# Table of Content

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE OF CONTENT</td>
<td>2</td>
</tr>
<tr>
<td>INTRODUCTION:</td>
<td>3</td>
</tr>
<tr>
<td>FEATURES</td>
<td>3</td>
</tr>
<tr>
<td>SPECIFICATIONS   (DVB-T/T2/C UPON REQUEST)</td>
<td>4</td>
</tr>
<tr>
<td>SAFETY AND OTHER RECOMMENDATIONS:</td>
<td>5</td>
</tr>
<tr>
<td>IMPORTANT NOTES!</td>
<td>5</td>
</tr>
<tr>
<td>QUICK-START INSTALLATION:</td>
<td>6</td>
</tr>
<tr>
<td>NETWORK SETUP:</td>
<td>14</td>
</tr>
<tr>
<td>CHANGING USER-ACCOUNT:</td>
<td>15</td>
</tr>
<tr>
<td>TUNER-SETUP:</td>
<td>16</td>
</tr>
<tr>
<td>ASI-INPUT(S):</td>
<td>19</td>
</tr>
<tr>
<td>SPTS OUTPUT SETTINGS: (ALSO SEE THE NOTE ABOVE)</td>
<td>20</td>
</tr>
<tr>
<td>STREAM OUTPUT SETTINGS:</td>
<td>22</td>
</tr>
<tr>
<td>ADDON: BISS DECRYPTION:</td>
<td>23</td>
</tr>
<tr>
<td>CHECK THE STREAMS:</td>
<td>24</td>
</tr>
<tr>
<td>SOFTWARE UPDATES:</td>
<td>27</td>
</tr>
<tr>
<td>ANNEX MPEG</td>
<td>30</td>
</tr>
<tr>
<td>MPEG PSI/SI Information’s:</td>
<td>30</td>
</tr>
<tr>
<td>RECOMMENDATIONS:</td>
<td>31</td>
</tr>
<tr>
<td>INSTALLATION GUIDE FOR F-CONNECTORS:</td>
<td>36</td>
</tr>
<tr>
<td>APPENDIX A</td>
<td>37</td>
</tr>
<tr>
<td>INSTALLATION AND SAFETY INSTRUCTIONS / MONTAGE UND SICHERHEITSHINWEISE</td>
<td>38</td>
</tr>
<tr>
<td>Umrechnungstabelle dBµV &lt;-&gt; dBm / Conversions of Power @ 75Ω</td>
<td>40</td>
</tr>
<tr>
<td>CONTACT:</td>
<td>43</td>
</tr>
<tr>
<td>Document History:</td>
<td>43</td>
</tr>
</tbody>
</table>
**Introduction:**

The BLANKOM IGS-900 is a high performance and cost-effective SPTS / MPTS IP streamer. Equipped with 16 DVB-S/S2 FTA (Free to Air unencrypted) tuner inputs, with BISS de-scrambling capabilities, up to 512 SPST Streamchannels through Gigabit Ethernet ports. Depending on the installed firmware the device can operate in SPTS (IPTV) Mode or 16x pass through MPTS-Mode (DVB over IP) by selecting it (device need to reboot if changing).

To meet customers’ various requirements, this device is also equipped with 2 ASI input ports which selected services can be streamed to the GbE output.

The BLANKOM IGS-900 is also characterized with an high integration level, high performance and very cost effective. This streamer is very adaptable to new generations of IPTV headend systems i.e. in hospitality environments serving FreeToAir (FTA) content and BISS encrypted Services.

**Features**

- 16 modern Tuner inputs DVB-S/S2/S2x (DVB-C, DVB-T/T2 optional)
- Supporting DiSEqC commands for up to 8 Satellite positions
- 2 ASI inputs
- IP (512 SPTS or 16 MPTS) over UDP, RTP / RTSP output
- BISS Service de-scrambling
- 2 Gigabit Ethernet (GE) mirrored output, up to 850 Mbps (SPTS)
- 2 independent GE output port, GE1 + GE2 (MPTS), SPTS can copy the Streams to different addresses
- Accurate PCR adjusting (SPTS)
- PID filtering and re-mapping (SPTS)
- PSI/SI rebuilding and editing (MPTS)
- “Null PKT Filter” function (MPTS)
- Websserver for inbuilt NetworkManagementSystem (NMS)
- Updates via WEB-IF

Depending on the region to be delivered, the power cords can be different like EURO or UK versions.
Specifications (DVB-T/T2/C upon request)

### Input

<table>
<thead>
<tr>
<th>Optional 1: 16 DVB-S/S2x tuners input +2 ASI input---SPTS output</th>
<th>950-2150MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional 2: 14 DVB-S/S2x tuners input +2 ASI input --- MPTS output</td>
<td></td>
</tr>
<tr>
<td>Optional 3: 16 DVB-S/S2x tuners input --- MPTS output</td>
<td></td>
</tr>
</tbody>
</table>

### Tuner Section (DVB-S/S2/S2x)

<table>
<thead>
<tr>
<th>Input Frequency</th>
<th>QPSK/8PSK /16APSK :0.5...45 MSps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Symbol rate</td>
<td>8APSK: 0.5...40MSps</td>
</tr>
<tr>
<td>FEC/Code rate</td>
<td>32APSK: 0.5...34MSps</td>
</tr>
<tr>
<td>Constellation</td>
<td>QPSK, 8PSK, 8APS, 16APS, 32 APSK</td>
</tr>
<tr>
<td>Dimension (W×L×H)</td>
<td>482mm×410mm×44mm</td>
</tr>
<tr>
<td>Approx weight</td>
<td>3.6kg</td>
</tr>
<tr>
<td>Environment</td>
<td>0...45℃ (work); -20...80℃ (Storage)</td>
</tr>
<tr>
<td>Power requirements</td>
<td>100...240VAC, 50/60Hz</td>
</tr>
<tr>
<td>Power consumption</td>
<td>20W</td>
</tr>
</tbody>
</table>

### Output

<table>
<thead>
<tr>
<th>Output Frequency</th>
<th>512 SPTS IP mirrored output over UDP and RTP/RTSP protocol through GE1 and GE2 port, Unicast and Multicast</th>
</tr>
</thead>
<tbody>
<tr>
<td>BISS de-scrambling</td>
<td>16 MPTS IP output (for Tuner passthrough) over UDP and RTP/RTSP protocol through GE1 and GE2 port, Unicast and Multicast</td>
</tr>
</tbody>
</table>

### Miscellaneous

| Power indicator | 1 |
| Reset: Reset webmaster IP address, recover it to default IP address | 2 |
| USB port for upgrade | 3 |
| NMS port: Network management interface | 4 |
| Data port (GE1&GE2): IP out port | 5 |
| ASI input port | 6 |
Safety and other recommendations:
Assure climatic environment rules for electronic machines like this, Grounding rules as well. Installation should be done by a certified electrician.

