PAN BEAM SERIES OPERATING AND INSTALLATION MANUAL

PB 04, PB 08, PB 16, PB 24, PB 32, PB 40, PB 224, PB 248, PB 272, PB 296

V 1.1

PAN BEAM - ACTIVE DSP COLUMN SPEAKER PURE ACOUSTICS

Shapely.
Versatile.
Functional.

Read the operating manual carefully prior to putting the device into operation.
The operating manual is to be kept in a safe place.

www.pan-acoustics.de

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1. Introduction

Thank you for choosing a product from Pan Acoustics. The active column speakers with DSP technology from the Pan Beam® series combine an appealing architectural design with modern beam steering technology.

The Pan Beam series offers a comprehensive speaker portfolio, e.g. for acoustically difficult environments, traditional AV installations, theater and outdoor applications. The portfolio is made complete by properly-matched subwoofer systems. All products of the Pan Beam series are optimized for natural speech and music reproduction.

Please read this operating manual carefully prior to startup in order to guarantee fault-free operation.

1.1. Symbols and explanation

⚠ **DANGER**   This symbol indicates a hazard with a high level of risk. If this hazard is not prevented, severe injuries or death may result.

⚠ **WARNING**   This symbol indicates a hazard with a moderate level of risk. If this hazard is not prevented, moderate to severe injuries or death may result.

⚠ **CAUTION**   This symbol indicates a hazard with a moderate level of risk. Failure to observe this instruction may lead to minor injuries or property damage.

⚠ **NOTICE**   This symbol provides important instructions for proper handling of the product. Failure to observe this instruction may lead to damage to the product or malfunctions.

1.2. General information and target group

All specifications in this operating manual are based on the product features available at the time of production and the safety rules applicable at that time.

This operating manual describes the configuration, function and connection of the Pan Beam speaker systems PB 04, PB 08, PB 16, PB 24, PB 32, PB 40, PB 224, PB 248, P 272, PB 296 to the power supply and audio sources. It is geared towards systems technicians and persons assigned the task of installing and operating a relevant system.

Pan Acoustics reserves the right to make changes and modifications without prior notice within the scope of statutory regulations and product improvements.

This operating manual and all additional information required for operation (see also: "Pan Beam setup" in the operating manual in its current version) must be read prior to use by all persons involved in commissioning. The operating manual and all additional information required must be kept within reach, near the device.

All necessary information and documents can be obtained from the Pan Acoustics website, www.pan-acoustics.de/de/manuals.html, or per email from kontakt@pan-acoustics.de.

⚠ NOTICE

The Pan Beam series speaker systems can only be configured and maintained (firmware update) using the Pan Beam Setup configuration software. An appropriate interface such as Pan Con, Pan Splitter, Pan Powerline CCU or the installation of the Dante controller from the manufacture Audinate Ltd. is required to connect the speakers to a PC.

1.3. General safety regulations

The following safety regulations are to be read completely and diligently prior to commissioning the device and afterwards kept in a safe place near the device. Reading the instruction manual is no substitute for knowing and following all valid local safety regulations and rules. The information and technical specifications published in this document are based on data available at the time of publication. We reserve the right to make changes to the product aimed towards product improvement and adjustment to new applicable standards.

⚠ DANGER

The device conforms to Protection Class 1. For safety reasons, the device may only be operated on a properly-installed outlet with a grounded socket. The grounded socket connection is never allowed to be dismantled. The rated voltages for the device must be consistent with the line voltage of the power supply. In order to prevent injuries, electric shock and fire, ensure that all persons involved in the set up, operation, dismantling or installation of the device/system have read this operating manual.

⚠ WARNING

In order to prevent electrical shock,

- the product is not allowed to be connected to the power supply if the enclosure is open.
- the product is only allowed to be used with an intact power cord.
- the product is only allowed to be connected to a power supply if the line voltage is consistent with the voltage indicated on the device.
- the product is only allowed to be assembled and mounted when disconnected from the power supply.
- pull only the plug, never the wire, when unplugging the device.
- objects are not allowed to be placed on top of the power cord of the device.
- the electrical cables are to be installed so that they are protected from damage due to foot traffic, pinching and tensile load.
- ensure that all devices interconnected via signal wires are operated with CEE sockets on a common protective ground.

In order to reduce the risk of fire or electrical shock,

- the product is not allowed to be exposed to moisture or humidity.
  (Exception: versions with an appropriate IP protection class).
- no objects (e.g. bottles) filled with liquid are allowed to be placed on top of the device.
- ventilation slots are not allowed to be covered up with objects (e.g. textiles).
- the device is not allowed to be subjected to excessive heat, direct sunlight, fire or similar influences.
- no open sources of fire (e.g. candles) are allowed to be placed on top of the device.

In order to prevent injury, it is necessary to decommission this product, clearly mark it and secure it from being inadvertently put back into operation if the product

- shows signs of visible damage.
- contains loose parts.
- no longer runs fault-free.
- was in prolonged storage under adverse conditions (e.g. in humid rooms).
- was subjected to severe transport stress (e.g. with improper packaging).

To avoid damage to the device and injuries to personnel,

- this product should be kept out of the reach of children.

To avoid injuries such as hearing damage from excessive volume levels, persons should

- never stand directly in front of a connected speaker.
- not be subjected to high volume levels for a prolonged period.

⚠CAUTION

In order to prevent damage to the product, avoid

- generating acoustic feedback.
- playing back distorted signals at high power for a prolonged period.
- generating impulse-like sounds (e.g. popping noises), which occur if a media player is switched on, connected or disconnected.
- connecting the product to the power supply for a prolonged period without using it.
- operating the device in environments with high air humidity.
- operating the device without sufficient possibility of air circulation.

⚠NOTICE

Device protection and operating safety

- The device is completely disconnected from the power supply by pulling the power plug.
- The device is only to be cleaned from the outside using a dry cloth.
- The original packaging should be used when transporting the device. The device is to be protected against vibrations.

