131 esp 1213 t1132 esp 1214 t1133 esp 1215 t1134 esp	

## 3.2.4 CAM

### CAM Configuration

**Watchdog:** The CAM watchdog is OFF by default which is the advised position for most applications. But in some configurations, it can be useful to switch on the CAM watchdog, this CAM watchdog will monitor all scrambled services that are set to "descramble". A service that still has scrambled streams after the CAM is marked as problematic (and will have a red lock symbol on the output pages).

If at least one service is descrambled successfully, the CAM is considered healthy and will not be reset. If none of the scrambled services are descrambled anymore the CAM will be reset.

➔ **Remark:** There will be 3 attempts to reset the CAM, after those reset attempts the CAM will get some time to update the smartcard rights. If the CAM becomes healthy again, the watchdog will become fully active again.

**CAM Inserted:** Turns green if a CAM module is detected.

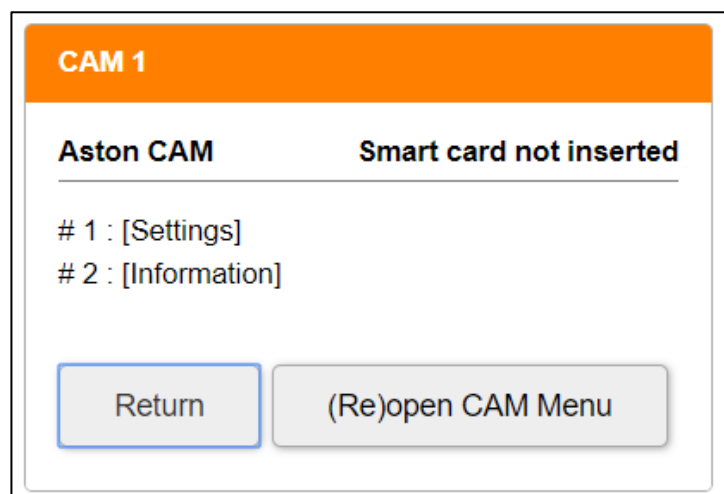
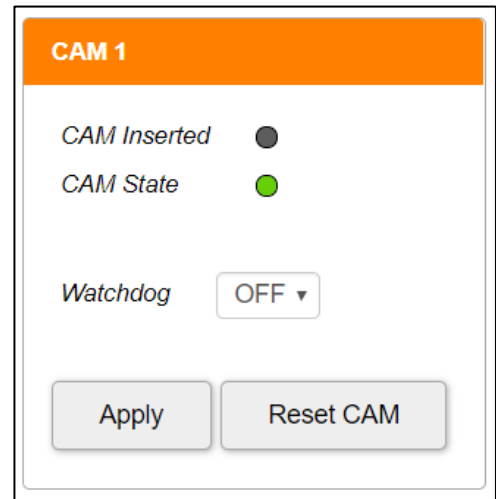
**CAM State:** Turns red if the CAM can't decrypt scrambled services.

### CAM Menu

The CAM menu will open automatically in a few seconds, if it doesn't you can click the "(Re)open CAM Menu" button. To use the CAM menu click on the menu item you want to open or click on "Return" to go back 1 step in the menu.

*The CAM menu will be different if you use another CAM module and/or CAM card. For more information about the CAM menus refer to its specific manual.*

If you get the message "Waiting for smart card, please wait" you will need to wait a few seconds and then click the "(Re)open CAM Menu" button or the "Waiting for smart card" message to refresh the menu.



## 3.2.5 Output Settings

### IP

There are 2 modes for the IP output : SPTS (default) and MPTS.

#### Mode : SPTS

This is the default mode and is used in IPTV solutions. In this mode, multiple SPTS streams are being streamed to client devices (PC, TV, STB, ...) who can independently select any of the video and/or audio channels.

Click on "Add Service" to add a service to an IP stream. You can keep adding services until the CPU hits 100%. But if the CPU usage exceeds 90% you can have performance issues, due to peaks in the services. If you want the Universe to decrypt the services, make sure the lock icon is green otherwise go back to input settings and descramble the service.

➔ **Remark:** The CPU also has to process the incoming signal. This typically takes 30% of the processor even when no output streams are active. When the RF output is in overflow the CPU usage will be affected.

