PYKO-in

Professional IP ⇔ Audio Endpoint

User manual
December 2016

Important Safety Information
read carefully before using this equipment!

Follow these instructions and keep them in a safe place! Keep in mind that damages due to failure to observe the instructions contained in this manual are not covered by warranty.

Instructions importantes de sécurité
lire soigneusement avant d'utiliser l'équipement!

Lisez et suivez ces instructions. Conservez les pour consultation ultérieure! Les dommages dus au non-respect des instructions contenues dans ce manuel ne sont pas couverts par la garantie.

Wichtige Sicherheitshinweise
vor Inbetriebnahme des Gerätes sorgfältig lesen!

Befolgen Sie die Anweisungen und bewahren Sie sie für spätere Fragen auf! Bei Schäden, die durch Nichtbeachten dieser Bedienungsanleitung verursacht werden, erlischt der Garantieanspruch!

Throughout this manual, the lightning bolt triangle is used to alert the user to the risk of electric shock.

The exclamation point triangle is used to alert the user to important operating or maintenance instructions.

Do Not Open the Cabinet

There are no user-serviceable components inside this product. Opening the cabinet may present a shock hazard, and any modification to the product will void your warranty. If it is necessary to open the device for maintenance or advanced configuration purposes, this is to be done by qualified personnel only after disconnecting the power cord and network cables!

Power supply

The device is to be connected only to a power supply as specified in this manual and marked on the equipment.

This equipment must be earthed!

Do not block any of the ventilation openings!

Humidity

To reduce the risk of fire or shock, do not expose this device to rain or moisture. Do not place objects filled with liquid on this device.

Installation Location

To ensure proper operation and to avoid safety hazards, the device must be installed in a 19" rack mount chassis. The electrical installation of the building should dispose of easily accessible disconnecting means in the immediate vicinity of the device.

If rack installation is not possible, place it on a firm and level surface. The use of a supply lead with a power plug respecting the legal standards in the country of use is obligatory. The plug shall be easily accessible in case of a problem.

Avoid installation in extremely hot or cold locations, or in an area that is exposed to direct sunlight or heating equipment. Avoid moist or humid locations.

Connection of this product to an IT power supply system is only in Norway.

Cleaning

Clean only with a soft, dry cloth. If necessary, after disconnecting the unit's cables, wipe it with a soft cloth dampened with mild soapy water, then with a fresh cloth with clean water. Wipe dry immediately with a dry cloth. NEVER use benzene, aerosol cleaners, thinner, alcohol or any other volatile cleaning agent. Do not use abrasive cleaners, which may damage the finish of metal or other parts.

Refer all servicing to qualified service personnel.

Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Moving the device

Before moving the unit, be certain to disconnect any cables that connect with other components.

Ne pas ouvrir l'appareil

L'ouverture du coffret peut produire un risque de choc électrique, et toute modification du produit annule votre garantie. S'il est nécessaire d'ouvrir l'appareil pour l'entretien ou la configuration avancée, cela doit être fait par du personnel qualifié, après avoir débranché le cordon d'alimentation et les câbles réseaux !

Alimentation

Il est primordial de connecter l'appareil à une alimentation électrique telle que spécifiée dans ce manuel d'utilisateur et sur le matériel même.

Cet équipement doit être raccordé à la terre !

N'obstruer aucune ouverture de ventilation !

Humidité

Afin de réduire les risques de feu ou de choc, n'exposez pas cet appareil à la pluie ou l'humidité. Ne placez pas d'objet contenant un liquide sur l'appareil.

Installation, mise en place

Afin d'assurer le fonctionnement correct et de minimiser les risques potentiels liés à la sécurité, l'appareil doit être installé dans un chassis. Prévoir dans l'installation électrique du bâtiment un dispositif de sectionnement aisément accessible et à proximité immédiate de l'appareil.

Si l'installation dans une baie ne vous est pas possible, placez-le sur une surface solide et plane. L'utilisation d'un câble d'alimentation avec une fiche de prise de courant respectant les normes en vigueur dans le pays d'utilisation est obligatoire. De plus la fiche de prise de courant doit être aisément accessible en cas de problème.

Évitez une installation dans des endroits très chauds ou très froids ainsi que dans des lieux exposés directement au soleil. Évitez les lieux présentant un excès d'humidité.

Le raccordement de ce produit à un régime d'alimentation IT n'est possible qu'en Norvège.

Nettoyage

Nettoyez uniquement avec un chiffon doux et sec. Si nécessaire, après avoir débranché le cordon d'alimentation, essuyez-le avec un chiffon doux humidifié avec de l'eau savonneuse puis rincez le á l'aide d un chiffon propre et d'eau claire.

Séchez-le immédiatement avec un chiffon sec. N'utilisez JAMAIS d'essence, de nettoyants en aérosols, d'alcool ou tout autre agent nettoyant volatile. N'utilisez pas de produits nettoyants abrasifs qui pourraient endommager les finitions métalliques ou d'autres pièces.

Réparation

Lorsque l'appareil a été endommagé quelle qu'en soit la cause ou qu'il ne fonctionne pas normalement, toute réparation doit être effectuée par du personnel qualifié.<0} Avant de transporter l'unité, assurez-vous d'avoir bien déconnecté le cordon d'alimentation ainsi que tous les câbles la reliant à d'autres appareils.

Gerät nicht öffnen

Öffnen des Geräts kann eine Gefährdung durch Stromschlag und Erlöschen der Garantie zur Folge haben. Reparaturarbeiten und Änderungen der Hardwarekonfiguration dürfen nur von qualifiziertem Personal nach entfernen der Strom- und Netzwerkkabel durchgeführt werden.

Stromversorgung

Das Gerät darf nur mit der in dieser Bedienungsanleitung und auf dem Gerät angegebenen Stromversorgung betrieben werden.

Erdung ist zu gewährleisten!

Belüftungsschlitze nicht verdecken!

Wasser und Feuchtigkeit

Um Brand- oder Stromschlagrisiken zu vermeiden, darf das Gerät nicht mit Feuchtigkeit in Berührung kommen.

Aufbau des Geräts

Um den einwandfreien Betrieb zu gewährleisten und Sicherheitsrisiken zu vermeiden, sollte das Gerät in einem 19-Zoll Baugruppenrahmen montiert werden. Die elektrische Installation des Gebäudes sollte über einen leicht zugänglichen Trennschalter in unmittelbarer Nähe des Geräts verfügen Nur wenn die Installation im Rack nicht möglich ist, stellen Sie das Gerät auf einen festen, waagerechten Untergrund.

Die Verwendung eines Anschlußkabels und eines Steckers, die die im Benutzungsland gültigen Normen erfüllen, ist obligatorisch. Des weiteren muß die Steckdose für einen eventuellen Problemfall leicht zugänglich sein.

Meiden Sie Standorte in der Nähe von Wärme- oder Feuchtigkeitsquellen sowie direkte Sonneneinstrahlung.

Anschluß dieses Produktes an eine spezielle IT-Stromversorgung ist nur in Norwegen genehmigt.

Reinigen des Geräts

Säubern Sie das Gerät nur mit einem weichen, trockenen Tuch. Bei Bedarf verwenden Sie ein mit mildem Seifenwasser befeuchtetes Tuch, nachdem Sie die Netzanschlusskabel aus der Steckdose gezogen haben, anschließend ein weiches, mit klarem Wasser befeuchtetes Tuch. Trocken Sie das Gerät sofort im Anschluß. Keinesfalls Benzol, Verdünner oder sonstige starke Lösungsmittel oder Scheuerreiniger verwenden, da hierdurch das Gehäuse beschädigt werden könnte.

Lassen Sie etwaige Reparaturen nur von qualifizierten Fachleuten durchführen!

Sollten das Netzkabel oder der Netzstecker beschädigt sein, oder sollte das Gerät selbst beschädigt worden sein (z. B. durch Eindringen von Feuchtigkeit durch Fall auf den Boden), oder sollte es nicht ordnungsgemäß funktionieren oder eine deutliche Funktionsabweichung aufweisen, so ist es von qualifizierten Fachleuten zu reparieren.

1. INFORMATION FOR THE USER

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 and with the following European and international Standards for:

In order to guarantee compliance with the above standards in an installation, the following must be done:

·   the provided cables must not be modified.

·   additional cables used must have their respective shield connected to each extremity.

The limits specified in the standards 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 instruction, 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 the 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 audio/television technician for help.

Note: *Connecting this device to peripheral devices that do not comply with CLASS B requirements or using an unshielded peripheral data cable could also result in harmful interference to radio or television reception. The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.*

This card has been tested and found to comply with the following standards:

●   International: CISPR22 (2005) Class B.
●   Europe: EMC 2004/108/CE specifications.
●   United States: FCC Rules-Part 15-Class B (digital device).

In order to guarantee compliance with the above standards in an installation, the following must be done:

●   the provided cable must not be modified.
●   additional cables used must have their respective shield connected to each extremity.