👉Caution:
Before connecting power cord to Tuner to IP Gateway, you should set the power switch to “OFF”. Do not connect the RF-cable (F-plugs) when the unit is running.

Important Notes!
This manual is for use by qualified personnel only. Handling this device or system requires special electronic technical knowledge. To reduce the risk of electrical shock or damage to the equipment, do not perform any servicing other than the installation and operating instructions contained in this manual unless you are qualified to do so. This device operates in the given voltage and frequency range without requiring manual adjustment.
Do not open the top case w/o unplugged power source because serious injury or death may be the result! Inside are components under risk from electrostatic discharge. To avoid equipment damages do not touch these components or, observe the respective handling rules!
For continued protection against fire, the fuses may only be replaced by identical fuses with the same electrical specifications which are designed for the corresponding fuse positions.
No part of this publication may be reproduced in any form or by any means or used to make any derivative work (such as translation, transformation or adaptation) without the written permission from Blankom / IRENIS GmbH.
IRENIS GmbH reserves the right to revise this publication and make changes in its content from time to time, whereby it shall not be obligatory for IRENIS GmbH to provide notification of such revision or change.
IRENIS GmbH provides this manual without warranty of any kind, neither implied nor expressed, this includes also any warranties regarding the merchantability and fitness for a particular purpose. IRENIS GmbH may improve this manual or make changes in the products described herein at any point of time.

Installation Notes
All types of the IRENIS-BLANKOM family are 19"devices with 1 RU height designed for installation in 19” racks. In addition to the front panel screws an internal module support is required at the rack. Depending on the Frontend used and the operating adjustments, the RF-input port carries DC Voltage (13V /18V, max. 400 mA).
By connecting a mains cable, the device can become functional without any auxiliary appliances. The power supply units are designed for the wide range of 100-230V AC; a manual adjustment of the voltage is not necessary.
For some models the second power connector is feeding another independent power supply for internal redundancy. For a maximum of redundancy both power supplies should use different circuits. All the outputs are decoupled from one another. Thus, the circuit does not have any effect on the functioning of the device. Connections that are not required need not to be terminated.
**Suggestion:** CAT 6E Ethernet cable for Gigabit-Ethernet

**Note:**
IPv4 global scope sessions use multicast addresses in the range 224.2.128.0 - 224.2.255.255 with SAP Announcements being sent to 224.2.127.254 Port 9875 (note that 224.2.127.255 is used by the obsolete SAPv0 and MUST NOT be used).

IPv4 administrative scope sessions using administratively scoped IP multicast. The multicast address to be used for announcements is the highest multicast address in the relevant administrative scope zone.

For example, if the scope range is 239.16.32.0 - 239.16.33.255, then 239.16.33.255 is used for SAP Announcements.

*This Product is manufactured in PRC (China), HS-Code: 85176200*

**Quick-Start Installation:**

The user can control and set the configuration of the device with any computer by connecting to the web server-interface (WebIF) by the 100BaseT NMS Port. The user should ensure that the computer’s IP address is different from other device’s IP address; otherwise, it might cause an IP conflict. Be sure to set it in the same network range.

Default Login-Data is 192.168.0.136 (default factory address) are **admin/admin**:

**Note:** We recommend using always the newest version of the browser Firefox.

Which lets you start in the STATUS display:
Menu is different in MPTS (see above)

Please select the operating mode for SPTS (default) or MPTS in the Firmware section:

Manually reboot and maybe better to safe the config first?
Internally and external:
The file can be uploaded by LOAD CONFIGURATION.

The Safe-Restore menu is self-explaning: It internally SAVEs or RESTORE the settings.
Load an external previously safed config is almost better:

Try and error ;-( Reason: We have changed the SPTS mode to MPTS operation and that doesn’t accept the previous safed settings from the SPTS mode. So we go back to SPTS.

Just to show the difference for MPTS – outputs – only 16 IP streams can be assigned. You should decide whether a stream goes through GbE 1 or 2 so please balance the MPTS streams if more than 800 Mb/s are streamed in total.

Note: Depending on installed Firmware, the Stream output selection may be different:
Instead of IP stream there will be SPTS select. By click on the service name a popup opens:
So the IP output settings of each stream can be modified here. For RTSP-mode please note, that the receiver needs to be in the same subnet like the selected GbE Data port like here:

So the first stream can be received by rtsp://192.168.2.137:5000/1
But your receiver needs to be part of it:
Rtsp://192.168.2.137:5000/2 is the address of the 2nd stream and so on until max. = 512 streams.

Back to the selection of the mode MPTS or SPTS streams:
Power toggling performs a hard reset.

Success.
Network Setup:

We assume that the user is familiar with IP settings and already knows his own system to connect the unit to. If you use the **Output Streaming**: We recommend using 2 separate Switches! At least a 100BaseT for the Management NMS RJ45 port and a second one with Gigabit Ethernet 10/100/1000BaseT with at least Layer 2+ with IGMP V2 features. Otherwise you might flood your IP-Streaming network with unnecessary Data, which might overload connected IPTV STB's because they almost have only 100BaseT capacity (Never ones use 1GbE ports) but too many inputs into a STB can result in side effects. If you need to select a Switch, we recommend HP Procurve 2530 24G or 48G which are cost effective, easy to configure, can be trunked and supporting IGMP V2. If the switch needs routing functions, the bigger brother of this series might be the right choice.

Because to not accidently put DATA and NMS port in the same sub-network, the data – port setting does not allow this by default. Usually the DATA GbE Ports needing at least own and free IP addresses- otherwise the Switch or the receivers (i.e. IPTV STB's) cannot locate the source of the streams.

**Note:** For the GBE 1 and GBE 2 ports a security mechanism is installed to avoid setting them in the same IP-range like you have done for the NMS-port.

On GbE 1 the Gateway can be changed. GbE 2 would follow it automatically:
### Changing user-account:

Change it to your needs, but do not forget the password otherwise you would need to reset the unit with the Front-panel RESET switch (press it min. 10...15 sec) to factory default.

**Table:**

<table>
<thead>
<tr>
<th>IP Address</th>
<th>Subnet Mask</th>
<th>Gateway</th>
<th>MAC Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.1.137</td>
<td>255.255.255.0</td>
<td>192.168.1.1</td>
<td>73-18-05-7e-04-28</td>
</tr>
<tr>
<td>192.168.1.150</td>
<td>255.255.255.0</td>
<td>192.168.1.1</td>
<td>73-18-09-7e-04-25</td>
</tr>
</tbody>
</table>
Tuner-Setup:

Using a Multiswitch with more than one SAT-position and > 16 outputs: You can set every single Tuner Input individually.