1.4. Safety instructions

All products from Pan Acoustics are developed and manufactured in Germany according to the latest safety regulations. Each product is thoroughly inspected prior to shipping according to in-house quality guidelines.

The device conforms to the current CE regulations for operation in residential, business, commercial and industrial areas.

The device is to be carefully inspected upon receipt for shipping damage and completeness. In case of damage, the forwarder and sender are to be notified without delay.

Safety may be impaired if the product:
- shows signs of visible damage.
- no longer works properly.
- has been stored under adverse conditions for a prolonged period.
- has been improperly shipped (e.g. unsuitable packaging).

If the product shows signs of impairments that no longer guarantee safe operation, the device is to be secured and labeled accordingly. It should also be ensured that no intentional or inadvertent operation by third parties is possible.

1.5. Setup location

The speaker must be operated in dry places guaranteeing sufficient air circulation. Exceptions to this are speakers with an appropriate protection class, e.g., IP 54 or IP 65.

The device can be damaged due to condensation. That is why devices should be properly acclimated prior to operation.

The ambient temperature when operating the device should not exceed 40°C and should not fall below 0°C. Exceptions to this are speakers with an appropriate modification, see type plate.

⚠WARNING

When unpacking, it is important to pay attention to the temperature difference between the ambient temperature and the device. In case there is a high temperature difference, it is necessary to wait for a sufficient period before commissioning the device in order to prevent damage due to condensation.

⚠NOTICE

If the ambient temperature is higher than 40°C, adequate measures are to be undertaken to protect the device against overheating. If the speaker overheats, it automatically shuts off and only on turns on again after cooling off.

1.6. Scope of delivery

The scope of delivery may vary depending upon the model and can be obtained in the appendix.
--> *See chapter 9.1. "Delivery scope for speakers"*

1.7. Definition

Pan Beam
Product series of active speakers, line array with beam steering technology.

Pan Beam Net
Audio and control signals are transmitted via the Pan Beam Net by means of a (twisted-pair) network cable. The cable must be category CAT 5e or higher. The cabling is configured in a daisy chain.

Pan Beam Setup software
Software for the setup of Pan Beam speakers

Pan Powerline
Transmission technology for audio, control data and power supply over a 2-wire-system

Beam steering technology
Electronic vertical and horizontal beam steering of an active speaker

Multi beam steering technology
Generation of several so-called sound beams using beam steering technology

Side lobes
Side lobes describe sound artifacts created alongside the main beam direction.

RJ45
Plug connector for transmitting signals

IEC-60320 C13
Internationally standardized power connector for devices (low heat device socket)

DANTE
Digital audio network protocol for transmission of audio and control data developed by Audinate.

AES/EBU
Interface for transmission of digital audio signals between various devices according to AES3

USB
   Serial port for connecting devices to a computer

Daisy chain cabling
   In this type of cabling, devices are connected serially, i.e. in a circuit

General Purpose Interface (GPI)
   A platform-independent circuit connection between devices from different manufacturers

2. Product description

2.1. Pan Beam

The Pan Beam models PB 04/08/16/24/32/40/224/248/272/296 are active, digitally steerable column speakers. The Pan Beam models PB S-208/-118 are active subwoofer systems. Via the Pan Beam Setup software, the radiating characteristics of the column speakers can be influenced individually in real time.

With the products from the Pan Beam series, you can achieve nearly constant alignment of the volume within a large listening area and in doing so, direct the sound flexibly and precisely to the corresponding listener plane(s). This characteristic of the speakers means, on the one hand, that even when standing near the speaker, the listener does not need to withstand what is otherwise a high and unpleasant sound pressure level. On the other hand, at larger distances, the listener experiences uniform and clearly-audible sound reproduction with natural sound.

The defining features of Pan Beam products are:

- Perfect design
- Innovative technology
- High-performance DSP control
- Highest level of speech intelligibility and music reproduction
- Flexible and precise alignment (multi-beam technology)
- Efficient digital amplifiers
- Networking
- Flexibility through modularity
- Light weight
- Low power input and low quiescent current
- Integration in EN 60849 systems

2.2. Beam steering technology

The combination of high-performance DSP technology and Pan Beam Setup control software allows for the configuration of the vertical width and inclination angle of the beam. It is not necessary to mechanically tilt the speaker, i.e. the speaker can be mounted vertically, e.g. on a wall.

In this, the length of the sound column determines the maximum bundling in low frequencies. The longer an array is, the better the control over low frequencies.

2.3. Multi beam steering technology

From PB 08 and PB 248, the Pan Beam column speakers offer the capability of multi-beam steering technology. This allows for the generation of more than one beam from one column. As a result, the beam energy can be ideally distributed among the surfaces onto which sound is projected, e.g. orchestra level, first balcony, second balcony in the theater. Where required, each of the beams generated can be defined in terms of its volume.

2.4. Side lobe optimization

The Pan Beam column speakers offer a DSP function enabling the optimization of so-called side lobes. In addition to the "max. SPL", there are also two additional functions available: "SPL + side lobe" and "min. side lobe". Through side lobe optimization, reflections caused by the physical characteristics of the speaker, e.g. when mounting the unit near glass walls, can be reduced to a minimum.

3. Connections

All connections for audio, control data and power supply are located on the back panel of the speakers. The connections are freely accessible. No tools are required for connecting the audio signals and power supply.