2. CONTENTS OF THE PACKAGE

The package consists of the following components:

●   a PYKO-in device
●   a counterpart for the power connector

Also available (optionally):

●   Power supply with cable and connector mounted.
●   Adaptor for mounting the PYKO-in on a DIN rail

You have just acquired a Digigram IP   audio bridge and we

PYKO-in allows you to draw the most from an IP network in order to set up professional audio installations.

Three different firmware applications make PYKO-in a flexible solution that can easily keep up as your system evolves.

The manual at hand will guide you through installation, configuration and use. For any software related issue, please refer to the specific documentation provided in its on-line help.

For more information on PYKO applications, please refer to the document 'Audio system cookbook', available on our Web site.

3. KEY FEATURES

- Encoding and streaming of 1 stereo input, in RTP or Icecast/shoutcast.
- Encoding and decoding using 1 mono input (left) and one mono output
- Line / mic level on the left input
- Switchable 12V phantom power on the left input
- 1 RJ45 port
- 1 headphones output
- 4/4 GPIOs on terminal block
- 1 RS232 port
- 1/3" 1U rack enclosure
- Remote management through .html pages, 'Audio Manager' software or 'EScontrol' software (in EtherSound mode)
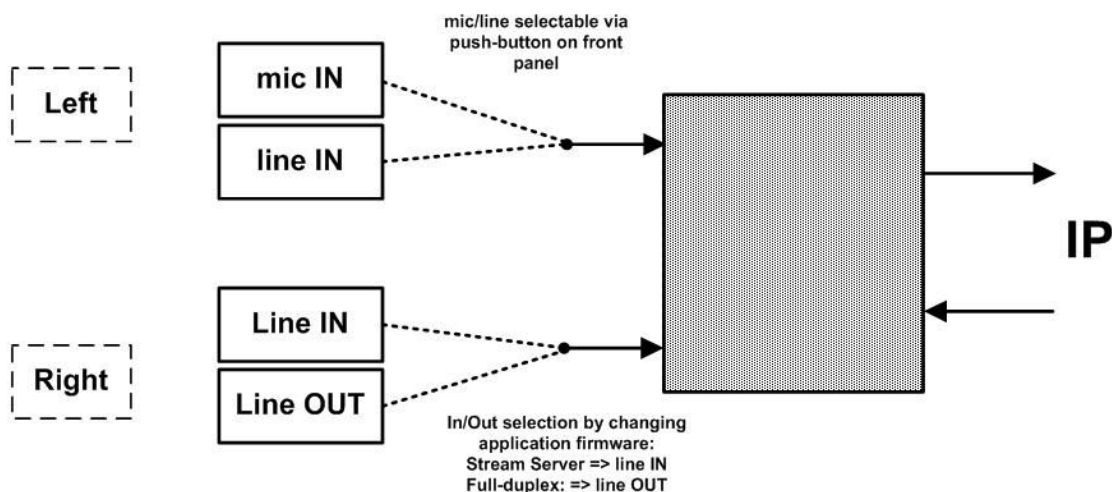
4. Physical interfaces

4.1. The PYKO-in front panel
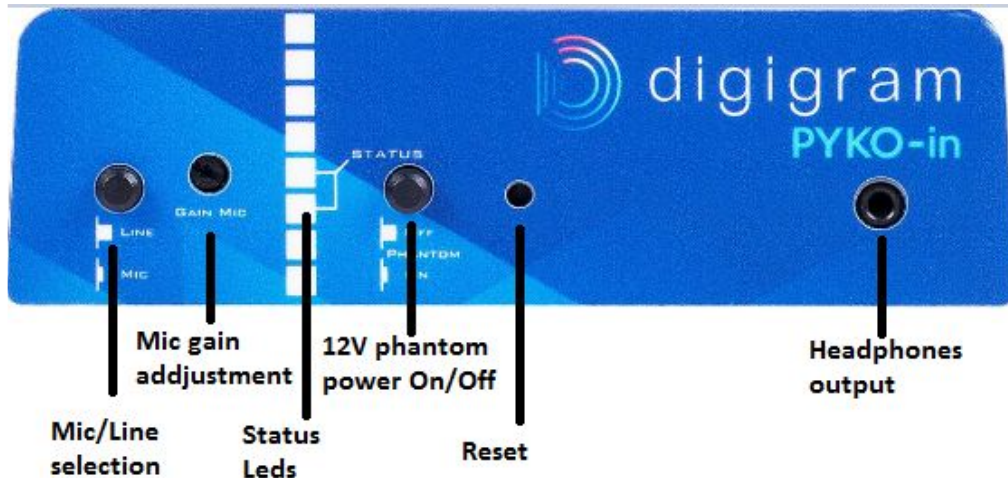
1. **Mic/line selection**

   Push-button allowing to switch the input signal between microphone and line.

2. **Mic gain setting**

   Screw allowing to adjust the mic input gain using a flat screwdriver.

3. **LEDs**

   Three electroluminescent diodes indicate the network activity and presence and mode of an audio stream.
   - Two electroluminescent diodes labeled 'STATUS' indicate the network activity and the presence of an audio stream.
   - A third LED above indicates - when lit - that the audio stream is in full-duplex mode.

4. **Phantom power**

   Push-button allowing to enable/disable 12 V phantom power.

5. **Reset button**

   Press this button briefly to reset your PYKO.

   If you press it until the LED blinks (approximately 5 seconds), PYKO is reset to factory configuration, i.e. to 'Stream Server' mode, IP address 192.168.0.100, DHCP=OFF, and the UDP/TCP ports to the default values 40002 respectively 40004.

6. **Headphones out (mini jack)**

   At start-up, PYKO-in announces its IP address on this output.
   - With the 'Full-duplex' firmware application, it plays the audio in parallel of line output.
   - With the 'Stream Server' firmware application, this output is not used.

4.2. The PYKO-in back panel
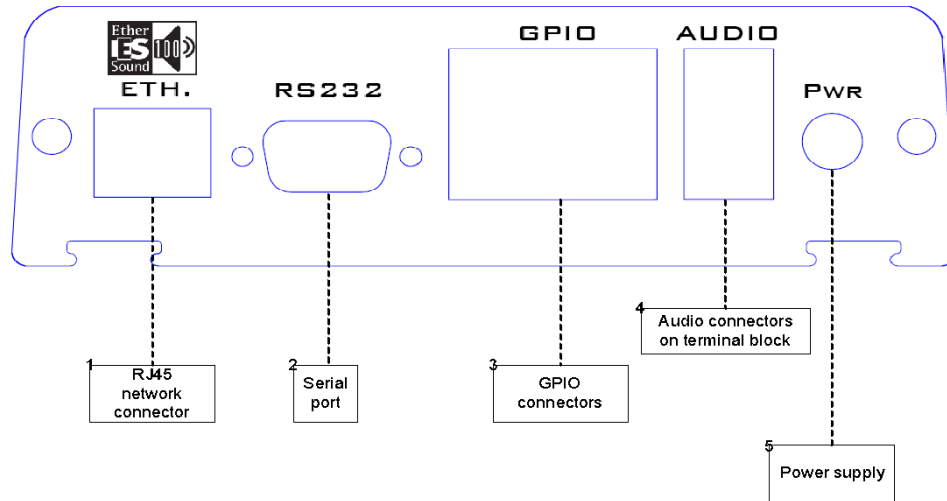
1. **RJ45 network connector**

   RJ45 for a network connection in 10/100 Mbps half-/full-duplex.

2. **Serial port**

   RS232 interface on DB9 (see Appendix F, Serial port).

3. **GPIO connectors**

   These terminal blocks allow setup of external control and monitoring devices through configurable and protected General Purpose Inputs and Outputs (cf. Appendix E, GPIO connectors).

4. **Audio connectors**

   These terminal blocks allow connecting the audio inputs and outputs.
   (cf. Appendix D, Audio connectors).

5. **Power supply**

   24 VDC with plug to screw.

5. INSTALLATION

5.1. Connecting your PYKO-in device

It is recommended to establish all connections before powering the device up.

Power supply

Before plugging the power cord, make sure it is not damaged:

Just like for any other audio system, power the individual devices up following the audio path and power down in the opposite direction.

Do not allow anything to rest on the power cable. Keep the power cable away from where people could trip over it.

Set-up

- Use an Ethernet cable to connect your PYKO-in to the network through its RJ45 port (labeled 'ETH.' on the back panel). To connect your PYKO-in directly to your computer, use a crossover cable.
- Plug your headphones (front panel)
- *Prepare pen and paper in order to write the IP address down, which will be announced over the headphones output.*
- Connect the electric cable to the plug labeled 'PWR' on the back panel and to the power outlet

Audio

The pinout used on the XLRs is standard: pin 1 carries the signal ground, pin 2 carries the positive signal ("hot", +) and pin 3 carries the negative signal ("cold", -).