Using a SAT-Splitter: Be careful, active splitter needs at least one 13V...18V DC connection to it to operate. You should avoid to switch on V/H polarisation Voltage 13/18V on every Input port. The active splitter would pass the 13V or 18V to the Multiswitch and assigning the fixed polarisation to the Multiswitch. So all selected Transponders should be either in Vertical (13V) or Horizontal (18V) position.

Passive splitters should be used with DC Passthrough and the Voltage should be passed only once as well.

We recommend to check www.lyngsat.com or www.satbeams.org for correct settings.

Example:
https://www.lyngsat.com/Astra-1KR-1L-1M-1N.html
We are using a 1-8 active splitter here and so we have to take care, that the first 8 inputs will be setup to tune the same polarisation and set the first Input to it LOW-Band = 9750 MHz LNB-IF frequency (while high-band is almost 10600 MHz using 22KHz signal):

- Only 1x 18V supplying is enough by using the active (or passive) Splitter. Be patient, the unit's WEBIF will take some time to update the Information:

You can now proceed with the other 16 Inputs.
Following 7 tuner INPUTS at the splitter do not need DC.

Example to tune to a second Satellite, here with connected Input no. 9 directly to a Multiswitch w/o using a splitter:

**LyngSat**

**Eutelsat Hot Bird 13B/13C/13E at 13.0°E**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Provider Name</th>
<th>Channel Name</th>
<th>System Encryption</th>
<th>SR-REC</th>
<th>EIRP-TID</th>
<th>GIU lock</th>
<th>PNlock</th>
<th>Source Updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>10710 V to 110</td>
<td>n-c</td>
<td>n-c</td>
<td>P</td>
<td>11700 MHz, 12437 MHz, 10600 SAT-IF, 29900 SBR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SET!**

Author: Ralf Riedel
Filename: Blankom_IGS-900-16_Tuner_to_IP_Gateway_user_manual2019-09RR.docx
Remark:
We do not recommend to use the Loop-outputs to serve the next RF Input because of it’s too much attenuation. The reception might fail because of a too weak signal input.

Now we have configured 9 of 16 Inputs:

And we can mix with the ASI... so next chapter:

### ASI-INPUT(s):

As soon as you connect the ASI IN-Ports:

Now we have configured 9 SAT + 2 ASI Inputs and like to stream selected Services to IP out:
SPTS output Settings: (Also see the note above)

CA Filter and PidRemap are ON by default.
CA-Filter: If you do not need to filter decrypted unnecessary EMM/ECM PIDs from the Input Streams, please uncheck them.
Pid Remapping isn’t almost necessary for SPTS streaming. In MPTS mode it can avoid overlapping PID-Re-Multiplex problems.
You need to parse every single Input content by selecting the Input (Tuner/ASI) and PARSE it:

See the content and more info:
Now we sent this to the output on the right side:

proceed with all Inputs to generate your favorite Streams...
Finally you’ll get an overview how many you have selected from which input left to the outputs right:

Now it's time to configure your
Stream output settings:

by selecting the output service

The RTSP-streams can be unicast received by GBE1 out or GBE2: rtsp://192.168.2.137:5000/1 ... /512 (max streams in SPTS) and GBE2: rtsp://192.168.2.150:5000/1 ... /512 while in MPTS mode
The single streams are /1 ... /16 only, but consider which output you have directed them to.

a popup will follow:

Details of the services are shown and can be partly modified as well as the streaming addresses and protocols.
The default values can be used, they are automatically assigned.

Proceed with all of them, filter unwanted PIDs, I hope we know what you are doing ...
SAVE and Go.

Now its Time to SAFE yourself before your kid is cutting the power source accidently:
Addon: BISS decryption:

You can insert different BISS keys and finally select the outputs which should be "de-bissed" before they are streamed out:
Check the streams:

**Inputs:**

<table>
<thead>
<tr>
<th>Tuner</th>
<th>Quality</th>
<th>Strength</th>
<th>Sat Freq</th>
<th>LNB Freq</th>
<th>Symbolrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 DVB-S/S2</td>
<td>35%</td>
<td>68%</td>
<td>31.973 Mbs</td>
<td>10744.000 MHz</td>
<td>0</td>
</tr>
<tr>
<td>2 DVB-S/S2</td>
<td>34%</td>
<td>72%</td>
<td>41.592 Mbs</td>
<td>10891.000 MHz</td>
<td>0</td>
</tr>
<tr>
<td>3 DVB-S/S2</td>
<td>32%</td>
<td>68%</td>
<td>41.450 Mbs</td>
<td>10891.000 MHz</td>
<td>0</td>
</tr>
<tr>
<td>4 DVB-S/S2</td>
<td>30%</td>
<td>74%</td>
<td>32.511 Mbs</td>
<td>11053.000 MHz</td>
<td>0</td>
</tr>
<tr>
<td>5 DVB-S/S2</td>
<td>30%</td>
<td>70%</td>
<td>38.426 Mbs</td>
<td>11273.000 MHz</td>
<td>0</td>
</tr>
<tr>
<td>6 DVB-S/S2</td>
<td>31%</td>
<td>70%</td>
<td>31.091 Mbs</td>
<td>11530.000 MHz</td>
<td>0</td>
</tr>
<tr>
<td>7 DVB-S/S2</td>
<td>30%</td>
<td>68%</td>
<td>31.099 Mbs</td>
<td>11530.000 MHz</td>
<td>0</td>
</tr>
<tr>
<td>8 DVB-S/S2</td>
<td>31%</td>
<td>68%</td>
<td>33.135 Mbs</td>
<td>11823.000 MHz</td>
<td>0</td>
</tr>
<tr>
<td>9 DVB-S/S2</td>
<td>30%</td>
<td>62%</td>
<td>49.291 Mbs</td>
<td>12437.000 MHz</td>
<td>0</td>
</tr>
</tbody>
</table>

**SPTS outputs:**

<table>
<thead>
<tr>
<th>Program Select</th>
<th>Program Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Program Select" /></td>
<td><img src="image2.png" alt="Program Information" /></td>
</tr>
</tbody>
</table>
Using Dektec Fantasi with streamexpert, GE2 disconnected,

1 = ONE (SD) = udp://224.2.2.2:3004

13 = ONEHD = udp://224.2.2.2:3052 and others...

