

# Product Specification

< ***C61-500*** >

V 1.4

**HUMAX Co. Ltd,**

**Americas Marketing Team**

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# 1. Overview

DIRECTV C61-500 is HD Satellite Receiver GENIE Mini client box.

## 1.1. Product Summary

|   |   |                  |             |
|---|---|------------------|-------------|
| Product Name                                | C61-500   | Product Category | STB, Client |
| Product Code                                | 91-00814  | EAN code         |             |
| Target Market                               | US  |                  |             |
| Customer                                    | DirecTV / AT&T  |                  |             |
| Business type                               | <input checked="" type="checkbox"/> Finished Goods <input type="checkbox"/> SKD <input type="checkbox"/> CKD  |                  |             |
| Product Type                                | <input type="checkbox"/> Zapper <input type="checkbox"/> PVR <input checked="" type="checkbox"/> IP STB   |                  |             |
| HD / SD                                     | <input checked="" type="checkbox"/> HD <input type="checkbox"/> SD  |                  |             |
| Front-end Type<br>(복수 선택 가능)                | <input type="checkbox"/> Satellite <input type="checkbox"/> Cable <input type="checkbox"/> Terrestrial <input checked="" type="checkbox"/> IP   |                  |             |
| Middle ware                                 | <input type="checkbox"/> HUMAX-OCTO <input type="checkbox"/> HUMAX-NEO<br><input type="checkbox"/> MHEG <input type="checkbox"/> MHP <input type="checkbox"/> NDS <input type="checkbox"/> OpenTV <input checked="" type="checkbox"/> (JetHead MW)  |                  |             |
| Embedded CAS                                | <input type="checkbox"/> NDS <input type="checkbox"/> Irdeto <input type="checkbox"/> Viaccess <input type="checkbox"/> Nagra<br><input type="checkbox"/> CONAX <input type="checkbox"/> CryptoWorks <input type="checkbox"/> (    N/A    )   |                  |             |
| DRM   | <input type="checkbox"/> MS-DRM <input type="checkbox"/> Verimatrix <input type="checkbox"/> Cloakware <input type="checkbox"/> (    )  |                  |             |
| Digital Broadcasting Standard<br>(복수 선택 가능) | <input type="checkbox"/> DVB-S <input type="checkbox"/> DVB-S2 <input type="checkbox"/> DVB-T <input type="checkbox"/> DVB-T2 <input type="checkbox"/> DVB-C <input type="checkbox"/> DVB-C2<br><input type="checkbox"/> ARIB <input type="checkbox"/> ATSC <input type="checkbox"/> (ISDB-T) |                  |             |

|                         |   |
|-------------------------|---|
| <b>MPEG standard</b>    | <input checked="" type="checkbox"/> MPEG2 <input checked="" type="checkbox"/> MPEG4   |
| <b>Plant for PCBA</b>   | <input type="checkbox"/> KOREA <input type="checkbox"/> Hungary <input type="checkbox"/> Poland <input checked="" type="checkbox"/> China <input type="checkbox"/> (Brazil) |
| <b>Plant for FG</b>     | <input type="checkbox"/> KOREA <input type="checkbox"/> Hungary <input type="checkbox"/> Poland <input checked="" type="checkbox"/> China <input type="checkbox"/> (Brazil) |
| <b>Special function</b> | <b>MoCA 2.0 Client</b>  |

## 2. H/W specification

### 2.1. General Specification

| Items   | Description   | Remark           |
|---|---|------------------|
| <b>System</b>                                 |   |                  |
| CPU   | BCM73649  |                  |
| NOR Flash                                     | MX25L6456EXCI-10G   | 8MB SNOR         |
| NAND Flash                                    | JS27HU1G08SCDA-25   | 128MB NAND       |
| DRAM  | H5TQ4G63EFR-TEC   | DDR3-2133, 512MB |
| <b>Front End</b>                              |   |                  |
| <b>MoCA</b>                                   |   |                  |
| Input frequency range                         | 400Mhz ~ 700Mhz   | MoCA2.0          |
| Input impedance                               | 75 ohm  |                  |
| TX signal level                               | Between -1dBm and +7dBm   |                  |
| RX sensitivity                                | Min. PHY Rate = 95.62 Mbps in conditions of RX power level -63 dBm  |                  |
| Modulation                                    | OFDM  |                  |
| <b>Video/Audio Processing</b>                 |   |                  |
| Video Decoding                                | MPEG-2 part 2 (ISO/IEC 13818-2) Main Profile @ Main Level<br>MPEG-4, part 10 (AVC) Main and High profile Level 4.0        |                  |
| Audio Decoding                                | MPEG-1 Part 3 (Layer II, AC-3)<br>MPEG-4 Part 3 (HE-AAC), and ATSC A/52A [3, 5, and 12] (Dolby Digital)<br>AAC+ (AAC-SBR) |                  |
| Output Resolution                             | 1920x1080p(30/24), 1920x1080i, 1280x720p, 720x480p, 720x480i  |                  |
| Audio Mode                                    | Single/Dual Mono/Stereo/Joint Stereo  |                  |
| <b>Conditional Access Interface &amp; DRM</b> |   |                  |
| CAS   | N/A   |                  |
| DRM   | N/A   |                  |
| CI+   | N/A   |                  |
| HW Security                                   | N/A   | No CAS           |
| <b>I/O Specification</b>                      |   |                  |
| Mini-DIN                                      | Mini-DIN Output Connector (10-pin mini-DIN connector)   |                  |
| HDMI Out                                      | A type connector(x1)  |                  |
| S/PDIF Out                                    | S/PDIF Output Connector   |                  |
| USB   | USB 2.0 Port (Type "A" connector)   |                  |