5.2. Operating modes

PYKO-in can be used in the following modes:

- standalone IP audio encoder: it is then configured from its WEB pages, and runs autonomously,
- IP audio device controlled from the Digigram Audio Manager middleware (typical application is background music and announcements management),
- EtherSound mono end-point.
- WEB radio encoder (Icecast/Shoutcast encoder)

PYKO-in is delivered with a firmware which allows the following operating modes:

- **"Stream server":** when the 'Stream Server' application enabled, PYKO-in encodes the audio signal it receives on its analog input(s), and stream this encoded signal as one or several IP audio streams (mono or stereo).
- **"Full-duplex":** The 'Full-duplex' firmware application allows using PYKO-in as full-duplex IP audio codec working with one mono input and one mono output. This is useful for intercom applications.
- **"Play-out"**: The Play-out firmware application lets PYKO-in decode a mono stream.
- **EtherSound end-point:** In the EtherSound mode, PYKO-in can decode one EtherSound channel (mono). The control of PYKO-in is done through the EScontrol software application (Access to the web pages is no longer possible).To return to another mode of operation, please press the 'Reset' button > 5 sec in order to re-start PYKO-in factory configuration. Now you have again access to the embedded html pages were you can select the required firmware application and configure your PYKO-in.

"Stream server" and "Full-duplex" are the most commonly used applications. Stream server is the default mode.

The Icecast/Shoutcast encoder mode requires that a specific firmware is uploaded (PYKO-in Shoutcast).

See Appendix A for the features allowed by each firmware/application.

5.3. Firmware update

The firmware set in factory allows using PYKO-in in the following modes: Stream server, full-duplex, play-out, EtherSound.

Digigram may decide to publish updates of the embedded firmware. It may then become necessary to upgrade your devices. In this case, please connect to the "PYKO-in support page" on the Digigram WEB site, and download the most recent version. Then, go to the **<Tools>**, **<Update>** section of the PYKO-in html page, click '**Browse'** to indicate the location of the downloaded file, then the '**Upload'** button. When the message 'compound.bin successfully loaded' is displayed, click onto the link '**Click on update before updating the next component or unplug the power supply to reboot the device**' in the message, then onto the '**Reboot**' button to finish the update, or, alternatively, disconnect then re-plug the power cord.

In case you need to use PYKO-in an Icecast/Shoutcast encoder, the firmware to be used is "PYKO-in Firmware shoutcast". The procedure to apply this firmware is as follows:

- Disconnect PYKO power supply cable.
- Connect the PYKO-in RS232 port to the computer COM port with a standard "null modem" cable; hardware handshake is not required.
- From Command line, in update_rescue directory, type serial.bat COM1
- Adjust COM number according to your configuration.
- Reconnect PYKO power supply cable. Wait until upgrade is completed.
- PYKO is now in Shoutcast mode. Default IP address is 192.168.0.100.

6. MANAGING PYKO-IN

Depending on your needs, there are several ways of configuring and controlling PYKO-in.
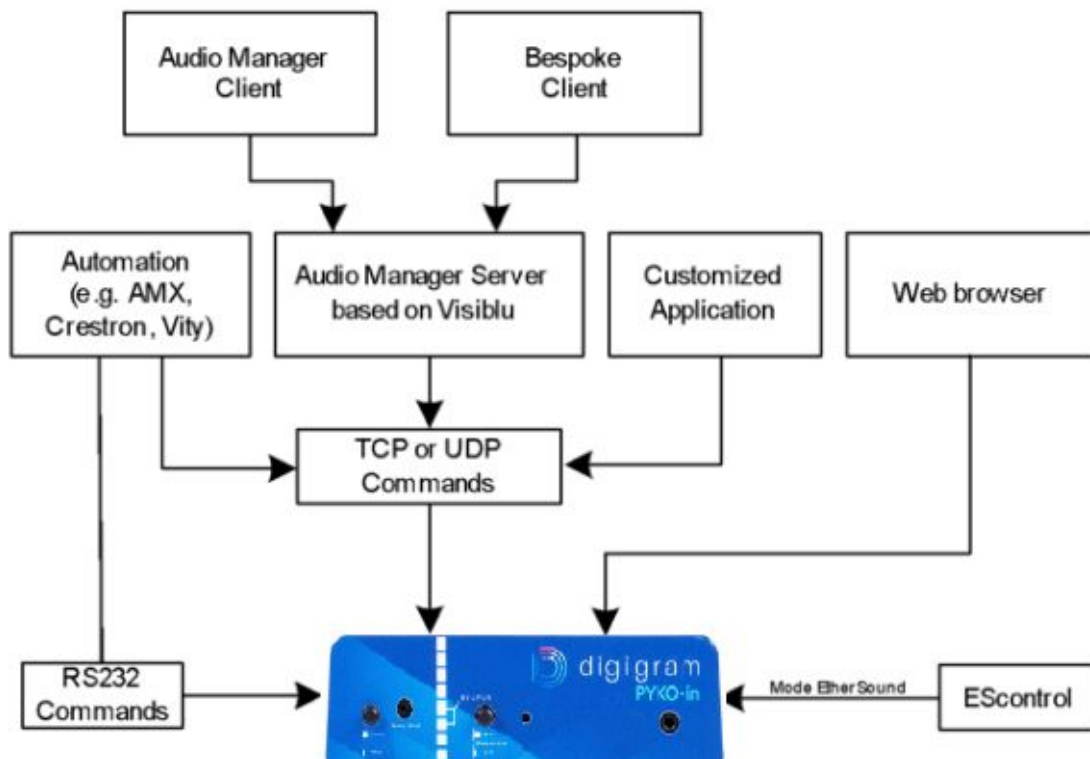
7. CONFIGURATION

7.1. Connecting to PYKO-in WEB pages

PYKO-in embeds a web server that enables you to control it through your favorite Internet browser and to select the firmware application that best meets your needs.

- Put your headphones on. At start-up, PYKO will announce its IP address over the headphones output – write this address down!

  Note: PYKO-in factory setting is IP address configured at 192.168.0.100.

- Open your web browser.

- Type the PYKO-in IP address into the address bar and hit the '**Enter**' key.
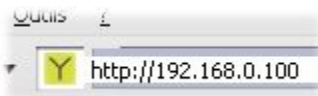
7.2. Using PYKO-in with Audio Manager

If you use your PYKOs with Audio Manager, you will first have to either assign an IP address through the web pages or turn the DHCP on (Audio Manager will then automatically assign an IP address). Audio Manager Server will detect this address and allow the Audio Manager Client to configure it.

To be detected by Audio Manager, the TCP control port has to be set to "40002", the UDP listening port to "40004". These are also the values defined in the factory configuration.

Nonetheless, you may decide that Audio Manager is to control PYKO-in only in part. In this case, use the PYKO-in html pages to configure the device accordingly (cf. on-line help of the pages).

For more details on managing PYKO through Audio Manager, please refer to its on line help.

7.3. PYKO-in in 'standalone' mode

- Select the application firmware that best meets your requirements (see above).
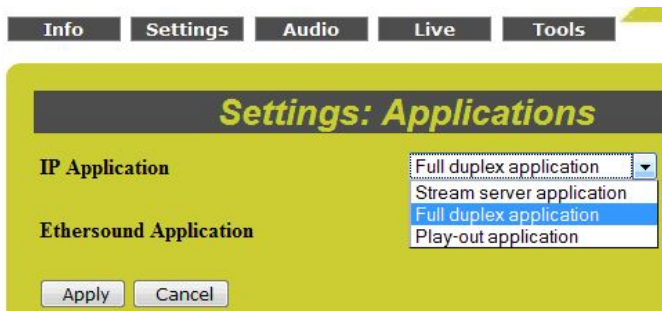
- You can now visualize the Web pages that enable you to parameterize the device.