Do not forget to press the "Apply" button when all output settings are done.

**General**
















CPU  20%


Bitrate  10 Mbps









**Service settings**

Output mode SPTS


**SPTS**

SID	Type	Name	Dest. Address	Dest. Port	Enabled	Details
4112		EEN	<input type="text" value="239.50.100.1"/>	<input type="text" value="49152"/>	<input checked="" type="checkbox"/>	 
4128		Canvas	<input type="text" value="239.50.100.2"/>	<input type="text" value="49152"/>	<input checked="" type="checkbox"/>	 
4160		Radio 1	<input type="text" value="239.50.100.3"/>	<input type="text" value="49152"/>	<input checked="" type="checkbox"/>	 
4176		Radio 2	<input type="text" value="239.50.100.4"/>	<input type="text" value="49152"/>	<input checked="" type="checkbox"/>	 
4256		Sporza	<input type="text" value="239.50.100.5"/>	<input type="text" value="49152"/>	<input checked="" type="checkbox"/>	 





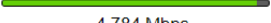

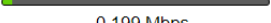

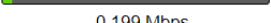

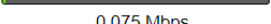
--Add Service--
Download playlist > 




- SID: Service ID.
- Type:
  -  : HD-TV
  -  : SD-TV
  -  : Radio
  -  : Data
- Lock:
  -  : Descrambled service
  -  : Problematic service (still scrambled after running through the CAM)
  -  : FTA service that runs through the CAM module
  -  : Scrambled service not running through the CAM module
  - No lock symbol: FTA service
- Name: Name of the service.
- Dest. Address: Destination address, the IP address the service will run on, needs to be in the 239.0.0.0-239.255.255.255 range.
- Dest. Port: Destination port, the port the service will run on.
  - ! → Make sure that no 2 service(s) have the same Destination address and Destination port, in that case only 1 service will be available.*
- Enabled: Turns the service on or off. Can be used instead of the delete button if you are planning to use that service later.
- Delete button: Deletes the service from the list.
- Details: Show advanced settings about the service, see details below.
- Apply: Saves the current settings!



Click "Download playlist:  " to download a playlist for your streams. This playlist can be opened on your computer with VLC or can be imported in your IPTV setup box or middleware.

Click on "Details" to enter the advanced settings for that service. Here you can enable or disable the underlying streams. Do not forget to press the "Apply" button.

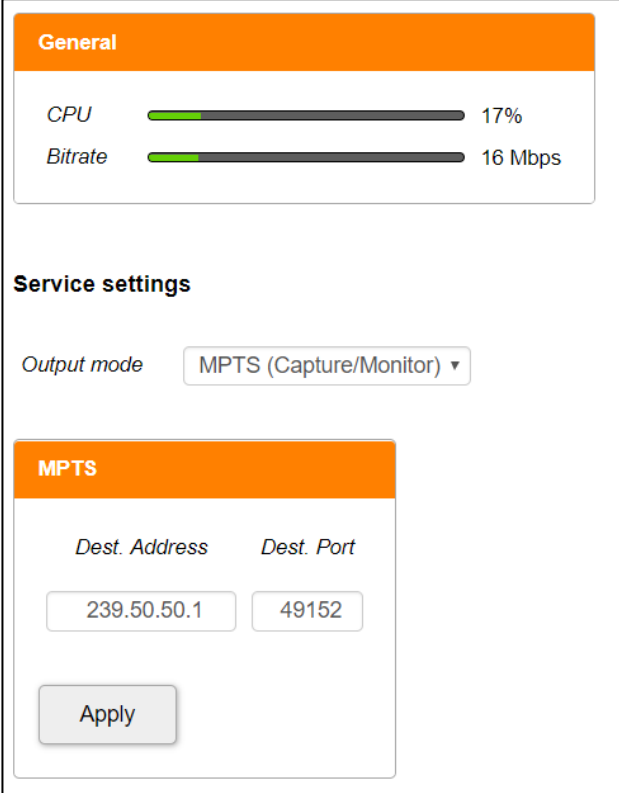
SPTS						
SID	Type	Name	Dest. Address	Dest. Port	Enabled	Details
4112		EEN	239.50.100.1	49152	<input checked="" type="checkbox"/>	 
PID	Type	Bitrate		Enabled		
4113		 4.784 Mbps		<input checked="" type="checkbox"/>		
4114		 0.199 Mbps		<input checked="" type="checkbox"/>		
4116		 0.199 Mbps		<input checked="" type="checkbox"/>		
4115		 0.075 Mbps		<input checked="" type="checkbox"/>		

- PID: Package identifier for the listed stream.
- Type:
  -  : Video
  -  : Audio
  -  : Data
- Bitrate: Bitrate of the stream.
- Enabled: Turns the selected stream on or off.