3.1. Connector panel for Pan Beam PB 04/08/16/24/32/40 - analog/digital audio (AES/EBU)
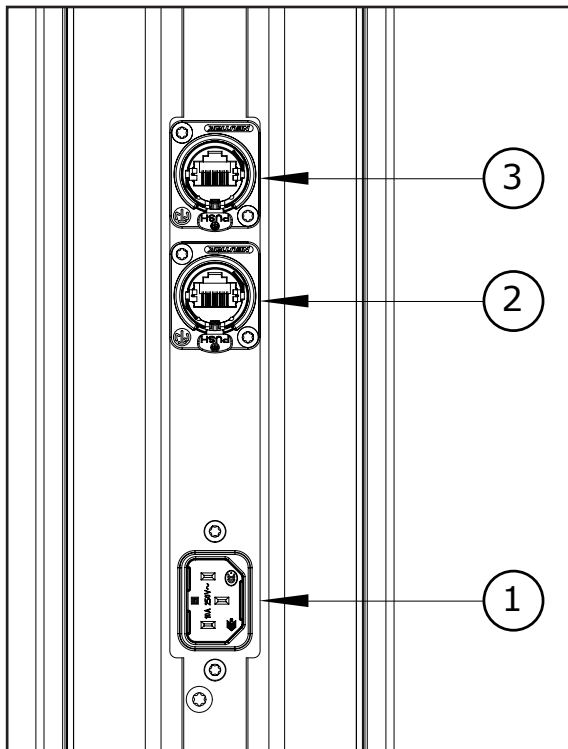
(3) Pan Beam Net connection
RJ45

(2) Pan Beam Net connection
RJ45

(1) Power connection
according to IEC 60320-1 C13
3-pin low-voltage with integrated strain relief and protective ground conductor
Supply voltage: 100–230 V, 50/60 Hz
The rental version is equipped with a PowerCON TRUE1 connector

3.2. Connector panel for Pan Beam PB 04/08/16/24/32/40 - DANTE
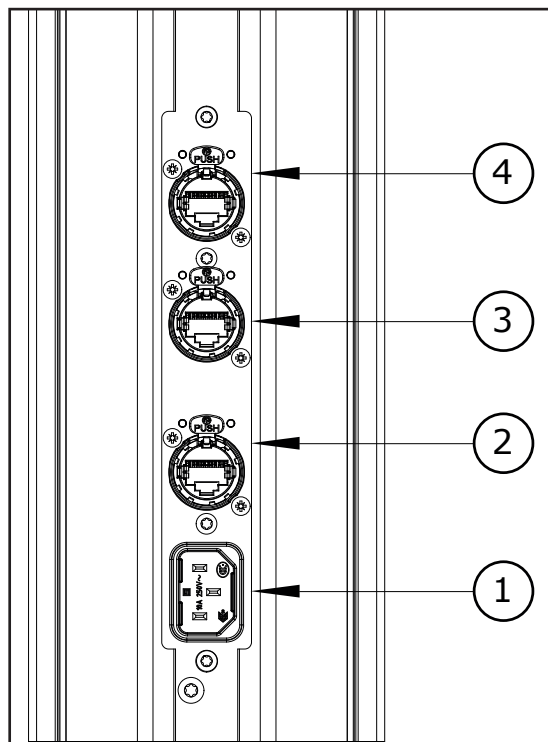
(4) Dante Network secondary port
RJ45 / 1 GBit/s

(3) Dante Network primary port
RJ45 / 1 GBit/s

(2) Pan Beam Net-Link
RJ45

(1) Power connection
according to IEC 60320-1 C13
3-pin low-voltage with integrated strain relief and protective ground conductor
Supply voltage: 100–230 V, 50/60 Hz

3.3. Connector panel for Pan Beam PB 224 - analog/digital audio (AES/EBU)
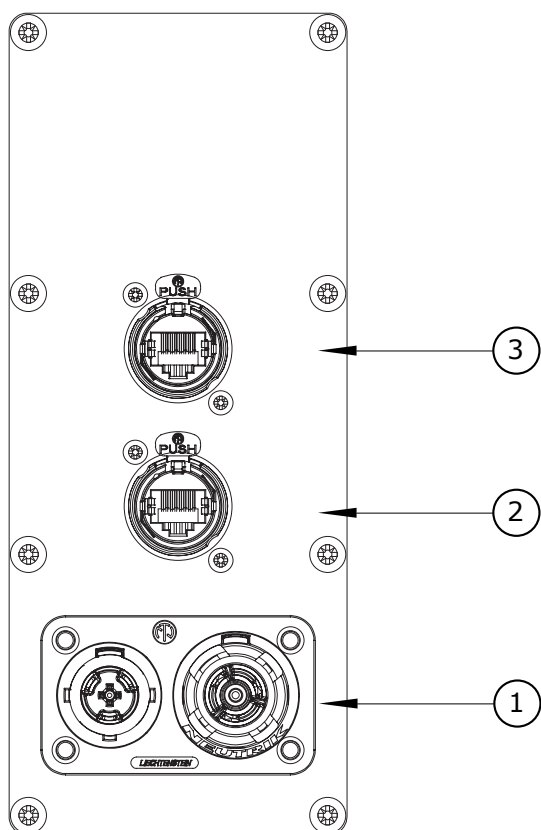
(3) Pan Beam Net connection
RJ45

(2) Pan Beam Net connection
RJ45

(1) Power connection
PowerCON TRUE1
Supply voltage: 100–230 V, 50/60 Hz

3.4. Connector panel for Pan Beam PB 224 - DANTE
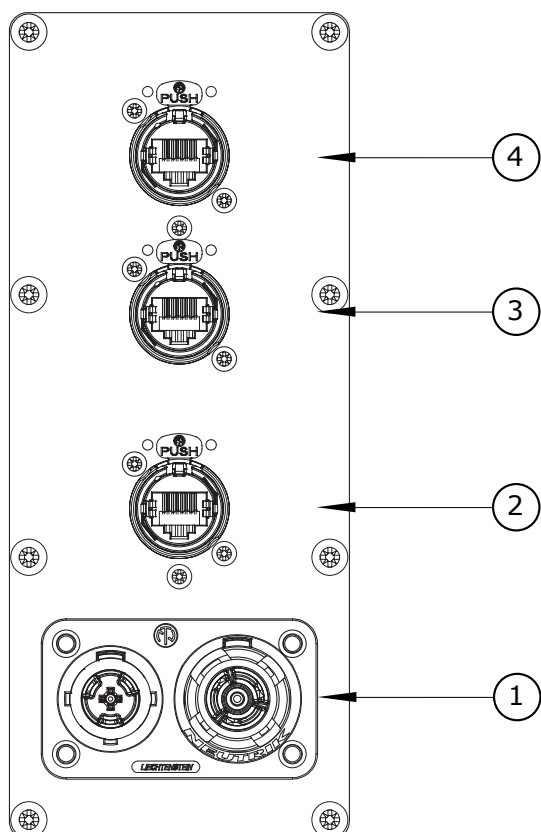
(4) Dante Network secondary port
RJ45 / 1 GBit/s