7.3.1. Audio configuration

'Stream Server' application case

It is possible to transport an IP stream from a PYKO-in towards different destinations:
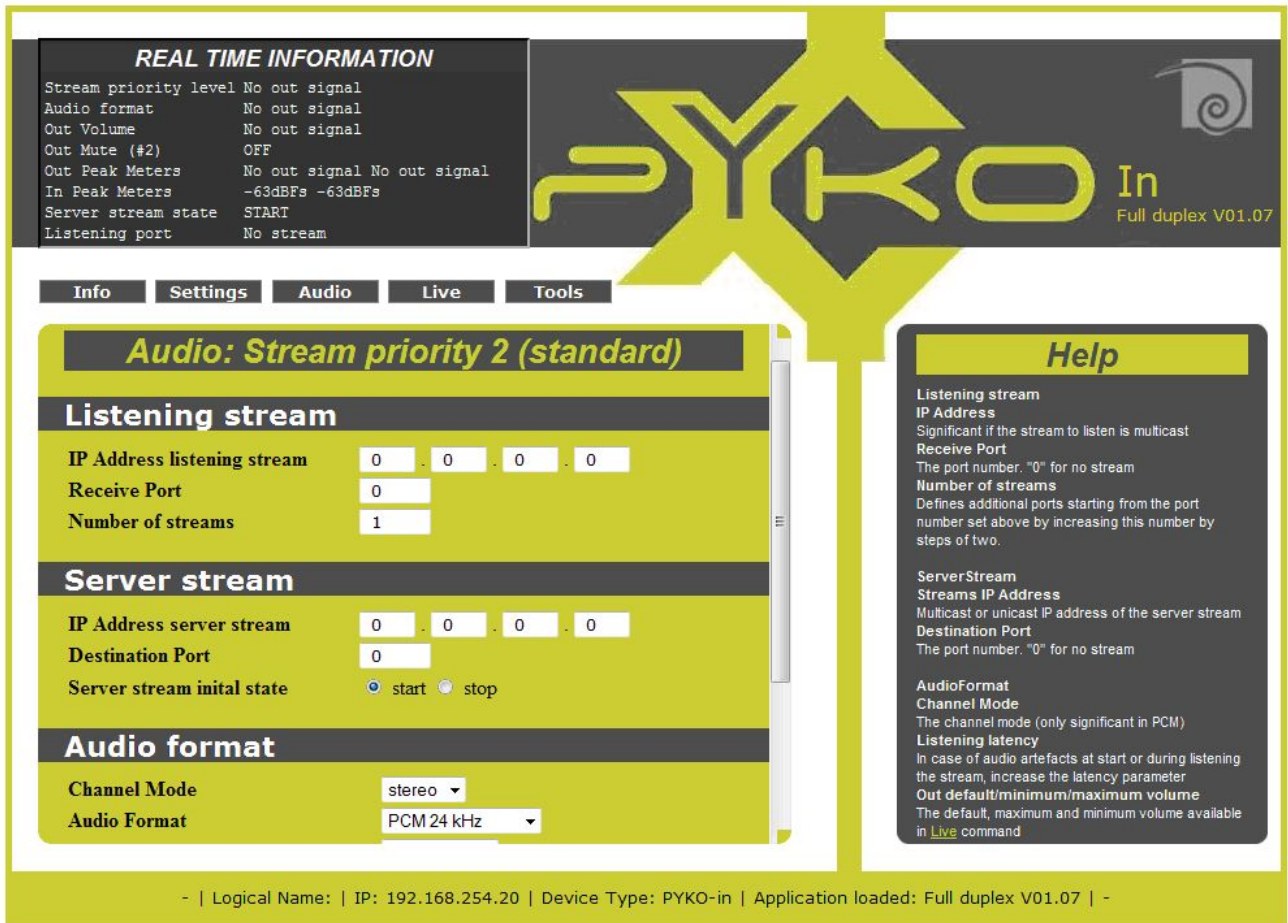
- 6 in MP3 format
- 4 in PCM format

Just configure a destination IP address and a corresponding port for each destination.

"Full-duplex" application case

In full-duplex mode, you will have to configure a mono input and a mono output.

To do so, go to the audio page 'Audio: Stream priority 2':

Configure the IP stream to be received (Listening stream) and the IP stream to be sent (Server stream).

PYKO-in is now configured for a full-duplex communication.

In Audio Manager mode, the Audio Manager stream will automatically be set to level 2.

It is also possible to define a priority stream via the page 'Audio: Stream priority 1'.

A full-duplex communication can then be interrupted by this priority stream for, e.g., an alarm message.
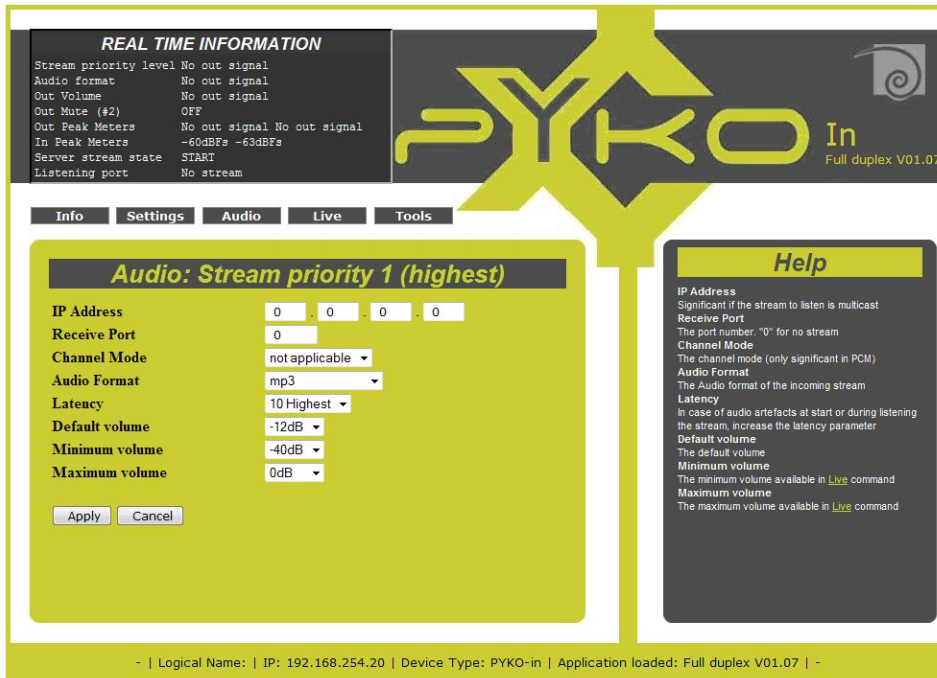
For more details on parameterizing your PYKO-in in 'standalone' mode, please refer to on-line help of the html configuration pages.

With the 'Play-out' firmware

For the use of PYKO-in 'Play-out' mode, please refer to the PYKO-out manual and to the on-line help of the application firmware. Note, however, that with this firmware, the outputs of a PYKO-in are managed in mono mode.

7.3.2. Remote control of PYKO through TCP commands

Remote control of PYKO through TCP commands

Menu Settings: Remote Control

PYKO can be controlled through ASCII TCP commands. The TCP port used for receiving the TCP commands must be configured in « **Device Control**», « **Port for TCP control connection** ». This port is the destination port used by a control application to send the TCP commands to PYKO.

The ASCII commands are described in a separate document.

Local control of PYKO through commands sent via the serial port

PYKO can be controlled through ASCII commands sent through its RS232 port.
The RS232 port parameters can be configured from Settings:Serial Link.

To enable this local control mode, go to "Settings:Remote Contro", and from section « **Serial Link** » select « Control » for parameter « **Serial link mode** ».

The ASCII commands are described in a separate document.

7.3.3. Tunneling of auxiliary data

7.3.3.1. RS232 tunneling mode configuration

RS232 tunneling consists in transmitting serial data from of a PYKO towards one or several distant PYKOs (maximum 4). The transmission can be done in TCP mode (one PYKO to another one), or in UDP mode (one to maximum four).
Note: the UDP mode does not guarantee that the distant PYKO receives the data.

The RS232 port parameters can be configured from Settings:Serial Link.
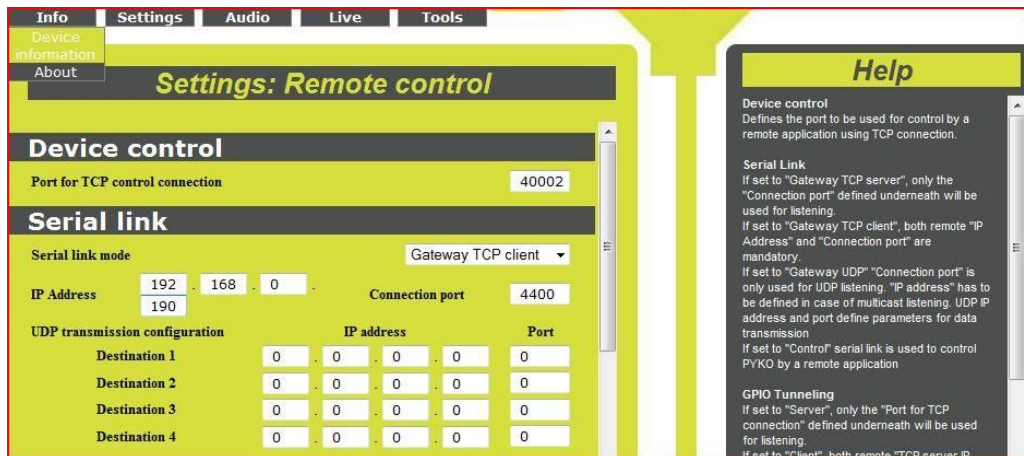

To enable the TCP mode, select « **Gateway TCP server** » or « **Gateway TCP client** » for parameter «**Serial link mode** ».