Almost OK...
RTSP screenshots: first is in MPTS, 2nd a SPTS stream
Software Updates:

Irenis GmbH does not publish Software and Firmware upgrades online. If you face some problems, please send us a bug-report along with all necessary data of the device(s). Nevertheless, here is how it works for this unit:

The update files are rar-files, so first you’ll need to unzip them. Windows inbuilt zip function might not work, but you can try the freeware 7zip which works with rar-files:

1. Enter the WEB GUI –> Firmware-Menu, update, maybe a good idea to save your config locally first:

   ![Configuration Menu](image)

   + Safe to file:

   ![Backup Configuration](image)

   ![Load Configuration](image)

   Than update IGS-900_Base_System_Firmware_encr_v01.01.02.07.pkg first:
2. Power off and on.
3. Default ip is 192.168.0.136, enter WEB GUI

--->Firmware - Menu,
update IGS-900_16xTuner_IP_cpu_SPTS_v1.21_MPTS_v2.22_20180726.bin
and IGS-900_16xTuner_IP_fpga_SPTSv1.50_MPTsv2.30_20171031.fpga.

4. Power off and on again. Finished:

Don’t be confused, ‘Hardware-Version’ shiows actual FPGA –Software version.

5. Default IP is still 192.168.0.136.

Remark: If you accidently lost NMS IP address, you can RESET the device to its factory defaults by pressing the RESET-Button @ the front panel > 15 seconds.
ANNEX MPEG

MPEG PSI/SI Information's:

We assume, that the user is familiar with all abbreviations mentioned in this manual.
Recommendations:

As a Multicast capable Switch we recommend is the HP (ARUVA) 2530 24G or 48G.

(For Floor switches we have an own branded one and support IGMP as well) IGMP should be set to ON in the port configs. The latest HP Firmware might not be the best choice. Better to test IGMP functions before installation into a HOT running System and eventually do a downgrade of the Firmware. This one works:

![Unit Information](image)

General notes about Streams:

Multicast streams:

Multicast Address Ranges:
We recommend, that the addressing of your Multicast streams should be in conjunction with this listings to avoid conflicts with other network equipment or protocols.

https://www.iana.org/assignments/multicast-addresses/multicast-addresses.xhtml

One small part from this:

**IPv4 Multicast Address Space Registry**

**Last Updated**
2018-01-05

**Expert(s)**
Stig Venaas

**Note**
Host Extensions for IP Multicasting [RFC1112] specifies the extensions required of a host implementation of the Internet Protocol (IP) to support multicasting. The multicast addresses are in the range 224.0.0.0 through 239.255.255.255. Address assignments are listed below.

The range of addresses between 224.0.0.0 and 224.0.0.255, inclusive, is reserved for the use of routing protocols and other low-level topology discovery or maintenance protocols, such as gateway discovery and group membership reporting. Multicast routers should not forward any multicast datagram with destination addresses in this range, regardless of its TTL.
Registries included below

- **Local Network Control Block** (224.0.0.0 - 224.0.0.255 (224.0.0/24))
- **Internetwork Control Block** (224.0.1.0 - 224.0.1.255 (224.0.1/24))
- **AD-HOC Block I** (224.0.2.0 - 224.0.255.255)
- **RESERVED** (224.1.0.0-224.1.255.255 (224.1/16))
- **SDP/SAP Block** (224.2.0.0-224.2.255.255 (224.2/16))
- **AD-HOC Block II** (224.3.0.0-224.4.255.255 (224.3/16, 224.4/16))
- **RESERVED** (224.5.0.0-224.5.255.255 (251 /16s))
- **DIS Transient Groups** 224.252.0.0 - 224.255.255.255 (224.252/14))
- **RESERVED** (225.0.0.0-231.255.255.255 (7 /8s))
- **Source-Specific Multicast Block** (232.0.0.0-232.255.255.255 (232/8))
- **GLOP Block**
- **AD-HOC Block III** (233.252.0.0-233.255.255.255 (233.252/14))
- **Unicast-Prefix-based IPv4 Multicast Addresses**
- **Scoped Multicast Ranges**
- **Relative Addresses used with Scoped Multicast Addresses**

Multicast (as opposed to unicast) is used to send UDP packets from 1 source to multiple destination servers. This is useful for example for streaming from a satellite/DVB-T receiver to multiple receiving PCs for playback. Multicast can also be used on the output of an encoder to feed multiple streaming servers. Multicast only works with UDP and is not possible with TCP due to the 2 way nature of TCP, most commonly multicast is used with RTP and MPEG2-TS.

A multicast IP address must be chosen according to IANA information, we recommend using an address in the range **239.0.0.0 to 239.255.255.255** as this is reserved for private use. Using multicast addresses in the 224.0.0.0 range may clash with existing services and cause your stream to fail. For more details see [http://www.iana.org/assignments/multicast-addresses/multicast-addresses.xml](http://www.iana.org/assignments/multicast-addresses/multicast-addresses.xml)

Choosing a UDP port number for multicast streams is also important. Even if you use a different multicast IP for each of your streams, we strongly recommend using different UDP port numbers as well. This is because a server and all software running on the server receives ALL multicast traffic on an open port and extra processing is required to filter out the required traffic. If the each stream arrives on a different port, the server can safely ignore any traffic on ports that are not open. Port numbers MUST be chosen so that don’t clash with any existing services or ephemeral ranges. The ephemeral range for Windows Vista, 7, 2008 is 49152 to 65535, for older Windows it is 1025 to 5000 and for Linux it is 32768 to 61000. For more information on Windows see [http://support.microsoft.com/kb/929851](http://support.microsoft.com/kb/929851) Care should also be taken to avoid system ports 0 to 1024. See [http://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xml](http://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xml) Generally one of the unassigned You Ports (1024-49151) should be used, you can run the `netstat -abn` (as admin under windows) command to see which ports are currently in use.
Registered port

A registered port is a network port (a sub-address defined within the Internet Protocol, in the range 1024–49151) assigned by the Internet Assigned Numbers Authority (IANA) (or by Internet Corporation for Assigned Names and Numbers (ICANN) before March 21, 2001,[1] or by USC/ISI before 1998) for use with a certain protocol or application.

Ports with numbers 0–1023 are called system or well-known ports; ports with numbers 1024-49151 are called you or registered ports, and ports with numbers 49152-65535 are called dynamic and/or private ports. Both system and you ports are used by transport protocols (TCP, UDP, DCCP, SCTP) to indicate an application or service.