(3) Dante Network primary port
RJ45 / 1 GBit/s

(2) Pan Beam Net-Link
RJ45

(1) Power connection
PowerCon TRUE1, integrated strain relief
and protective ground conductor
Supply voltage: 100–230 V, 50/60 Hz

4. Commissioning

4.1. Electrical connections

All audio and power supply connections are located on the back panel of the speakers. The connections are freely accessible, --> *see chapter 3. "Connections"*.

For the power supply, the power connection of the speaker is to be made to an appropriate power source using the included power cord.

The connection for audio signals and control data is established via the RJ45 connector sockets.

⚠ DANGER

In order to prevent electrical shock, the modules are only allowed to be connected to one another when the power is switched off.

⚠ NOTICE

To prevent malfunctions, the recommended bending radius of the power and signal connection cables is to be observed.

4.2. Mounting of speakers, consisting of several modules

The PB 16, PB 24, PB 32 and PB 40 speaker systems consist of two or more modules. The PB 16 consists of a "bottom" and "top" module. The PB 24, 32 and 40 feature additional intermediate ("middle") modules. The power and signal supply is provided via an internal cable assembly with appropriate plug connectors. The mechanical connection of the individual modules is completed via connector elements that are inserted into the lateral slots.

①	②	③
Insert the narrow connectors into the lateral slot.	Secure the connectors using screws (left and right).	Insert the wide connector into the rear slot.
④	⑤	⑥
Secure the connector using screws.	Connect the power and signal plug connectors.	Join the modules and secure them with screws.
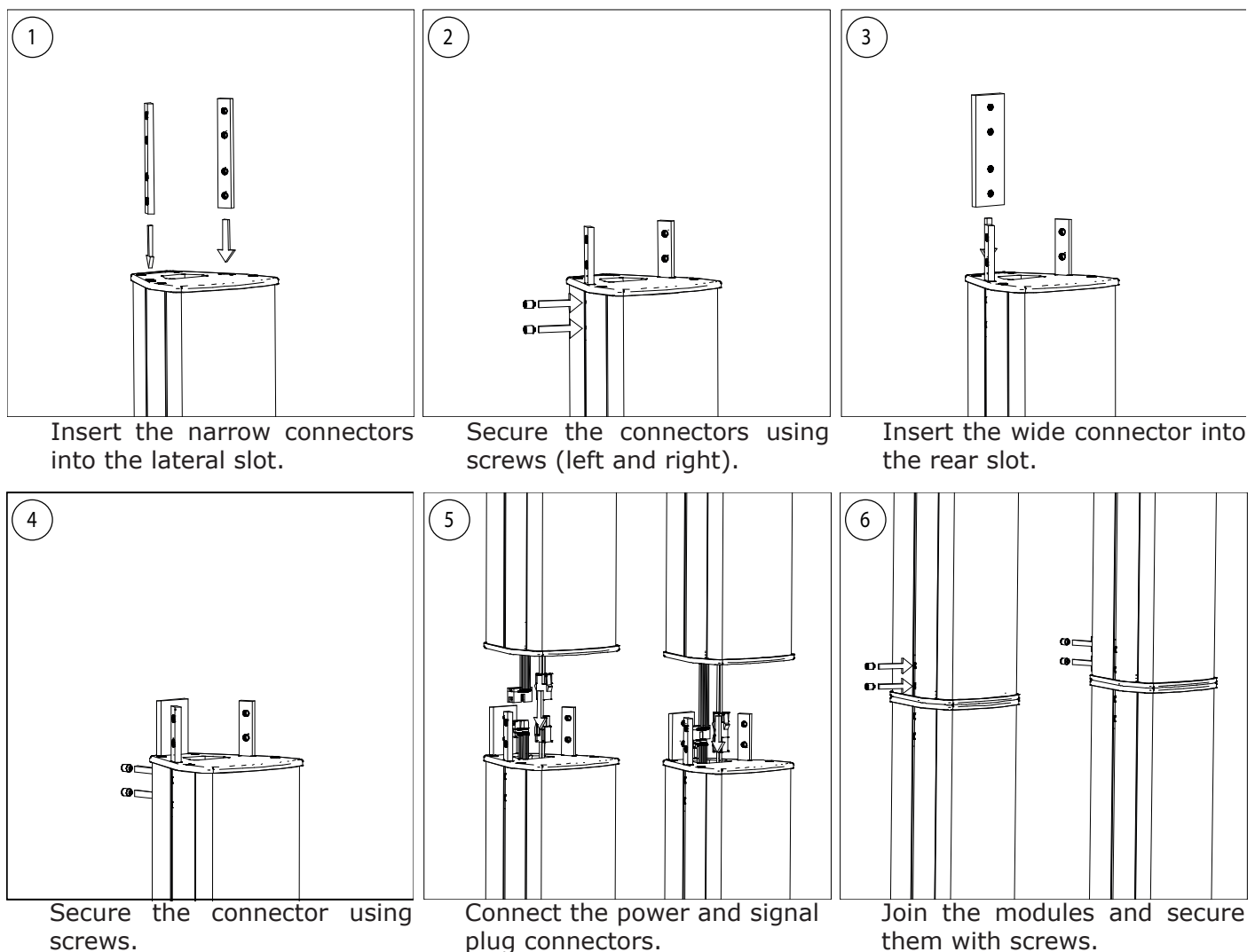
⚠ NOTICE

When joining the modules, the inside cable assembly is to be fed into the interior of the speakers. Avoid crushing and bending the cables.