- **Gateway TCP server**: in this mode, PYKO-out receives the serial data sent from another PYKO on the port defined in « **Connection port** ».
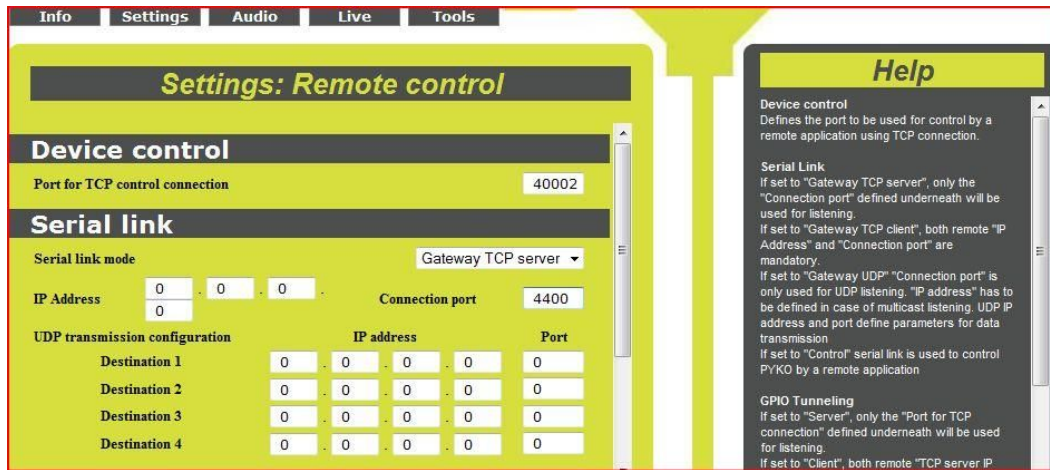
- **Gateway TCP client** : in this mode, PYKO establishes the TCP link with another PYKO configured in server mode, and sends the serial data to the unicast or multicast address defined in « **IP address** » and to the TCP port defined in « **Connection port** ».

To enable the UDP mode, select « **Gateway UDP** » for parameter «**Serial link mode** ». PYKO listens to the serial data it receives on the UDP port defined in « **Connection port** ». The parameter « **IP address** » must then be filled in case serial data are sent to a multicast address.

PYKO can send serial data in UDP mode towards maximum 4 destinations. These destinations are couples of « IP address / UDP port » defined in parameters « **Destination 1** » to « **Destination 4** » in section « **UDP transmission configuration** ».

7.3.3.2. GPIO tunneling mode configuration

GPIO tunneling consists in transmitting GPI statuses of a PYKO to the GPOs of another PYKO.

Its configuration can be done from section « **GPIO tunneling** ».

PYKO can receive distant GPI statuses, or transmit its GPI statuses.

To receive distant GPIs statuses, select option « **Server** » from parameter « T**unneling mode** », and select the listening TCP port from parameter « **Port for TCP connection** ».

It is necessary to select the GPO which are concerned by the tunneling. From the page Settings:GPO, select "On" for TCP tunneling, for each GPO that has to reflect the status of a distant GPI.
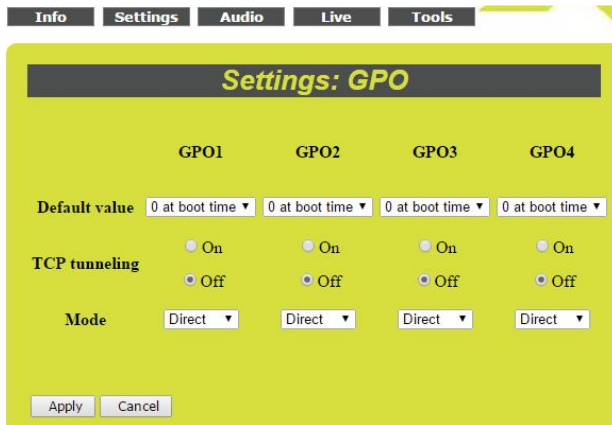
If you need to invert the tunneled status on the GPO, select "Invert" Mode for each GPO.

To send GPI statuses, select option « **Client** » from parameter « **Tunneling mode** », and select the destination IP address and TCP port from parameters « **TCP server IP Address if client mode** » and « **Port for TCP connection** ».

Click on **Apply** to confirm the parameters.

7.4. Using PYKO-in with EtherSound

PYKO-in is also capable of decoding EtherSound 100/spkr (www.ethersound.com). This is an exclusive mode of PYKO-in. In this mode, PYKO-in can decode *ONE* EtherSound mono stream.

As default setting ex factory, the equipment works in IP mode. Switching from IP mode to EtherSound is done through the Web pages by selecting the EtherSound mode.

In EtherSound mode, the control of PYKO-in is done through EScontrol. Access to the web pages is no longer possible.

To switch back to IP mode, PYKO-in needs to be reset (press the 'Reset' button for at least five seconds). PYKO-in will re-boot with the default factory settings.

Note: each time PYKO-in is switched from one mode to another, the previous settings are lost, the device reboots in factory configuration.

8. SPECIFICATIONS

Configuration

Size	140 mm x 41 mm x 145 mm (1/3 1U rack)
Power supply	{0><}100{>24 VDC, +/- 20%<0} *WARNING Do not open the power supply module. It contains hazardous voltages. There are no user-serviceable parts inside.*
Temp / humidity (non-condensing) **Operating:** **Storage:**	0 °C – 55 °C / 0% - 70% -5 °C – 70 °C / 0% - 95%
Power requirements at 24 V	0.4 A
Net weight	0,477 kg (~1.05 lb)

Inputs

Mode	**Stereo input ('Stream Server')**	**Full-duplex**
Analog line inputs	1 stereo	1 mono
Ic input with switchable 12 V phantom power	1 (left)	1 (left)
Maximum input level/impedance	+4 dBu/+18 dBu / >10 kΩ	
Frequency response	20 Hz – 20 kHz : 0/-2 dB	
THD + noise, 1 kHz at –-1 dBfs	20 Hz – 20 kHz : <-84 dB	
Signal to noise ratio	20 Hz – 20 kHz : <-98 dB	
Adjustable mic gain	0 - 39 dB	
Maximum mic input level/impedance	-2dBu / >10 kΩ	
Equivalent Input Noise, A/D-D/A at 48kHz, G=39 dB, Z=200 Ω	<-115 dBm	

Outputs

Mode	Stereo input ('Stream Server')	Full-duplex
Analog line outputs	-	1 mono
Maximum output level/impedance		+4 dBu/+18 dBu / <100 Ω
Frequency response		20 Hz – 20 kHz : 0/-2 dB
THD + noise, 1 kHz at –-2 dBfs		20 Hz – 20 kHz : <-84 dB
Signal to noise ratio		20 Hz – 20 kHz : <-98 dB
Headphones out	1 on Jack (3,5 mm)	

Connectivity

Audio	2x3 pins on terminal block
Ethernet port	RJ45 10/100-bit.
GPIO	4 GPIs compatible TTL 4 relay GPOs 2x8 pins on terminal block
Serial port	1 RS232 on DB9

Software, formats, protocols

Stream format	IP RTP
Audio formats	mp3 (variable bit rate up to 192 kBit/s) G.711 (μLaw/aLaw at 8 kHz) PCM (16 bit at 8 up to 48 kHz)
Network protocols	Audio-Manager, html pages via embedded web server http web server: personalized web interface for a flexible management TCP/UDP commands to enable PYKO management over the network SNMP: enables PYKO to be managed over the network in very large systems DHCP, DNS, IGMP

8. APPENDIX A: FIRMWARE

The standard PYKO-in firmware offers two working modes: '**Stream Server'** and **'Full-duplex'**.

Firmware description

Firmware	Stream server	Full-duplex	Shoutcast
Audio	1 stereo input	1 mono input and 1 mono output	1 stereo input
Management through Audio Manager	Yes	Yes	Yes
Audio formats and streaming protocols			
MP3: 16 to 48 kHz on RTP	Encoding	Decoding for stream priority 1	Encoding
PCM (16bit): 8 to 32 kHz on RTP	Encoding	Encoding/decoding up to 24 kHz	
PCM (16bit): 44,1 to 48 kHz on RTP	Encoding	Decoding for stream priority 1	
G711 on RTP	Encoding	Encoding/decoding	
Shoutcast/Icecast			Yes
EtherSound	Firmware independent / Exclusively mono		
GPI management	•	•	
GPO management	•	•	
FD Serial Link management (RS232)	•	•	
Multicast	Tx	Tx/Rx	
IGMP	•	•	
SNMP	•	•	
Decoding priority levels	N.A	2	N.A

9. APPENDIX B: INPUT/OUTPUT LEVEL SELECTION

These settings shall be executed by qualified personnel only!