- Ports 0–1023 – system or well-known ports
- Ports 1024–49151 – you or registered ports
- Ports >49151 – dynamic / private ports


Range for Ephemeral port

The Internet Assigned Numbers Authority (IANA) suggests the range 49152 to 65535 (2^{15}+2^{14} to 2^{16}−1) for dynamic or private ports.[1]

Many Linux kernels use the port range 32768 to 61000. FreeBSD has used the IANA port range since release 4.6. Previous versions, including the Berkeley Software Distribution (BSD), use ports 1024 to 5000 as ephemeral ports.[1][3][4]

Microsoft Windows operating systems through XP use the range 1025–5000 as ephemeral ports by default.[4] Windows Vista, Windows 7, and Server 2008 use the IANA range by default.[5] Windows Server 2003 uses the range 1025–5000 by default, until Microsoft security update MS08-037 from 2008 is installed, after which it uses the IANA range by default. Windows Server 2008 with Exchange Server 2007 installed has a default port range of 1025–60000. In addition to the default range, all versions of Windows since Windows 2000 have the option of specifying a custom range anywhere within 1025–65535.[5][9]

Packet structure

<table>
<thead>
<tr>
<th>Octet</th>
<th>Bit</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Octet</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The UDP header consists of 4 fields, each of which is 2 bytes (16 bits). The use of the fields "Checksum" and
"Source port" is optional in IPv4 (pink background in table). In IPv6 only the source port is optional (see below).

Source port number
This field identifies the sender's port when meaningful and should be assumed to be the port to reply to if needed. If not used, then it should be zero. If the source host is the client, the port number is likely to be an ephemeral port number. If the source host is the server, the port number is likely to be a well-known port number.[4]

Destination port number
This field identifies the receiver's port and is required. Similar to source port number, if the client is the destination host then the port number will likely be an ephemeral port number and if the destination host is the server then the port number will likely be a well-known port number.[4]

Length
A field that specifies the length in bytes of the UDP header and UDP data. The minimum length is 8 bytes because that is the length of the header. The field size sets a theoretical limit of 65,535 bytes (8 byte header + 65,527 bytes of data) for a UDP datagram. However the actual limit for the data length, which is imposed by the underlying IPv4 protocol, is 65,507 bytes (65,535 – 8 byte UDP header – 20 byte IP header).[4]

In IPv6 jumbograms it is possible to have UDP packets of size greater than 65,535 bytes.[5] RFC 2675 specifies that the length field is set to zero if the length of the UDP header plus UDP data is greater than 65,535.

Checksum
The checksum field may be used for error-checking of the header and data. This field is optional in IPv4, and mandatory in IPv6.[6] The field carries all-zeros if unused.[7]

RTP:
a part from: https://tools.ietf.org/html/rfc3550
Chapter 11:
RTP relies on the underlying protocol(s) to provide demultiplexing of RTP data and RTCP control streams. For UDP and similar protocols,

RTP SHOULD use an even destination port number and the corresponding RTCP stream SHOULD use the next higher (odd) destination port number.

For applications that take a single port number as a parameter and derive the RTP and RTCP port pair from that number, if an odd number is supplied then the application SHOULD replace that number with the next lower (even) number to use as the base of the port pair. For applications in which the RTP and RTCP destination port numbers are specified via explicit, separate parameters (using a signaling protocol or other means), the application MAY disregard the restrictions that the port numbers be even/odd and consecutive although the use of an even/odd port pair is still encouraged. The RTP and RTCP port numbers MUST NOT be the same since RTP relies on the port numbers to demultiplex the RTP data and RTCP control streams.

In a unicast session, both participants need to identify a port pair for receiving RTP and RTCP packets. Both participants MAY use the same port pair. A participant MUST NOT assume that the source port of the incoming RTP or RTCP packet can be used as the destination port for outgoing RTP or RTCP packets. When RTP data packets are being sent in both directions, each participant's RTCP SR packets MUST be sent to the port that the other participant has specified for reception of RTCP. The RTCP SR packets combine sender information for the outgoing data plus reception report information for the incoming data. If a side is not actively sending data (see Section 6.4), an RTCP RR packet is sent instead.
any port (even, not odd > 1024)

Note: Regarding SAP (Session Announcement Protocol)
IPv4 global scope sessions use multicast addresses in the range 224.2.128.0 - 224.2.255.255 with SAP Announcements being sent to 224.2.127.254 Port 9875 (note that 224.2.127.255 is used by the obsolete SAPv0 and MUST NOT be used).
IPv4 administrative scope sessions using administratively scoped IP multicast. The multicast address to be used for SAP announcements is the highest multicast address in the relevant administrative scope zone.
For example, if the scope range is 239.16.32.0 - 239.16.33.255, then 239.16.33.255 is used for SAP Announcements.

We assume, that this professional unit is used by professional technicians knowing all relevant norms, regulations, abbreviations (i.e. DVB, ATSC …) and specifications.
Installation guide for F-connectors:

The LNC –connectors are almost marked as:

- HH = Horizontal High-Band
- HL = Horizontal Low-Band = LH
- VL = Vertical Low-Band = LV
- VH = Vertical High-Band = HV

Electronic equipment is not household waste - in accordance with directive 2002/96/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL dated 27th January 2003 on used electrical and electronic equipment, it must be disposed of properly.

At the end of its service life, take this unit for disposal to an appropriate official collection point


Bitte geben Sie dieses Gerät am Ende seiner Verwendung zur Entsorgung an den dafür vorgesehenen öffentlichen Sammelstellen ab.
Appendix A

Product Disposal

Warning! Ultimate disposal of this product should be handled according to all national laws and regulations.

製品の廃棄
この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

Warning
Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!
Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention
La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l’environnement. Renseignez-vous auprès de l’organisme compétent.

경고
이 제품은 해당 국가의 관련 범규 및 규정에 따라 폐기해야 합니다.

Waarschuwing
De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.
Installation and safety instructions / Montage und Sicherheitshinweise