The PB 224, PB 248, PB 272 and PB 296 speaker systems consist of two or more modules. The PB 248 consists of two PB 224 modules. The PB 272 consists of three PB 224 and the PB 296 of four PB 224 modules. The power and signal supply is provided via external cables joined using the appropriate plug connectors. The mechanical connection is made as with PB 16, 24, 32, 40 via four connector elements into the two lateral and rear slots. A mounting plate is pre-fitted on the back panel for wall mounting, in order to fasten appropriate wall brackets.

PB 224
PB 224 AES/EBU

PB 224 Dante

PB 16 Dante
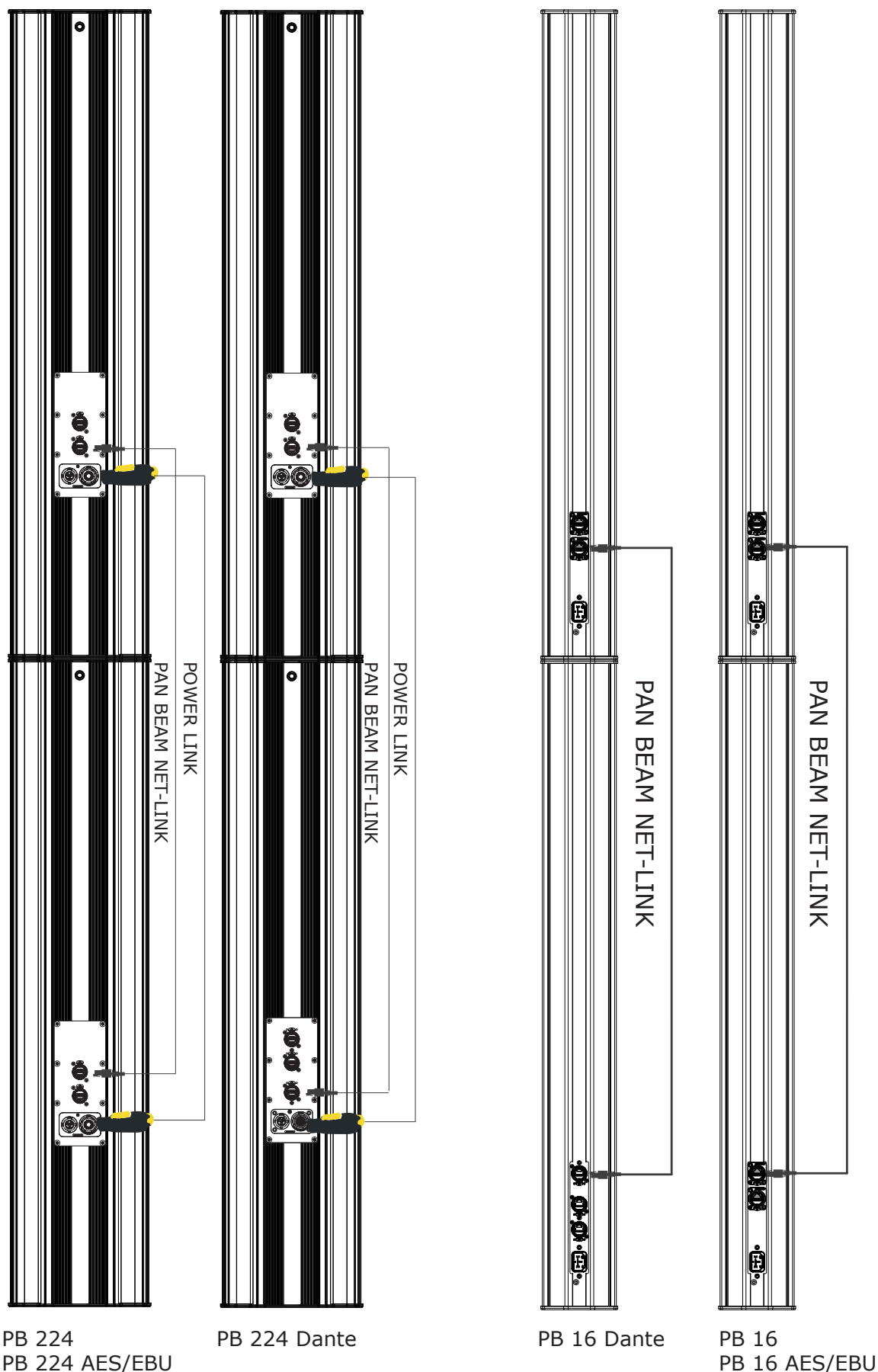
PB 16
PB 16 AES/EBU

4.3. Cascading of the speaker columns with Pan Beam Setup software

The speaker systems PB 16, 24, 32, 40, 248, 272, 296, consisting of several modules, are to be appropriately cascaded according to the mechanical connection by means of the Pan Beam Setup software. Please refer to the Pan Beam Setup manual for the appropriate procedure.

5. Error description

	Display		Meaning
LED	○	off	no power supply
	●	red glowing/flashing	error
	●	illuminated green	ready for operation
	●	orange blinking	communication

Problem	Cause	Remedy
Signal LEDs are not illuminated	Speaker has no power	Check the connection to the power supply
Signal LED illuminated / blinking red	Speaker has detected an error	Contact service department
Signal LED blinking orange	Communication between software and speaker, communication between media controller and speaker	None, as this is normal behavior
Connected Pan Beam does not appear in the software	Pan Beam not connected to Pan Beam Net or DANTE	Check connection, verify IP address/subnet in DANTE controller
No audio playback	No audio signal connected	Connect audio signal via audio input on the interface, crosspoint not set in DANTE Controller routing matrix
No audio playback despite connection	Wrong audio input chosen	Check to ensure that the audio connection is properly connected
No audio playback despite proper connection	No audio signal, cable defective	Check audio signal, examine cable at the source
DANTE Distorted audio playback	Incorrect sample rate configured in the DANTE controller	Configure proper sample rate
No connection via USB port	USB cable not inserted properly USB cable defective USB cable inserted in USB port after Pan Beam Setup program launch	Check to ensure that the cable is properly connected Replace USB cable Relaunch Pan Beam Setup program.
Media controller does not work	Pin configuration incorrect Baud rate incorrect Faulty instruction set	Check pin configuration Configure proper baud rate Check instruction set

If the error is not specified in the above table or cannot be remedied using the measures mentioned, please consult the technical support of Pan Acoustics GmbH.