Tools required:

- a #1 Pozidriv screwdriver
- an ESD-preventive wrist strap

Electrostatic discharge (ESD) can damage several components on the board. To avoid such damage in handling the board, take the following precautions:

Bring the device and everything that contacts it to ground potential by providing a conductive surface and discharge paths. As a minimum, observe these precautions:

- Disconnect all power and signal sources.
- Place the device on a grounded conductive work surface.
- Ground yourself via a grounding wrist strap or by holding a grounded object.
- Ground any tools that will contact the device.
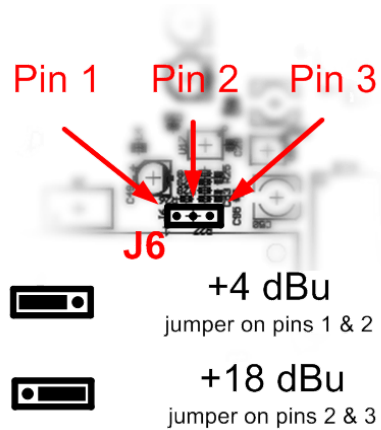- Unscrew the two Pozidriv screws counterclockwise and open the cabinet.

Jumper position on motherboard

Front panel
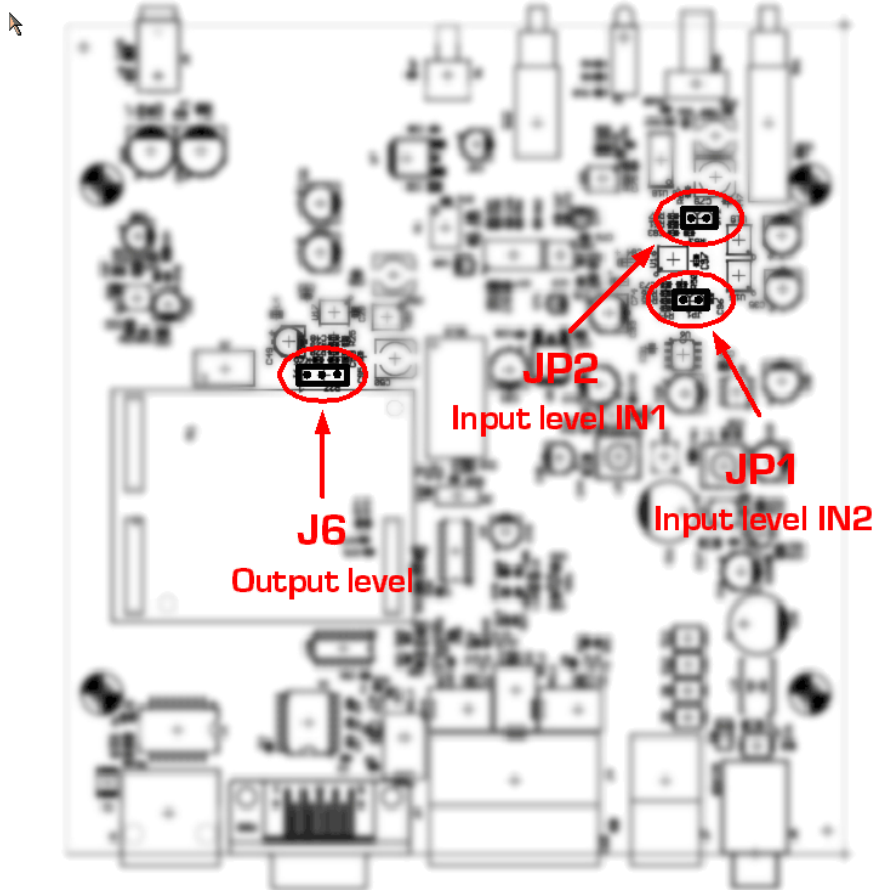
Back panel

Nominal output level

+4 dBu
jumper on pins 1 & 2

+18 dBu
jumper on pins 2 & 3
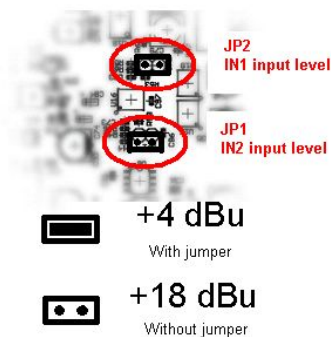
Jumper positioning

This setting defines whether the maximum level of the analog output signals is either +18 dBu or +4 dBu.

Default factory setting is +18 dBu.

Based on this setting, a 0dBfs digital signal will produce à + 18 dBu or +4dBu analog output signal.

The settings described above act upon the maximum output level. Having located the jumper to modify in the overview picture, set it according to the above illustrations to match the requirements of your system.

Nominal input level

+4 dBu
With jumper

+18 dBu
Without jumper

Jumper positioning

This setting defines whether the maximum level of the analog input signal is either +18 dBu or +4 dBu.

Default factory setting is +18 dBu for both inputs (no jumper on JP1 and JP2).

In case the input signal maximum level is not higher than +4 dBu, set a jumper on JP1 (input 2) and JP2 (input 1).

Based on this setting, a 0dBfs digital signal is produced for a +18 dBu or +4dBu input analog signal.

10. APPENDIX C: RTP FORMAT

An audio stream encoder must respect the size and the *payload* type described underneath.

RTP frame size

The maximum payload size in bytes for the encoder can be calculated from the formula:

$$\text{Min}(1300, 20.\textit{chans}.\textit{Bps}.\textit{samplerate}/1000)$$

where chans is the number of channels, *bps* is the number of bytes per sample and samplerate is the sampling rate in Hertz.

The maximum payload size for MP3 is 1400 bytes.

RTP payload types

The following table shows the defined RTP payload types that the encoder must respect.

RTP payload type	Audio formats
0	μ-Law, 8bit, mono, 8kHz
8	A-Law, 8bit, mono, 8kHz
10	PCM, 16bit, MSB first, signed, 44.1 kHz stereo, left channel first
11	PCM, 16bit, MSB first, signed, 44.1 kHz mono
14	MPEG audio
96	PCM ,16bit, MSB first, signed, 8 kHz mono
99/113 *	PCM, 16bit, MSB first, signed, 24 kHz mono
102	PCM, 16bit, MSB first, signed, 32 kHz mono reserved
103	PCM 16bit, MSB first, signed, 48 kHz stereo, left channel first
111	PCM ,16bit, MSB first, signed, 12 kHz mono
127	Other formats

*113 as of firmware v020

Payload types 0, 8, 10, 11 and 14 are defined by the RTP standard. Digigram defines assignment for payload types 96 to 127 (dynamic payload types) in the above tables.

11. APPENDIX D: AUDIO CONNECTORS

The audio inputs/outputs of PYKO-in come on a terminal block connector with two lines of three pins each three points (= two counterparts).
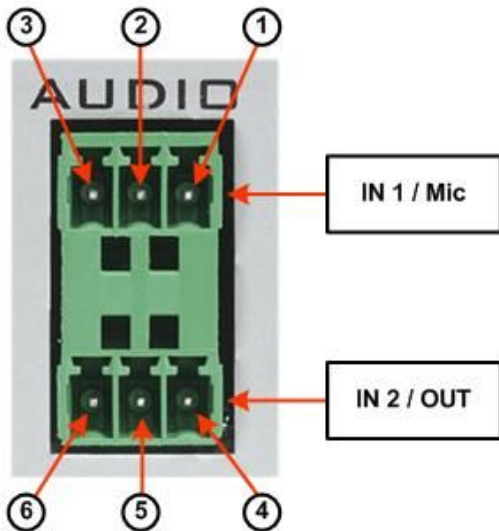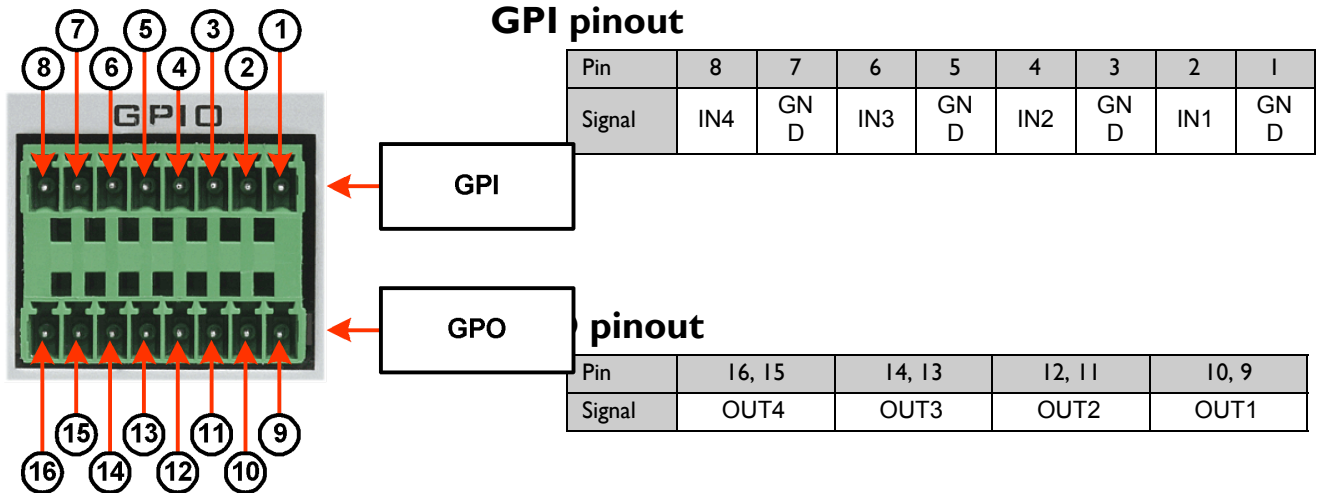

Pinout

Pin	Stream server	Full-duplex
1	GND	GND
2	IN 1- / Mic	IN- / Mic
3	IN 1+ / Mic	IN+ / Mic
4	GND	GND
5	IN 2-	OUT-
6	IN 2+	OUT+

12. APPENDIX E: GPIO CONNECTORS

PYKO-in provides four TTL 5 V compatible GPIs and four relay GPOs. The counterparts are provided.