| Items                              | Description  | Remark     |
|------------------------------------|--|------------|
| <b>Power Supply</b>                |  |            |
| Power Type                         | EPS10R3-16   | EPS10R3-16 |
| Power Consumption (Operation mode) | 5.26W  |            |
| Power Consumption (Standby mode)   | 4.15W  |            |
| Input Voltage                      | 120V +/- 15%, 60Hz   |            |
| Power Indicator                    | Yes(Green LED)   |            |
| Power Switch                       | N/A  |            |
| Protection                         | Separate internal fuse & lightning protection              |            |
| Max Load for USB1                  | 500mA  |            |
| <b>Physical Specification</b>      |  |            |
| Size (W x H x D)                   | 150 x 93 x 26mm(W x D x H)                                 |            |
| Weight                             | 251.5g   |            |
| <b>Front Panel</b>                 |  |            |
| LED display                        | 1x Power indicator(Blue) / 1x Network status(Yellow/Green) |            |
| Control Buttons                    | 1x Power key/ 1 x RBR key(side)                            |            |
| RCU Sensor                         | 1x IR IN/1 x RF4CE   |            |
| <b>Rear Panel</b>                  |  |            |
| SWiM IN                            | F type connector(x1)                                       |            |
| Mini-DIN                           | 10-pin mini-DIN connector(dedicated to DirecTV)(x1)        |            |
| HDMI Out                           | A type connector(x1)                                       |            |
| S/PDIF Out                         | Coaxial connector(x1)                                      |            |
| USB                                | A type 2.0 connector(x1)                                   |            |
| Power                              | DC Jack connector(x1) with LED                             |            |

## 2.2. Regulation & Certification

| Regulation         | Remark  |
|--------------------|---|
| US                 | EMI : FCC / Class B Digital Device<br>Safety : UL |
| License/Royalty    | Remark  |
| Dolby Digital      | Yes   |
| Dolby Digital Plus | No  |
| Macrovision (Rovi) | No  |
| CGMS-A             | No  |
| HDMI/ HDCP         | Yes   |
| Certification      | Remark  |
| Energy Star        | EPA for Certification                             |
| MoCA               | NTS Mid-MoCA                                      |
| RF4CE              | Zigbee  |

### 3. S/W specification

The Client interoperates with the DIRECTV Home Media Servers such as HR34 and HR44 which are, in the same way, an RVU Protocol Specification compliant server with extensions and refinements specific to DIRECTV.

The client extensions and refinements are designed to ensure that DIRECTV users experience familiar and intuitive operation of the client within the Home Media Server environment. The Clients display live and recorded TV, interactive applications, DIRECTV Cinema and Broadband applications content on a local TV. All tuning, recording, and most user interface screens displayed on the client's local TV are generated on the Home Media Server using the RVU Remote User Interface (RUI) sub-protocol.

User interface screens generated and displayed locally by the client include capabilities provided locally by most consumer electronic devices such as, setup for closed captioning, video formats, remote control, graphics preferences and client specific setup screens where applicable. User interface screens and OSDs generated locally by the client use the RVU Local User Interface (LUI) sub-protocol.