- Die beschriebenen Geräte dienen ausschließlich der Installation von Satelliten-Empfangsanlagen.
- The equipment described is designed solely for the installation of satellite receiver systems.
- Jegliche anderweitige Nutzung oder die Nichtbeachtung dieses Anwendungshinweises hat den Verlust der Gewährleistung bzw. Garantie zur Folge.
- Any other use, or failure to comply with these instructions, will result in voiding of warranty cover.
- Die Geräte dürfen nur in trockenen Innenräumen montiert werden. Nicht auf oder an leichtentzündlichen Materialien montieren.
- The equipment may only be installed in dry indoor areas. Do not mount on or against highly combustible materials.
- Die Geräte sind mit einer Potenzial-Ausgleichsleitung (Cu, mindestens 4 mm²) zu versehen.
- The equipment must be provided with an earthing wire (Cu, at least 4 mm2).
- Die Sicherheitsbestimmungen der jeweils aktuellen Normen EN 60728-11 und EN 60065 sind zu beachten.
- The safety regulations set out in the current EN 60728-11 and EN 60065 standards must be complied with.
- Verbindungsstecker: HF-Stecker 75 Ohm (Serie F) nach EN 61169-24
- Connector: HF plug 75 Ohm (series F) to EN 61169-24.
- **Nicht benutzte Teilnehmerausgänge** sollten mit 75-Ohm Widerständen (z. B. EMK 03) abgeschlossen werden. (Verringerung der terrestrischen Signalwelligkeit)
- **Unused subscriber ports** should be closed off by 75 Ohm resistors (e.g. EMK 03).
- **Nicht benutzte Kaskadenausgänge** sind mit 75 Ohm Widerständen inkl. DC-Blocker abzuschließen. 75 Ohm Widerstände ohne Gleichspannungssperren können das Gerät beschädigen!
- **Unused trunk outputs** must be terminated with 75Ohm resistors including DC Blocker. Otherwise the device may be inoperable or damaged.
- Please check the installation against shortage in coax cables and connectors before switching on. The input levels should be adjusted accordingly. Power-LED's showing operational mode. If this is not illuminated, please check the power source.
- Stromführendes Gerät
- **Current-carrying unit**
- Nicht öffnen oder am Gerät manipulieren!
- Do not open or tamper with the unit!
- Bei Arbeiten an der Anlage immer die Netzstecker aus der Steckdose ziehen!
- When working on the system always unplug the mains plug from the wall socket!
- Auf ausreichenden Abstand achten! Nach allen Seiten mind. 5 cm!
- **Ensure adequate clearance! Min. 5 cm to all sides!**
- Nicht über Kopf montieren.
- Do not install overhead.
• Free circulation of air must be possible to discharge the heat emitted by the unit. Risk of overheating!
• Permissible ambient temperature -20 to +50°C
• For the device cooling, free air circulation must be possible. Overheating risk!
• Permissible ambient temperature -20 to +50°C

Important notes: / Zur Beachtung

• No liquid-filled items may be placed on top of the power supply unit.
• The power supply unit must not be exposed to dripping or splashing water.
• The mains plug must be easily accessible and operable.
• The only reliable method of disconnecting the unit from the mains is to unplug it.
• If the inner cable conductor diameter is greater than 1.2 mm or in case of burr, the device sockets may be destroyed.

Bitte installieren Sie die Anschlüsse gemäß dem Aufdruck auf den Geräten – falls vorhanden
Please install according to the sticker on the devices if shown.