#### Mode : MPTS

This is a special mode and is mainly used for capturing or monitoring purposes. Basically this mode receives the DVB transponder and removes the RF part. The remaining digital transponder is entirely transmitted on the IP output. So there is no need to select services, all services are streaming. This is not used for IPTV solutions as some clients (STB, TV, ...) are not able to separate the different services. VLC however can still select the services.

Although this mode is mainly used for capturing and monitoring purposes, it can also be used 24/7 as a transport stream to transmit the entire DVB transponder over IP from point A to point B. This stream can then be received in point B by an Edge-QAM and rebroadcasted over DVB-C on a second local network.



The screenshot shows a configuration window with two main sections: 'General' and 'MPTS'.

**General**

- CPU: 17% (indicated by a green progress bar)
- Bitrate: 16 Mbps (indicated by a green progress bar)

**Service settings**

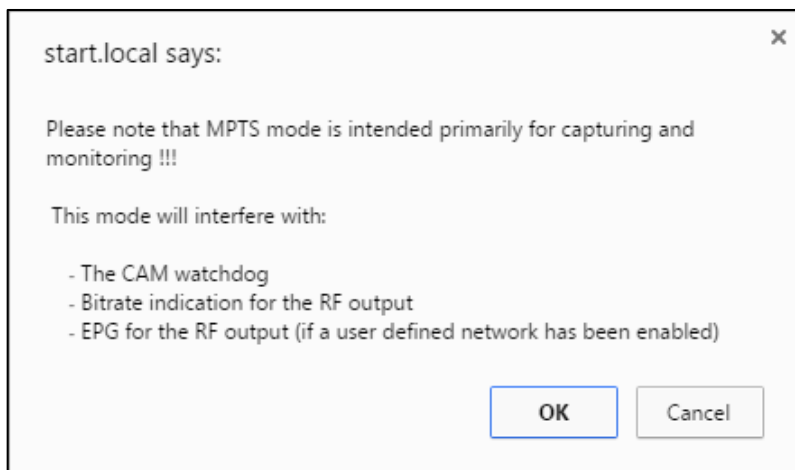
- Output mode: MPTS (Capture/Monitor) (selected in a dropdown menu)

**MPTS**

Dest. Address	Dest. Port
239.50.50.1	49152

Apply

The disadvantages of this mode is that some features are deactivated. See the screenshot below.



## RF

In the RF section, you can choose between adding (passing) services to your list or removing services from your list. When you choose for passing services to your list, you have the complete flexibility to choose which services must be processed by the Universe. When you choose for removing services from your list, you must disable services until you have no longer an overflow. The reason for this is that for instance a 55Mbps satellite transponder will not fit in a DVB-T MUX of 32 Mbps.

Do not forget to press the "Apply" button after the configuration is done.

- Type: Type of output signal (DVB-T or ISDB-T).\*
- Frequency (kHz): Here you can select the frequency you want to transmit on.
- Bandwidth: Choose the desired bandwidth.
- Constellation: Choose the type of constellation you want to use. (64QAM, 16QAM, QPSK)
- Code Rate: The following code rates can be used 7/8, 5/6, 3/4, 2/3 or 1/2. A higher code rate means more services can be selected without having an overflow.
- Guard Interval: The following code rates can be used 1/32, 1/16, 1/8 or 1/4.
- Mode: 2k, 4k or 8k.
- Level (dBm): Enter a value between -52 and -7 dBm.
- State: Turns the output on or off.
- Bitrate: Total bitrate that is being output at the TV OUT connector. Turns red if you have an overflow.