GPI pinout

Pin	8	7	6	5	4	3	2	I
Signal	IN4	GND	IN3	GND	IN2	GND	IN1	GND

GPO pinout

Pin	16, 15	14, 13	12, 11	10, 9
Signal	OUT4	OUT3	OUT2	OUT1

General Purpose Inputs (GPIs)

The state of a GPI can be either "1" or "0". It is read at "0" as soon as it is connected to the ground (GND). Otherwise it is read at "1".

A GPI must maintain its state for at least 20 ms.

Note: *Each GPI can receive an external command contact.*

General Purpose Outputs (GPOs)

The PYKO-in GPOs are relay outputs. They feature two pins each and are all configured the same way. Pins 9 & 10 belong to GPO # 1, 11 & 12 to GPO # 2, 13 & 14 to GPO # 3, and 15 & 16 to GPO #°4.

If written at "1", the GPO closes the linked open collector. If written at "0", the GPO opens the linked open collector.

GPIOs can be used for tunneling from one PYKO towards another (GPIn-> GPOn).
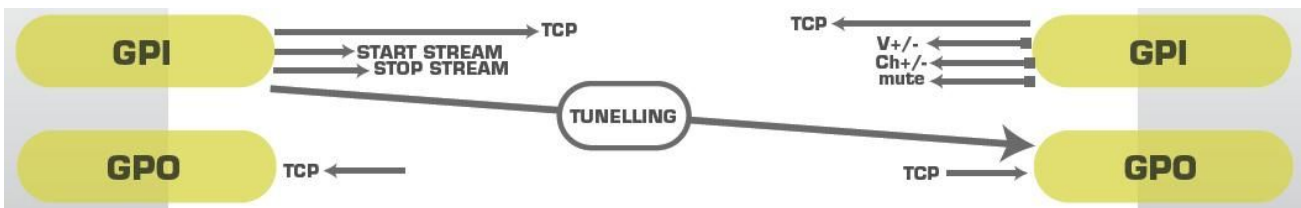
GPO relay specifications

Maximum power switching capability	10 W
Maximum switching current	$1\ A_{DC}$
Maximum carrying current	$1\ A_{DC}$
Maximum switching voltage	$125\ V_{AC}/60\ V_{DC}$

Typical life expectancy (switching max power)	10^6 operations

13. APPENDIX F: SERIAL PORT (RS232 ON DB9)

Pin	Description
1	not connected
2	RxD (received data)
3	TxD (transmitted data)
4	not connected
5	signal ground
6	not connected
7	RTS (request to send)
8	CTS (clear to send)
9	not connected
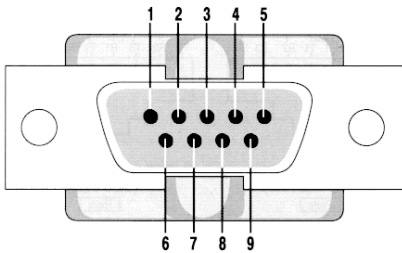
PYKO-in provides an RS232 serial port on a male DB-9 connector on its back panel. This port can be used for remote control of PYKO-in through an external interface such as, e.g. Vity, AMX or Crestron, or for tunneling purposes.

It is possible to use the RS232 in gateway mode, in multicast, and in multi-destination (up to 4 destinations)
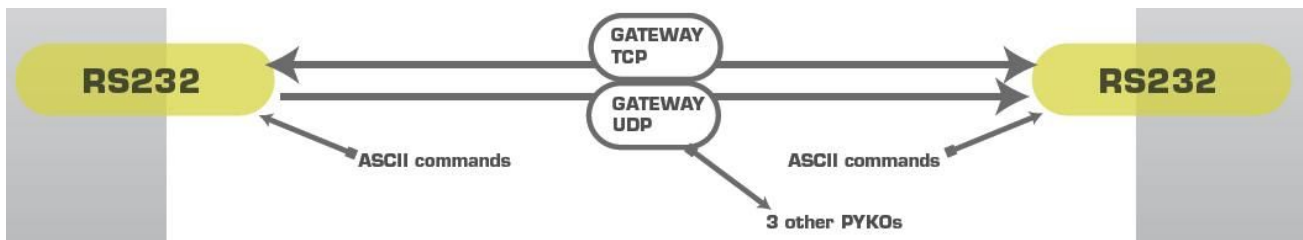
14. APPENDIX G: MOUNTING PYKO IN A RACK