Hinweis: Elektrische Installationen sollten nur durch geschultes Fachpersonal vorgenommen werden!
Note: Electrical installations should only be done by well-educated and skilled technicians!
<table>
<thead>
<tr>
<th>dBmV</th>
<th>dBµV</th>
<th>dBm 75Ω</th>
<th>mV RMS</th>
<th>mW 75Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>68</td>
<td>-40.75</td>
<td>2.51</td>
<td>8.4E-05</td>
</tr>
<tr>
<td>9</td>
<td>69</td>
<td>-39.75</td>
<td>2.82</td>
<td>1.1E-04</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
<td>-38.75</td>
<td>3.16</td>
<td>1.3E-04</td>
</tr>
<tr>
<td>11</td>
<td>71</td>
<td>-37.75</td>
<td>3.55</td>
<td>1.7E-04</td>
</tr>
<tr>
<td>12</td>
<td>72</td>
<td>-36.75</td>
<td>3.98</td>
<td>2.1E-04</td>
</tr>
<tr>
<td>13</td>
<td>73</td>
<td>-35.75</td>
<td>4.47</td>
<td>2.7E-04</td>
</tr>
<tr>
<td>14</td>
<td>74</td>
<td>-34.75</td>
<td>5.01</td>
<td>3.3E-04</td>
</tr>
<tr>
<td>15</td>
<td>75</td>
<td>-33.75</td>
<td>5.62</td>
<td>4.2E-04</td>
</tr>
<tr>
<td>16</td>
<td>76</td>
<td>-32.75</td>
<td>6.31</td>
<td>5.3E-04</td>
</tr>
<tr>
<td>17</td>
<td>77</td>
<td>-31.75</td>
<td>7.08</td>
<td>6.7E-04</td>
</tr>
<tr>
<td>18</td>
<td>78</td>
<td>-30.75</td>
<td>7.94</td>
<td>8.4E-04</td>
</tr>
<tr>
<td>19</td>
<td>79</td>
<td>-29.75</td>
<td>8.91</td>
<td>1.1E-03</td>
</tr>
<tr>
<td>20</td>
<td>80</td>
<td>-28.75</td>
<td>10.00</td>
<td>1.3E-03</td>
</tr>
<tr>
<td>21</td>
<td>81</td>
<td>-27.75</td>
<td>11.22</td>
<td>1.7E-03</td>
</tr>
<tr>
<td>22</td>
<td>82</td>
<td>-26.75</td>
<td>12.59</td>
<td>2.1E-03</td>
</tr>
<tr>
<td>23</td>
<td>83</td>
<td>-25.75</td>
<td>14.13</td>
<td>2.7E-03</td>
</tr>
<tr>
<td>24</td>
<td>84</td>
<td>-24.75</td>
<td>15.85</td>
<td>3.3E-03</td>
</tr>
<tr>
<td>25</td>
<td>85</td>
<td>-23.75</td>
<td>17.78</td>
<td>4.2E-03</td>
</tr>
<tr>
<td>26</td>
<td>86</td>
<td>-22.75</td>
<td>19.95</td>
<td>5.3E-03</td>
</tr>
<tr>
<td>27</td>
<td>87</td>
<td>-21.75</td>
<td>22.39</td>
<td>6.7E-03</td>
</tr>
<tr>
<td>28</td>
<td>88</td>
<td>-20.75</td>
<td>25.12</td>
<td>8.4E-03</td>
</tr>
<tr>
<td>29</td>
<td>89</td>
<td>-19.75</td>
<td>28.18</td>
<td>0.011</td>
</tr>
<tr>
<td>30</td>
<td>90</td>
<td>-18.75</td>
<td>31.62</td>
<td>0.013</td>
</tr>
<tr>
<td>31</td>
<td>91</td>
<td>-17.75</td>
<td>35.48</td>
<td>0.017</td>
</tr>
<tr>
<td>32</td>
<td>92</td>
<td>-16.75</td>
<td>39.81</td>
<td>0.021</td>
</tr>
<tr>
<td>33</td>
<td>93</td>
<td>-15.75</td>
<td>44.67</td>
<td>0.027</td>
</tr>
<tr>
<td>34</td>
<td>94</td>
<td>-14.75</td>
<td>50.12</td>
<td>0.033</td>
</tr>
<tr>
<td>35</td>
<td>95</td>
<td>-13.75</td>
<td>56.23</td>
<td>0.042</td>
</tr>
<tr>
<td>36</td>
<td>96</td>
<td>-12.75</td>
<td>63.10</td>
<td>0.053</td>
</tr>
<tr>
<td>37</td>
<td>97</td>
<td>-11.75</td>
<td>70.79</td>
<td>0.067</td>
</tr>
<tr>
<td>38</td>
<td>98</td>
<td>-10.75</td>
<td>79.43</td>
<td>0.084</td>
</tr>
<tr>
<td>dBmV</td>
<td>dBµV</td>
<td>dBm 75Ω</td>
<td>mMV RMS</td>
<td>mW 75Ω</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>----------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>39</td>
<td>99</td>
<td>-9.75</td>
<td>89.13</td>
<td>0.106</td>
</tr>
<tr>
<td>40</td>
<td>100</td>
<td>-8.75</td>
<td>100.00</td>
<td>0.133</td>
</tr>
<tr>
<td>41</td>
<td>101</td>
<td>-7.75</td>
<td>112.20</td>
<td>0.168</td>
</tr>
<tr>
<td>42</td>
<td>102</td>
<td>-6.75</td>
<td>125.89</td>
<td>0.211</td>
</tr>
<tr>
<td>43</td>
<td>103</td>
<td>-5.75</td>
<td>141.25</td>
<td>0.266</td>
</tr>
<tr>
<td>44</td>
<td>104</td>
<td>-4.75</td>
<td>158.49</td>
<td>0.335</td>
</tr>
<tr>
<td>45</td>
<td>105</td>
<td>-3.75</td>
<td>177.83</td>
<td>0.422</td>
</tr>
<tr>
<td>46</td>
<td>106</td>
<td>-2.75</td>
<td>199.53</td>
<td>0.531</td>
</tr>
<tr>
<td>47</td>
<td>107</td>
<td>-1.75</td>
<td>223.87</td>
<td>0.668</td>
</tr>
<tr>
<td>48</td>
<td>108</td>
<td>-0.75</td>
<td>251.19</td>
<td>0.841</td>
</tr>
<tr>
<td>49</td>
<td>109</td>
<td>0.25</td>
<td>281.84</td>
<td>1.059</td>
</tr>
<tr>
<td>50</td>
<td>110</td>
<td>1.25</td>
<td>316.23</td>
<td>1.333</td>
</tr>
<tr>
<td>51</td>
<td>111</td>
<td>2.25</td>
<td>354.81</td>
<td>1.679</td>
</tr>
<tr>
<td>52</td>
<td>112</td>
<td>3.25</td>
<td>398.11</td>
<td>2.113</td>
</tr>
<tr>
<td>53</td>
<td>113</td>
<td>4.25</td>
<td>446.68</td>
<td>2.660</td>
</tr>
<tr>
<td>54</td>
<td>114</td>
<td>5.25</td>
<td>501.19</td>
<td>3.349</td>
</tr>
<tr>
<td>55</td>
<td>115</td>
<td>6.25</td>
<td>562.34</td>
<td>4.216</td>
</tr>
<tr>
<td>56</td>
<td>116</td>
<td>7.25</td>
<td>630.96</td>
<td>5.308</td>
</tr>
<tr>
<td>57</td>
<td>117</td>
<td>8.25</td>
<td>707.95</td>
<td>6.683</td>
</tr>
<tr>
<td>58</td>
<td>118</td>
<td>9.25</td>
<td>794.33</td>
<td>8.413</td>
</tr>
<tr>
<td>59</td>
<td>119</td>
<td>10.25</td>
<td>891.25</td>
<td>10.591</td>
</tr>
<tr>
<td>60</td>
<td>120</td>
<td>11.25</td>
<td>1000.00</td>
<td>13.333</td>
</tr>
<tr>
<td>61</td>
<td>121</td>
<td>12.25</td>
<td>1122.02</td>
<td>16.786</td>
</tr>
<tr>
<td>62</td>
<td>122</td>
<td>13.25</td>
<td>1258.93</td>
<td>21.132</td>
</tr>
<tr>
<td>63</td>
<td>123</td>
<td>14.25</td>
<td>1412.54</td>
<td>26.604</td>
</tr>
<tr>
<td>64</td>
<td>124</td>
<td>15.25</td>
<td>1584.89</td>
<td>33.492</td>
</tr>
<tr>
<td>65</td>
<td>125</td>
<td>16.25</td>
<td>1778.28</td>
<td>42.164</td>
</tr>
<tr>
<td>66</td>
<td>126</td>
<td>17.25</td>
<td>1995.26</td>
<td>53.081</td>
</tr>
<tr>
<td>67</td>
<td>127</td>
<td>18.25</td>
<td>2238.72</td>
<td>66.825</td>
</tr>
<tr>
<td>68</td>
<td>128</td>
<td>19.25</td>
<td>2511.89</td>
<td>84.128</td>
</tr>
</tbody>
</table>
Sicherheitshinweise

Sicherheitshinweise bitte vor Montage bzw. Inbetriebnahme des Gerätes sorgfältig lesen und befolgen.

1. Installation

| Gefahr: | Das Gerät darf ausschließlich von sachverständigen Personen (siehe EN 60065), installiert und in Betrieb genommen werden. |
| Gefahr: | Das Gerät und/oder die Verteilereinheit muss vor Inbetriebnahme gemäß EN 60728-11 vorschriftsmäßig geerdet sein (Potentialausgleich) und bleiben, auch wenn das Gerät ausgebaut wird. |
| Gefahr: | Das Gerät darf nicht auf brennbarem Untergrund montiert werden (Brandgefahr). |
| Gefahr: | Schließen Sie das Gerät nur an eine vorschriftsmäßig installierte Steckdose mit Schutzleiter an. |
| Gefahr: | Planen Sie den Montage - bzw. Aufstellungsort so, dass Kinder nicht am Gerät und dessen Anschlüssen spielen können. |
| Gefahr: | Es droht Gefahr durch elektrischen Schlag (Lebensgefähr). |
| Gefahr: | Wählen Sie einen Montage - bzw. Aufstellungsort, an dem unter keinen Umständen Flüssigkeiten oder Gegenstände in das Gerät gelangen können (z.B. Kondenswasser, Gießwasser etc.). |
| Gefahr: | Der Montage- bzw. Aufstellungsort muss eine sichere Verlegung aller angeschlossenen Kabel zulassen. Stromversorgungskabel sowie Zuführungskabel dürfen nicht durch irgendwelche Gegenstände beschädigt oder gequetscht werden. Es ist darüber hinaus unbedingt darauf zu achten, dass Kabel nicht in die direkte Nähe von Wärmequellen verlegt werden (z.B. Heizkörper, andere Elektrogeräte, Kamin etc.) (Brandgefahr), (Gefahr durch elektrischen Schlag). |
| Gefahr: | Um sowohl Beschädigungen am Gerät als auch mögliche Folgeschäden (Brandgefahr) zu vermeiden, dürfen für Wandmontage vorgesehene Geräte nur auf einer ebenen Grundfläche montiert werden und nicht über Kopf. |

Warnung: (Nur für optische Sender sowie deren Verteilereinheiten) Blicken Sie auf keinen Fall direkt oder indirekt in den Laserstrahl. Schließen Sie das Gerät erst an die Stromversorgung an, wenn alle elektrischen und optischen Leitungen sicher verbunden sind.