**MUX 1**

Type

Frequency (kHz)

Bandwidth

Constellation

Code Rate

Guard Interval

Mode

Level (dBm)

State

Select the PIDs that should be

- Overflow: Turns red if too many services are selected. Please uncheck some services or streams and click apply until the symbol turns grey, and the Bitrate turns green.

**General**

Bitrate  13 / 31 Mbps

Overflow

PID Filter 21 PIDs can still be disabled to reduce the output bitrate

**\* For ISB-T configuration, please see Appendix A (p. 34 of this manual)**



- PID Filter: Shows the amount of PIDs you can still filter out or pass. The Universe can disable up to 27 PIDs and pass up to 31 pids depending on the mode.

LCN can be enabled (default it is off) in the following screen.

**Transport stream settings**

**MUX 1**

User defined network (LCN) \*\*

\*\* When disabled, the original network will be used

Network Name

Version

Network\_ID (NID)

Country  ▾

Original\_Network\_ID (ONID)

Private\_Data\_Specifier\_ID









When "User defined network (LCN)" is disabled, the Universe will use all settings from the original incoming network.













When "User defined network (LCN)" is enabled, the Universe will create a new network on the output, where the LCN is used to logically number your services.

- Network Name : Name of the network on the output.
- Version : Version of your new network on the output (default set to 0).
- Network\_ID (NID) : NID of your new network on the output (default set to 65281).
- Country : Select your country. This will determine the Original\_Network\_ID (ONID) and Private\_Data\_Specifier\_ID automatically. This is required for optimal performance of the LCN and EPG values (TV must be set to the same country).

Do not forget to press the "Apply" button after the configuration is done.

In the next screenshot, you can finalize which channels to put on your RF network.

- SID: Service ID.
- Type:
  -  : HD-TV
  -  : SD-TV
  -  : Radio
  -  : Data
- Lock:
  -  : Descrambled service
  -  : Problematic service (still scrambled after running through the CAM)
  -  : FTA service that runs through the CAM module
  -  : Scrambled service not running through the CAM module
  - No lock symbol: FTA service

MUX 1						
SID	Type	Name	LCN**	HD LCN**	Enabled	Details
4112		EEN	12	0	<input checked="" type="checkbox"/>	▼
4128		Canvas	11	0	<input checked="" type="checkbox"/>	▼
4144		Ketnet	10	0	<input checked="" type="checkbox"/>	▼
4160		Radio 1	9	0	<input checked="" type="checkbox"/>	▼
4176		Radio 2	8	0	<input checked="" type="checkbox"/>	▼
4192		Klara	7	0	<input checked="" type="checkbox"/>	▼
4208		Studio Brussel	6	0	<input checked="" type="checkbox"/>	▼
4224		MNM	5	0	<input checked="" type="checkbox"/>	▼
4240		Klara Continuo	4	0	<input checked="" type="checkbox"/>	▼
4256		Sporza	3	0	<input checked="" type="checkbox"/>	▼
4288		VRT NWS	2	0	<input checked="" type="checkbox"/>	▼
4304		MNM Hits	1	0	<input checked="" type="checkbox"/>	▼

Apply

- Name: Name of the service.
- LCN : Defines the logical sequence of your services on the TV. Note : only available when User defined network (LCN) is enabled.
- HD LCN : This will overrule the LCN value in case the TV or STB is able to receive HD channels. Older (non HD) TVs will then be able to fall back on the SD channel using the LCN numbers. Note : only available when User defined network (LCN) is enabled.

In the above example, HD TVs will follow the sequence of the HD LCN, while SD TVs will follow the sequence of the LCN.








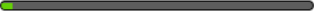


- Enabled: Add the service to the RF output. If you disable a video service only the video stream will be disabled, see remark below.
- Details: Show advanced settings about the service.
- Apply: Save the current service list.




➔ **Remark:** If you disable a SID only the main PID and SID will be disabled. All smaller underlying PIDs (data, audio services) will remain active. The audio will keep running until you rescan your TV. For disabling specific underlying PIDs please go to "Details".

➔ **Remark:** The order of the channels will be determined by your receiver. It is advised to set the country to "Others" when scanning the receiver for channels. You can always use the

channel numbering function of your receiver if you want to change the order of the channels.