Please retain the original packaging of the devices in order to ensure secure return shipping in the event of a claim. The risk of shipping damage is minimized by the original packaging.

5.1. Service and repair

Service and repair work are only allowed to be carried out by persons and partners instructed by Pan Acoustics.

No service or repair work is allowed to be made on the device above and beyond the statements made in the maintenance manual.

Contact data:
--> *see chapter 5.5. "Contact address"*

5.2. Maintenance measures

The following measures are to be carried out at regular intervals:

Cleaning
The enclosure should be regularly dusted off with a damp cloth and thereby examined for any damage.

Visual and functional inspection
The installed device should be regularly subjected to a visual inspection.

The following items are to be carried out:
• Check the connections on the Pan Beam Net interface and on the speaker to ensure a proper fit.
• Check the bracket for wall and ceiling mount for a firm fit.
• Check the enclosure for damage.
• Check network connection cable for damage.

5.3. EC conformity (CE mark)

The declaration of conformity for the relevant product from the Pan Beam series can be requested from Pan Acoustics.

5.4. WEEE declaration (disposal)

The waste bin symbol points out that electrical and electronic components are not allowed to be disposed of in household waste. This symbol is found on our products.

If the product is to be disposed of, please consult with your dealer or distributor.

5.5. Contact address

Pan Acoustics GmbH   Tel: +49 (0) 5331 900 95 70
Lindener Straße 15   Fax: +49 (0) 5331 900 95 79

38300 Wolfenbüttel   Email: support@pan-acoustics.de
Germany

6. Appendix

6.1. Pan Beam Net - RJ45 pin configuration
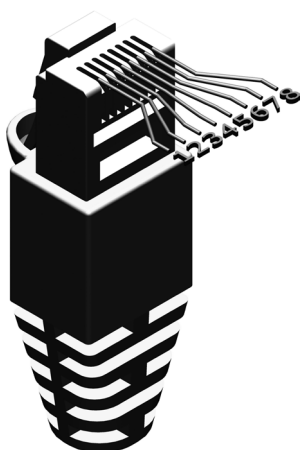
Pin	Description
1	Input A +
2	Input A -
3	Relay contact +
4	Input B + (AES/EBU)
5	Input B - (AES/EBU)
6	Relay contact -
7	RS485 +
8	RS485 -
Enclosure	PG (earth/ground) shielding

6.2. Alarm contact (alarm loop)

Each Pan Beam speaker has an alarm contact. Via this alarm contact, the speaker can display a detected error. For this purpose, a switch relay is installed in the speaker, which is connected in normal operating status. If the speaker is not in operation, there is no power supply, or if an internal error is signaled via the DSP, the relay is opened.

In the Pan Beam Net, all devices are interconnected by means of daisy chain cabling. In order to close the loop for the alarm contact, create a jumper between pin 3 and pin 6 (--> see chapter 6.1. *"Pan Beam Net - RJ45 pin configuration"*) on the device located at the end of the cabling.

Via the Pan Con and Pan Splitter interfaces, the alarm loop can now be evaluated, e.g. via a GPI on the media controller. To do so, the 3-pin connector on the Pan Beam Net interface is to be connected with the device accordingly.

Pan Net jumper plug

> 1   Alarm loop ---> etherCon Pin 6
> 2   Alarm loop ---> etherCon Pin 3
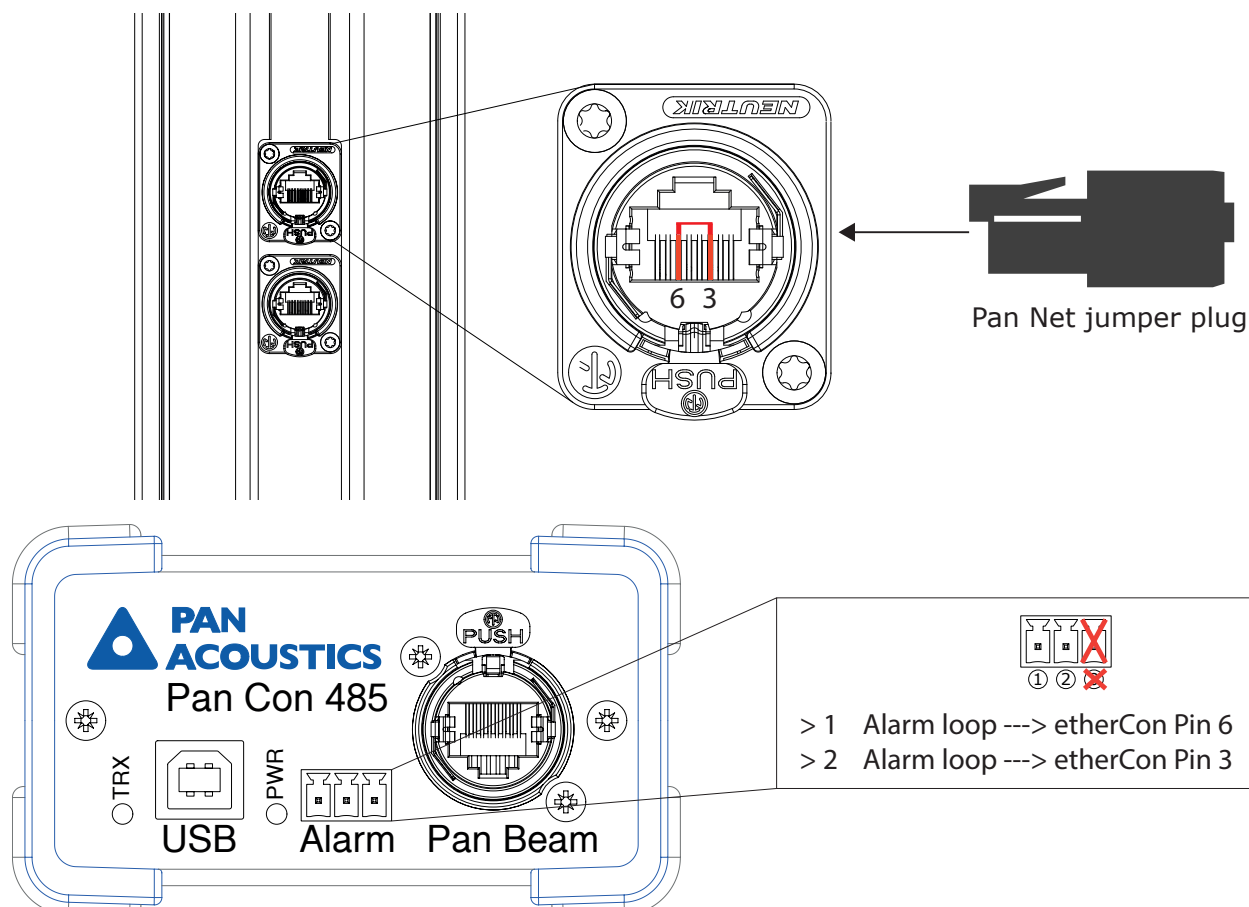
6.3. Control via media controller