More specific requirements are in

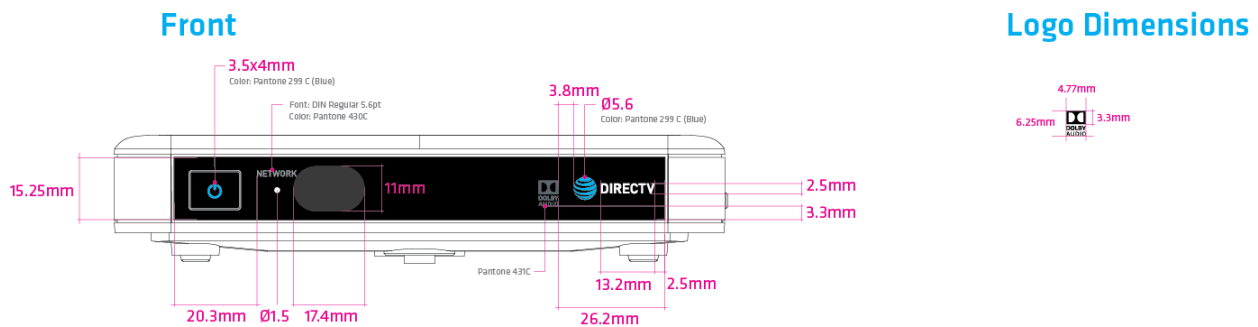
[http://depa.humaxdigital.com/pjt\\_directtv/DIRECTV%20Spec/SW/RVU\\_Client/SPS-7002\\_DIRECTV\\_RVU\\_Client\\_Software\\_Requirements/SPS-7002\\_DIRECTV\\_RVU\\_Client\\_Software\\_Requirements\\_v1.8.2.doc](http://depa.humaxdigital.com/pjt_directtv/DIRECTV%20Spec/SW/RVU_Client/SPS-7002_DIRECTV_RVU_Client_Software_Requirements/SPS-7002_DIRECTV_RVU_Client_Software_Requirements_v1.8.2.doc)

## 4. Industrial Design and Mechanical

### 4.1. Design Overview

#### 4.1.1. Front and Rear View (Example)

[Front Panel Layout]



[Rear Panel Layout]



[Bottom Layout]

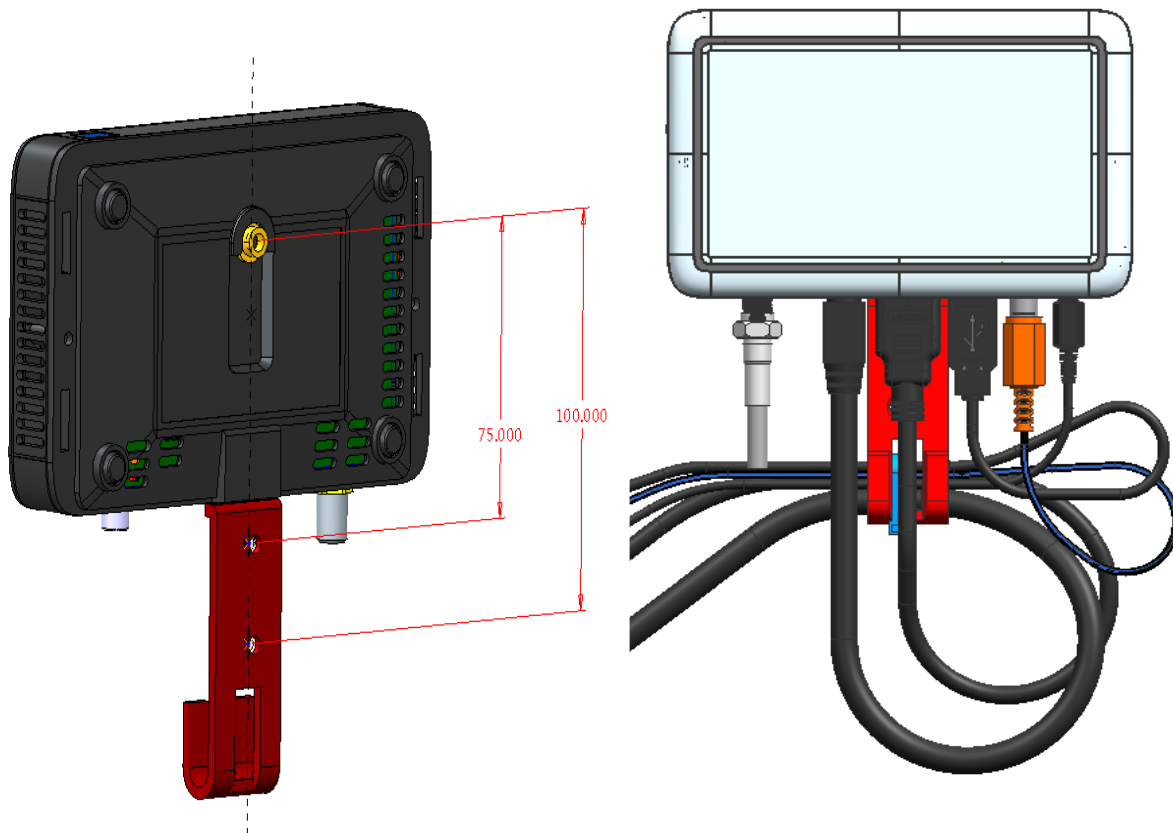


[Top/Side Layout]