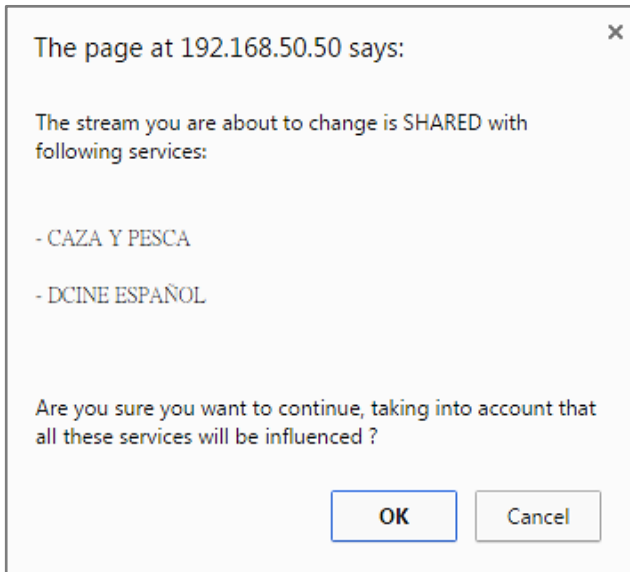
Click on details to enter the advanced settings for that service. Here you can enable or disable the underlying streams. Do not forget to press the "Apply" button.

SID	Type	Name	LCN**	HD LCN**	Enabled	Details
4112		EEN	<input type="text" value="12"/>	<input type="text" value="0"/>	<input checked="" type="checkbox"/>	
PID	Type	Bitrate		Enabled		
4113			2.837 Mbps	<input checked="" type="checkbox"/>		
4114			0.202 Mbps	<input checked="" type="checkbox"/>		
4116			0.200 Mbps	<input checked="" type="checkbox"/>		
4115			0.077 Mbps	<input checked="" type="checkbox"/>		

- PID: Package identifier.
- Type:  : Video  
 : Audio  
 : Data
- Bitrate: Bitrate of the stream.
- Enabled: Turns the selected stream on or off.

➔ **Remark:** A lot of transponders use shared PIDs. That means that 2 or more services make use of the same stream. In that case, when disabling that shared PID, the Universe will warn you about all the services that will be influenced by disabling that shared stream.

Click "OK" to continue or click on "Cancel" if you don't want those services to be affected.



#### Disabling SIDs vs disabling PIDs.

SID	Type	Name	LCN**	HD LCN**	Enabled	Details
4112		EEN	<input type="text" value="12"/>	<input type="text" value="0"/>	<input checked="" type="checkbox"/>	
	<i>PID</i>	<i>Type</i>	<i>Bitrate</i>		<i>Enabled</i>	
4113					<input type="checkbox"/>	
4114			0 Mbps		<input type="checkbox"/>	
4116			0 Mbps		<input type="checkbox"/>	
4115			0 Mbps		<input type="checkbox"/>	

If you disable all PIDs but let the covering SID enabled your receiver will still find the service but there will be no image or sound. This can be used if you temporary want to disable a service but do not want to rescan your receiver.

If you enable all PIDs and disable the covering SID, the PIDs will remain active and consume bandwidth but your receiver won't find it when you do a rescan. So if you want to save bandwidth you better disable the underlying PIDs starting with the one that has the biggest bitrate as the amount of PIDs that can be filtered is limited.

## 4. TECHNICAL SPECIFICATIONS

8600 – Universe		
INPUT		
Number of inputs	-	1 with passive loop-through (-2dB)
Tuner	-	1
Frequency Range	MHz	42 – 2150
Input level	dBm	-65 to -20
Standard	-	DVB-S/S2 DVB-T/T2 DVB-C
DC remote power for LNB or LNA	V - mA	0/13/18/22kHz DiSEqC, EN50494, EN50607 350
RF OUTPUT		
Number of outputs	-	1 RF with passive loop-through (-2 dB)
Multiplex	-	1
Frequency range	MHz	174-862
Output level	dBm	-52 to -7 (adjustable)
Standard	-	DVB-T ISDB-T
Modulation error rate (MER)	dB	40
ETHERNET OUTPUT		
Number of outputs	-	1Gb Ethernet
Standard	-	IEEE 203ab 10/100/1000 Base-T
Protocol	-	Multicast IP/UDP
Transport stream	-	SPTS / MPTS *