6.3.1. Pan Beam Net

Via the Pan Splitter 4/4 and Pan Splitter 2/6 interfaces, previous configurations (so-called presets) saved in the speaker can be activated using a media controller. To do so, connect the media controller to the specified interfaces via the RS485 interface.
--> *See chapter 7. "Interfaces".*

The following control commands must be transmitted completely. It is important to take the below timing into account. There is no feedback message. All Pan Beam speakers in the audio network execute the command.

Timing
A wait interval of at least 3 s must be adhered to between the individual commands.

⚠NOTICE

Mixed operation on the RS485 bus with other devices of third-party manufacturers is not allowed due to the different protocols!

On connected Pan Beam speakers, this may lead to a malfunction and/or failure of a speaker. Reactivation is only possible via technical support.

Parallel operation of the media controller and the Pan Beam Setup program is not possible and should be avoided.

Control commands

Calling up presets	String (HEX)
Preset 1	0x02 0x46 0x46 0x46 0x45 0x52 0x1C 0x30 0x31 0x1C 0x30 0x32 0x30 0x32 0x0D
Preset 2	0x02 0x46 0x46 0x46 0x45 0x52 0x1C 0x30 0x32 0x1C 0x30 0x32 0x30 0x33 0x0D
Preset 3	0x02 0x46 0x46 0x46 0x45 0x52 0x1C 0x30 0x33 0x1C 0x30 0x32 0x30 0x34 0x0D
Preset 4	0x02 0x46 0x46 0x46 0x45 0x52 0x1C 0x30 0x34 0x1C 0x30 0x32 0x30 0x35 0x0D
Preset 5	0x02 0x46 0x46 0x46 0x45 0x52 0x1C 0x30 0x35 0x1C 0x30 0x32 0x30 0x36 0x0D

⚠NOTICE

The prefix 0x in the string (HEX) must be adapted or can be omitted depending upon the media controller used. For this purpose, please refer to relevant information on the instruction manual of the media controller used.

6.3.2. Crestron

The relevant module is ready for operation with a media controller by the manufacturer Crestron. The module can be obtained through the Crestron website or from Pan Acoustics.

6.3.3. Pan Beam Net interface configuration, Crestron

baud rate	38400 ± 3%
data bits	8
parity	none
stop bits	2
flow control	none

6.4. DANTE

6.4.1. Setup
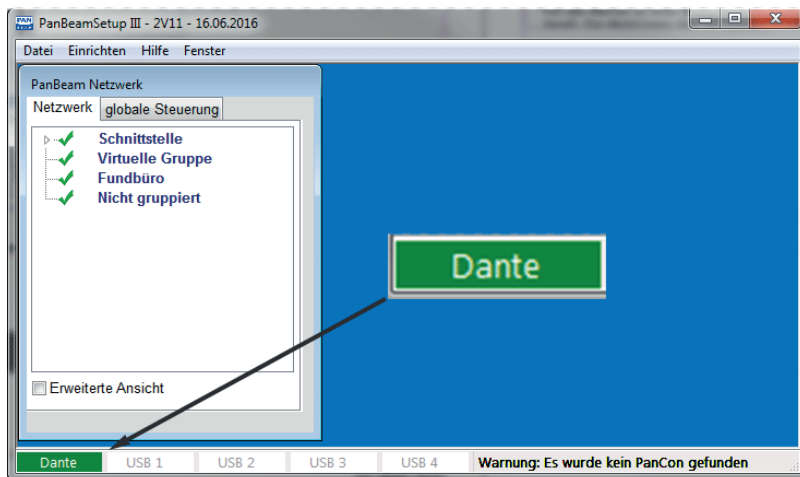
The speakers in the Pan Beam series are to be set up through the Pan Beam Setup software. The Audinate software DANTE Controller is to be installed for software access to DANTE network. After successful installation, the DANTE interface appears in the bottom line of the Pan Beam Setup software.

The DANTE controller can be launched via the "Interface" menu item in the Pan Beam Setup program.