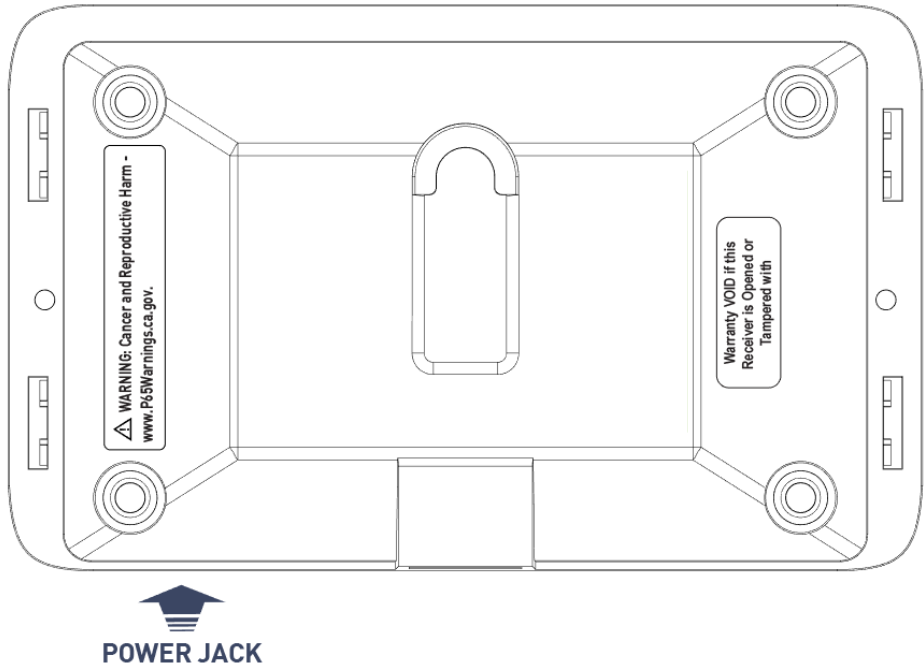


[Wall mount view]



## 4.2. Industrial Design specification

| Items          | Specification  |                          |
|----------------|--|--------------------------|
| Product size   | W150 x H26 x D93 (mm)                                  |                          |
| Color          | Matte Black  |                          |
| Door           | N/A  |                          |
| Key            | 1 Power Key/ 1 RBR Key(Side)                           |                          |
| CI slot        | N/A  |                          |
| Smartcard slot | N/A  |                          |
| Material       | Front  | Plastic ( O ), Metal ( ) |
|                | Top  | Plastic ( O ), Metal ( ) |
|                | Bottom   | Plastic ( O ), Metal ( ) |
| LED            | 1x Power status(Blue)/ 1x Network status(Yellow/Green) |                          |

|       |                     |   |
|-------|---------------------|---|
| 7-SEG | N/A                 |   |
| LCD   | N/A                 |   |
| VFD   | N/A                 |   |
| USB   | 1x A type Connector |   |
| Logo  | Front               | Dolby Audio /Energy Star / AT&T / DIRECTV   |
|       | Rear                | HDMI/USB  |
|       | TOP                 | N/A   |
| Label | Front               |  |
|       | Rear                |   |
|       | TOP                 |   |
|       | Bottom              |   |
|       |                     |   |

#### RF Information

- Modulation technique: DSSS\_O-QPSK
- Antenna specification: PCB Antenna
- Antenna gain: 2.9dBi(ANT 1), 2.6dBi(ANT 2)
- Frequency range: 2 425MHz~2 475MHz

## 6. FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:



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

Federal Communications Commission (FCC): This equipment complies with Part 15 of the FCC Rules. This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of the FCC Rules.

### Do Not Disassemble This Equipment

It does not contain any user-serviceable components. We recommend the installation of an AC surge arrester in the AC outlet to which this equipment is connected. Telephone companies report that electrical surges, typically lightning transients, are very destructive to customer terminal equipment connected to AC power sources.

### FCC RF Radiation Exposure Statement

MPE/SAR/RF Exposure Information. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment was verified for RF exposure and found to comply with Council Recommendation 1999/519/EC and FCC OET-65 RF exposure requirements.

### CAUTION—Additional Safety Instructions

WARNING: While this equipment is in operation, a separation distance of at least 20 centimeters (equal to 8 inches) must be maintained between the antenna inside the equipment and the bodies of all persons exposed to the antenna in order to meet the FCC RF exposure guidelines. Making changes to the antenna or the equipment is not permitted. Doing so may result in the equipment exceeding the FCC RF exposure guidelines. This equipment must not be co-located or operated in conjunction with any other antenna or radio transmitter.

### FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

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