Warnung: Die Sicherheitsbestimmungen der jeweils aktuellen Normen EN 60728-11 und EN 60065 sind zwingend einzuhalten.

Warnung: Befolgen Sie auch alle anwendbaren nationalen Sicherheitsvorschriften und Normen.

Warnung: Der Netzstecker des Gerätes muß jederzeit leicht erreichbar sein.

Warnung: Befolgen Sie alle Instruktionen in den gerätespezifischen Bedienungsanleitungen

2. Betrieb

| Gefahr: | Das Gerät darf nur in trockenen Räumen bei nicht tropischem Klima betrieben werden. In feuchten Räumen oder im Freien besteht die Gefahr von |
| Gefahr von | Kurzschluß (Brandgefahr) oder elektrischen Schlag (Lebensgefahr). |
| Gefahr: | Stecken Sie keine Gegenstände durch die Lüftungsschlitze. Gefahr durch elektrischen Schlag (Lebensgefahr). |
| Gefahr: | Stellen Sie keine mit Flüssigkeit gefüllten Gefäße (wie z. B. Vasen) auf das Gerät. Es droht Gefahr durch elektrischen Schlag (Brandgefahr). |
| Gefahr: | Es dürfen keine offenen Brandquellen, wie z. B. brennende Kerzen, auf das Gerät gestellt werden (Brandgefahr). |
| Gefahr: | Sorgen Sie für einen Freiraum von mindestens 20cm um das Gerät. Die Belüftung des Gerätes darf nicht durch Abdecken der Belüftungsoffnungen mit Gegenständen wie z. B. Zeitungen, Tischdecken, Gardinen usw. behindert werden (Brandgefahr). |
| Gefahr: | Befolgen Sie alle Instruktionen in den gerätespezifischen Bedienungsanleitung. |

Warnung: (Nur für Geräte mit Batterie): Explosionsgefahr bei unsachgemäßem Auswechseln der Batterie. Ersatz nur durch den gleichen Typ!

Warnung: Batterien dürfen nicht übermäßiger Wärme wie Sonnenschein, Feuer oder dergleichen ausgesetzt werden (Explosionsgefahr).

Warnung: Verwenden Sie nur das Zubehör des Herstellers oder Zubehör mit identischen technischen Eigenschaften.
Warnung: (Bei optischen Sendern sowie deren Verteilperipherie) ziehen Sie den Netzstecker bevor das Gerät ausgebaut wird.

4. Reparatur
   Gefahr: Reparaturen am Gerät sind ausschließlich vom Fachmann (siehe EN 60065) unter Beachtung der geltenden VDE-Richtlinien durchzuführen.
   Gefahr: Verwenden Sie nur Bauteile des gleichen Typs und mit identischen technischen Eigenschaften für die Reparatur, andernfalls droht Gefahr eines elektrischen Schlags (Lebensgefahr) und Brandgefahren.
   Warnung: (Bei optischen Sendern sowie deren Verteilperipherie) ziehen Sie den Netzstecker bevor das Gerät ausgebaut wird.

Bei Fragen zur Reparatur wenden Sie sich an den IRENIS-Service:
E-Mail: info@blankom.de, Kontakt: www.blankom.de

5. Verkauf
   Vorsicht: Im Falle eines Verkaufs müssen diese Sicherheitshinweise und die Bedienungsanleitung des entsprechenden Geräts dem Käufer ausgehändigt werden.

6. Entsorgung
   Vorsicht: Entsorgen Sie das Gerät entsprechend den geltenden umweltrechtlichen Bestimmungen. Elektrische und elektronische Geräte dürfen nicht in den Hausmüll!
   Vorsicht: Entsorgen Sie Batterien (falls vorhanden), entsprechend den geltenden umweltrechtlichen Bestimmungen.

Contact:
IRENIS GmbH
Hauptstr. 29
31171 Nordstemmen- Germany
Phone: +49 5069 4809781

Managing Director: Dipl.Ing. Murad Önal
Commercial Register: HRB 206370 / District Court Hildesheim

Web: www.blankom.de  E-Mail: info@blankom.de

Document History:

<table>
<thead>
<tr>
<th>Initial</th>
<th>First release</th>
<th>RRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 2017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 2018 V1.1</td>
<td>Added Network hints</td>
<td>RRI</td>
</tr>
<tr>
<td>sept 2019 v1.2</td>
<td>Addons and corrections</td>
<td>Ralf Riedel</td>
</tr>
</tbody>
</table>
EU Declaration of Conformity

1. **Product model**: BLANKOM IGS 900

2. **Name and address of the manufacturer or his authorised representative**:
   
   IRENIS GmbH  
   Hauptstr. 29  
   3171 Nordstemmen/Germany  
   +49 (0) 5069 4809 763  
   info@blankom.de

3. **This declaration of conformity is issued under the sole responsibility of the manufacturer**.

4. **Object of the declaration**:
   
   Equipment: DVB/IP GATEWAY, IRD  
   Brand name: BLANKOM  
   Model/type: IGS-900

5. **The object of the declaration described above is in conformity with the relevant Union harmonization legislation**:
   
   Low Voltage Directive (LVD) 2006/95/EC,  
   Electromagnetic Compatibility Directive (EMC) 2014/30/EU,

6. **References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared**:
   
   EMC: EN 55022:2010+AC:2011  
   EN 61000-3-2:2014, EN 61000-3-3:2013  
   EN 55024:2010  
   EN 61000-4-4:2012, EN 61000-4-5:2014  
   EN 61000-4-8:2010, EN 61000-4-11:2004

7. **Signed for and on behalf of**:
   
   At Nordstemmen, 11th of September, 2019
   
   Authorised representative:  
   IRENIS GmbH
   
   Dipl.-Ing. Murad Onol, Managing Director