GENERAL		
CI slot	-	1
Input voltage	VDC	12-20
Power consumption	W	7 (without CAM and without remote power)
DC jack	mm	Ø 2.1
Powering remote units	-	Yes, 1 unit can power other units
Operating temperature	°C	0-50
Dimensions	mm	222x142x50
Weight	kg	1.1
Accessories	-	15V power adapter, 1 Ethernet cable

\* Full MPTS from DVB input transponder

## 5. CONDITIONS OF WARRANTY

Unitron N.V. warrants the product as being free from defects in material and workmanship for a period of 24 months starting from the date of production indicated on it. See note below.

If during this period of warranty the product proves defective, under normal use, due to defective materials or workmanship, Unitron N.V, at its sole option, will repair or replace the product. Return the product to your local dealer for reparation.

### **THE WARRANTY IS APPLIED ONLY FOR DEFECTS IN MATERIAL AND WORKMANSHIP AND DOES NOT COVER DAMAGE RESULTING FROM:**

- Misuse or use of the product out of its specifications,
- Installation or use in a manner inconsistent with the technical or safety standards in force in the country where the product is used,
- Use of non-suitable accessories (power supply, adapters...),
- Installation in a defect system,
- External cause beyond the control of Unitron N.V. such as drop, accidents, lightning, water, fire, improper ventilation...

### **THE WARRANTY IS NOT APPLIED IF**

- Production date or serial number on the product is illegible, altered, deleted or removed.
- The product has been opened or repaired by a non-authorized person.

### **NOTE**

Date of production is YYWW format, example 1527 = year 2015 – week 27.  
For the serial number barcodes, the date corresponds to the 4 first numbers

## 6. APPENDIX

### 6.1. VHF Frequency table

TV Band	Channel	Center Frequency (KHz)	Frequency (KHz)
I	2	50500	47000 - 54000
	3	57500	54000 - 61000
	4	64500	61000 - 68000
III	5	177500	174000 - 181000
	6	184500	181000 - 188000
	7	191500	188000 - 195000
	8	198500	195000 - 202000
	9	205500	202000 - 209000
	10	212500	209000 - 216000
	11	219500	216000 - 223000
	12	562000	223000 - 230000



## 6.2. UHF Frequency table

TV Band	Channel	Center Frequency (KHz)	Frequency (KHz)	
IV	21	474000	470000 – 478000	
	22	482000	478000 – 486000	
	23	490000	486000 – 494000	
	24	498000	494000 – 502000	
	25	506000	502000 – 510000	
	26	514000	510000 – 518000	
	27	522000	518000 – 526000	
	28	530000	526000 – 534000	
	29	538000	534000 – 542000	
	30	546000	542000 – 550000	
	31	554000	550000 – 558000	
	32	562000	558000 – 566000	
	33	570000	566000 – 574000	
	34	578000	574000 – 582000	
	35	586000	582000 – 590000	
	36	594000	590000 – 598000	
	37	602000	598000 – 606000	
	38	510000	606000 – 614000	
	V	39	618000	614000 – 622000
		40	626000	622000 – 630000
		41	634000	630000 – 638000
		42	642000	638000 – 646000
		43	650000	646000 – 654000
		44	658000	654000 – 662000
		45	666000	662000 – 670000
		46	674000	670000 – 678000
		47	682000	678000 – 686000
		48	690000	686000 – 694000
		49	698000	694000 – 702000
		50	706000	702000 – 710000
		51	714000	710000 – 718000
		52	722000	718000 – 726000
		53	730000	726000 – 734000
		54	738000	734000 – 742000
		55	746000	742000 – 750000
		56	754000	750000 – 758000
		57	762000	758000 – 766000
		58	770000	766000 – 774000
59		778000	774000 – 782000	
60		786000	782000 – 790000	