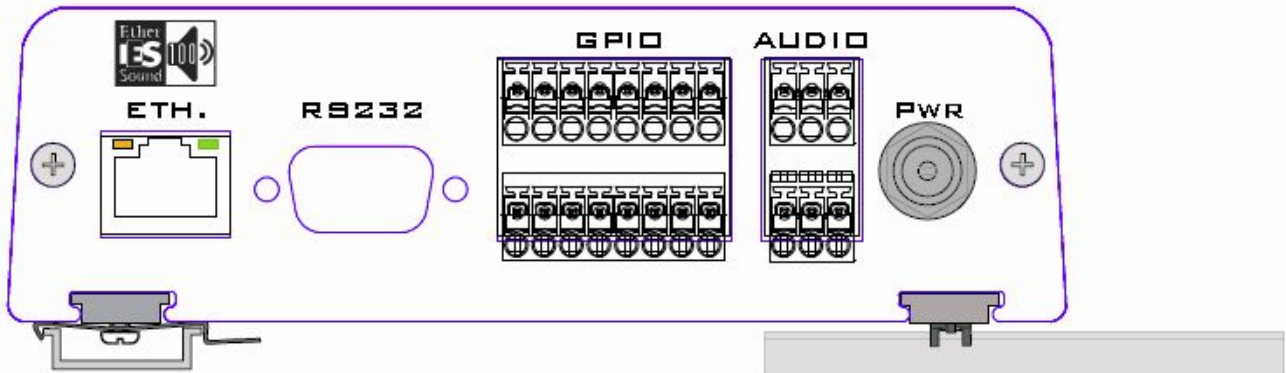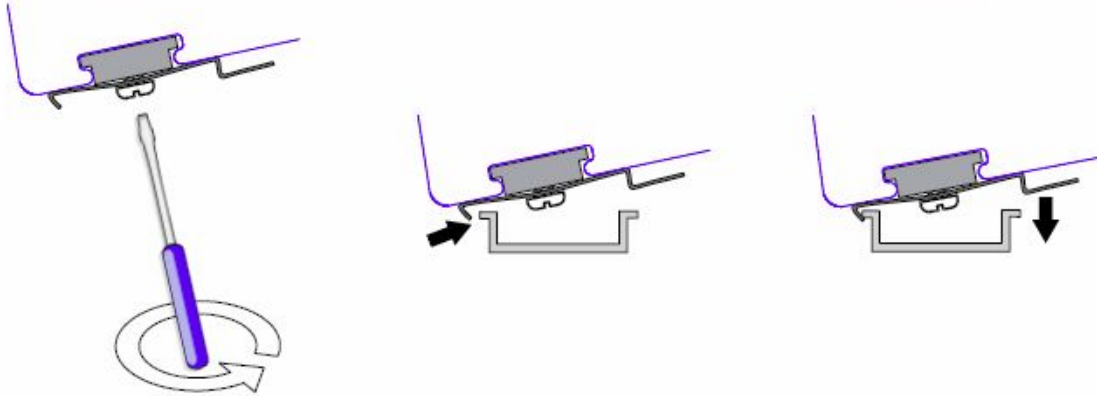You can mount up to three PYKOs in a 19" rack:
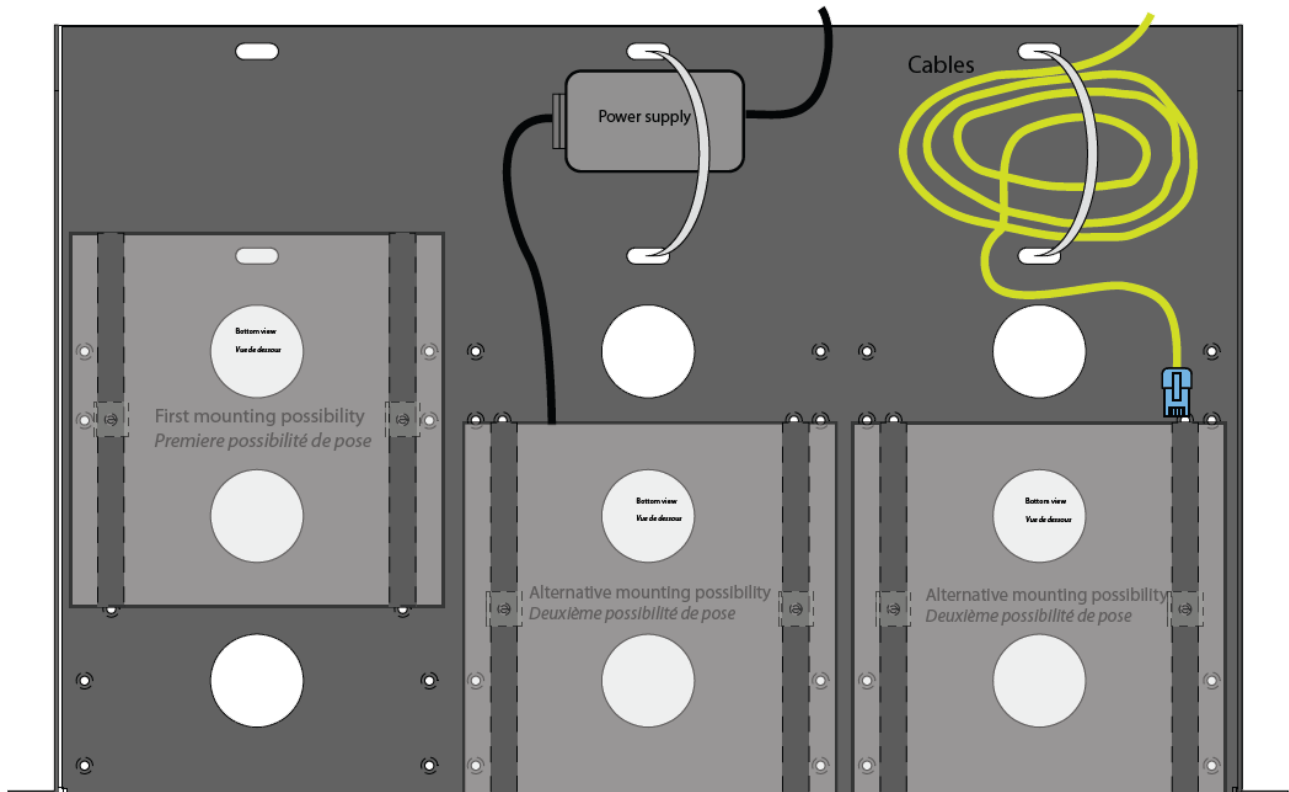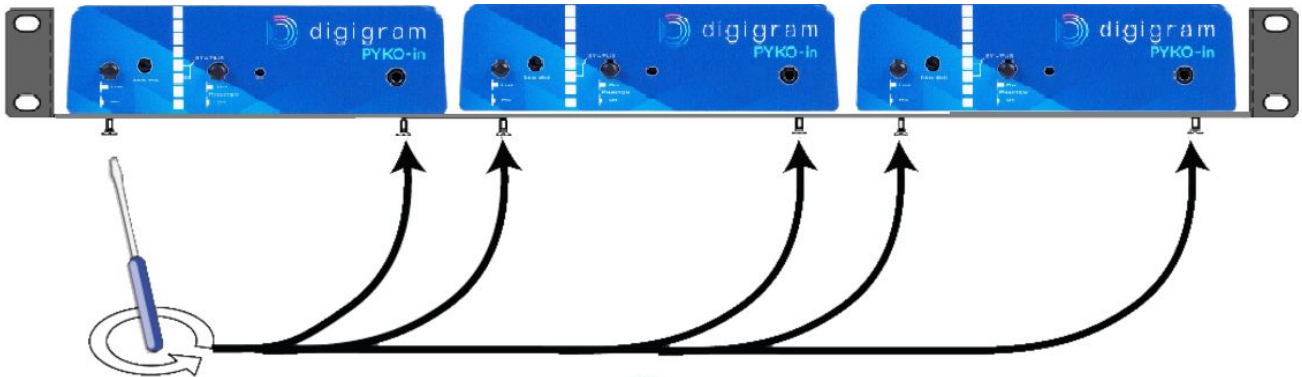
Insert the DIN-RAIL mount kit into the sliders on PYKO's bottom side.

First mounting possibility: *Second mounting possibility:*

Bottom view

Vue de dessous
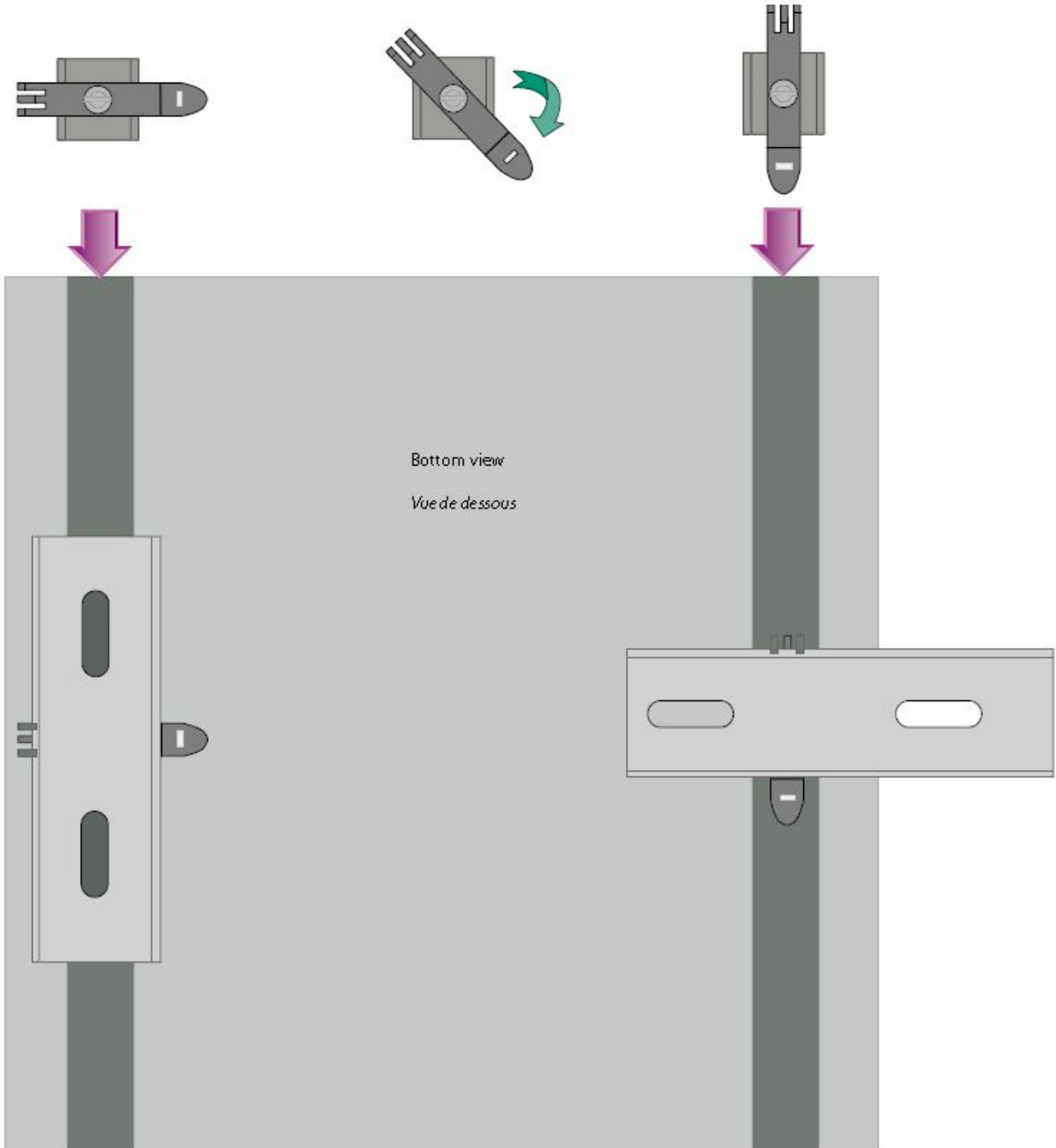
**For technical support,
please contact your system supplier**