## 6.3. Power Conversion Table

$\mu\text{V } 75\Omega$	$\text{dB}\mu\text{V}$	$\text{dBm}$	$\text{mV } 75\Omega$	$\text{dB}\mu\text{V}$	$\text{dBm}$	$\mu\text{V } 75\Omega$	$\text{dB}\mu\text{V}$	$\text{dBm}$
1	0	-109	1	60	-49	1	120	+11
1.5	3.5	-105.5	1.5	63.5	-45.5	1.5	123.5	+14.5
2	6	-103	2	66	-43	2	126	+17
2.5	8.0	-101	2.5	68	-41	2.5	128	+19
3	9.5	-99.5	3	69.5	-39.5	3	129.5	+20.5
3.5	11	-98	3.5	71	-38	3.5	131	+22
4	12	-97	4	72	-37	4	132	+23
4.5	13	-96	4.5	73	-36	4.5	133	+24
5	14	-95	5	74	-35	5	134	+25
6	15.5	-93.5	6	75.5	-33.5	6	135.5	+26.5
7	17	-92	7	77	-32	7	137	+28
8	18	-91	8	78	-31	8	138	+29
9	19	-90	9	79	-30	9	139	+30
10	20	-89	10	80	-29	10	140	+31
15	23.5	-85.5	15	83.5	-25.5			
20	26	-83	20	86	-23			
25	28	-81	25	88	-21			
30	29.5	-79.5	30	89.5	-19.5			
35	31	-78	35	91	-18			
40	32	-77	40	92	-17			
45	33	-76	45	93	-16			
50	34	-75	50	94	-15			
60	35.5	-73.5	60	95.5	-13.5			
70	37	-72	70	97	-12			
80	38	-71	80	98	-11			
90	39	-70	90	99	-10			
100	40	-69	100	100	-9			
150	43.5	-66.5	150	103.5	-5.5			
200	46	-63	200	106	-3			
250	48	-61	250	108	-1			
300	49.5	-59.5	300	109.5	+0.5			
350	51	-58	350	111	+2			
400	52	-57	400	112	+3			
450	53	-56	450	113	+4			
500	54	-55	500	114	+5			
600	55.5	-53.5	600	115.5	+6.5			
700	57	-52	700	117	+8			
800	58	-51	800	118	+9			
900	59	-50	900	119	+10			
			1000	120	+11			

## 6.4. Configuring the Universe for ISDB-T

To set the xx.yy channel numbering, output should be set to ISDB-T and service mode to "Select the PIDs that should be passed (ideal mode for a small number of services)".

### Modulation settings

MUX 1

Type ISDB-T ▼

Frequency (kHz)

Bandwidth 6 MHz ▼

Constellation 64QAM ▼

Code Rate 7/8 ▼

Guard Interval 1/16 ▼

Mode 2k ▼

Level (dBm)

State ON ▼

Select the PIDs that should be  
passed (ideal for small number of services) ▼

User define network (LCN) should be active => xx value can be set by the ISDB channel prefix value (same as previous test release).

### Transport stream settings

MUX 1

User defined network (LCN) \*\*

\*\* When disabled, the original network will be used

Network Name

Version

ISDB channel prefix

Network\_ID (NID)

Country User Defined ▼

Original\_Network\_ID (ONID)

Private\_Data\_Specifier\_ID

Now the yy number can be set by filling the LCN field:

#### Service settings

MUX 1						
SID	Type	Name	LCN**	HD LCN**	Enabled	Details
28800		RTL Austria	10	0	<input type="checkbox"/>	∨
28805		VOX Austria	9	0	<input type="checkbox"/>	∨
28810		RTL2 Austria	8	0	<input type="checkbox"/>	∨
28815		SUPER RTL A	7	0	<input type="checkbox"/>	∨
28820		VOX CH	3	0	<input checked="" type="checkbox"/>	∨
28825		RTL CH	2	0	<input checked="" type="checkbox"/>	∨
31200		Eurosport 1 Deutschland	6	0	<input type="checkbox"/>	∨
31210		HSE24 EXTRA	5	0	<input type="checkbox"/>	∨
31220		EURONEWS FRENCH SD	4	0	<input type="checkbox"/>	∨
31230		EURONEWS GERMAN SD	1	0	<input checked="" type="checkbox"/>	∨

Apply

With the config above, the different ISDB-T receivers/ TV sets should find the services as following:

- 1.01 => EURONEWS GERMAN HD
- 1.02 => RTL CH
- 1.03 => VOX CH









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