The DANTE Controller software in its latest version must be properly installed. Link for download: http://www.audinate.com

6.4.2. Routing
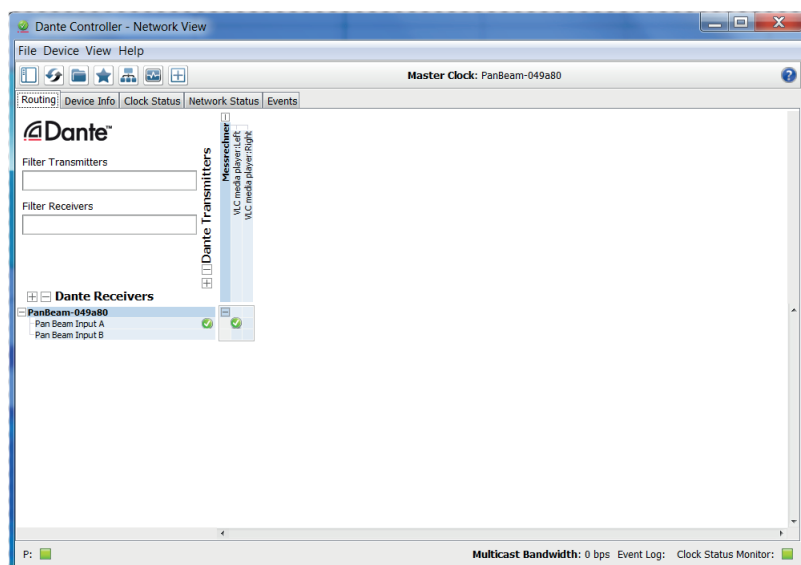
A Pan Beam speaker appears in the DANTE network under the "DANTE Receivers" tab. The speaker features two inputs, Input A and Input B.

For audio routing, the relevant connection is to be set between the desired DANTE transmitter and the Pan Beam speaker.

⚠ NOTICE

Via the Pan Beam Setup software, the relevant audio source is also to be activated (Input A and/or Input B).

6.4.3. Device Config
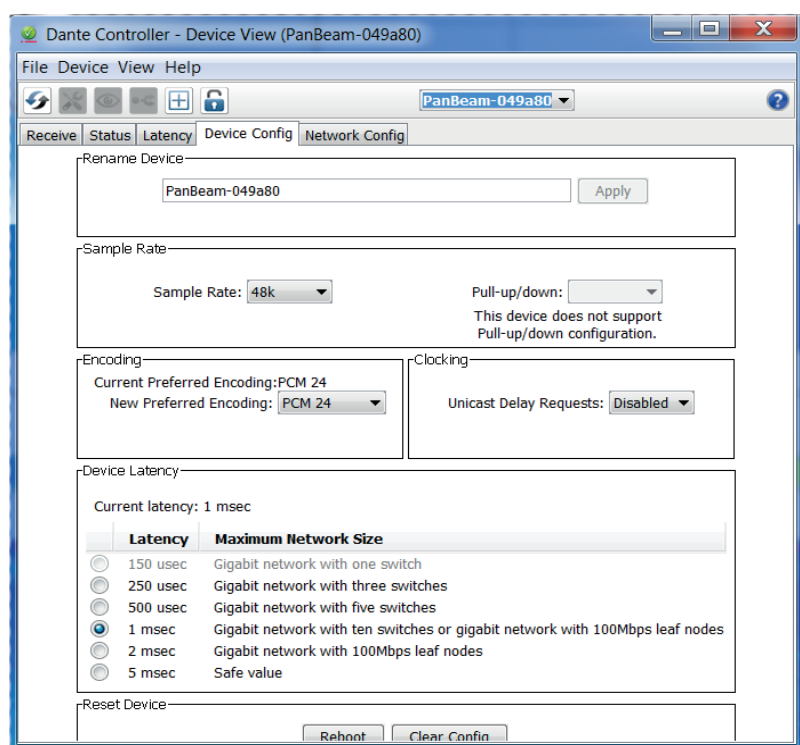
The DANTE interface allows to adjust various settings of the Pan Beam speakers via the "Device Config" tab.

Rename device:
Assign name for the speaker

Sample rates:
44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz

Encoding:
Pan Beam speakers support PCM24 and PCM32 encoding

Device latency and clocking
See Audinate Dante information at http://www.audinate.com

6.4.4. Network configuration
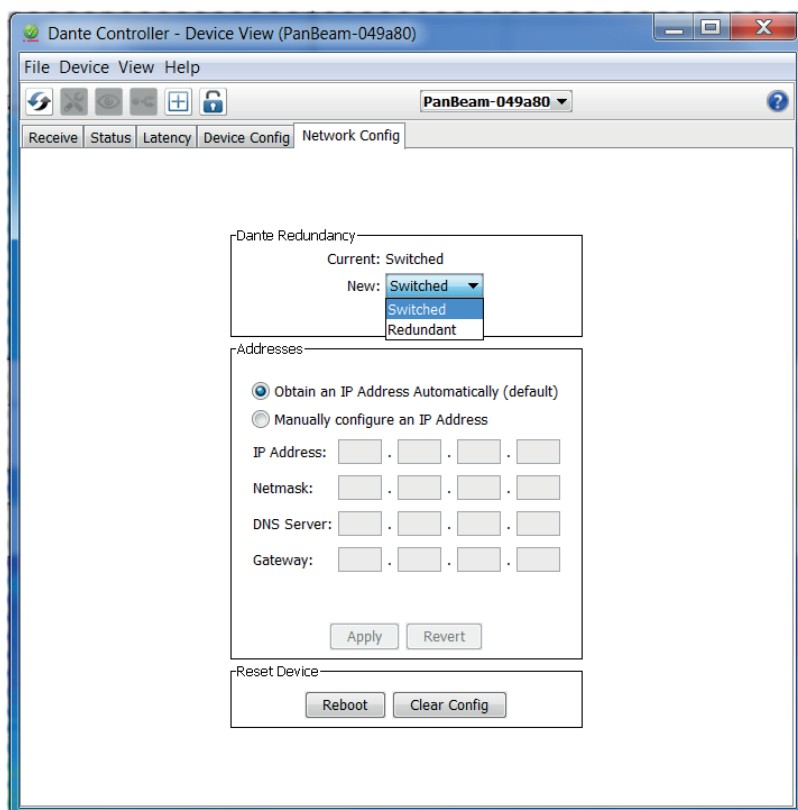
The DANTE interface of the Pan Beam speakers supports the "switched" and "redundant" modes in the DANTE network.

Switched:
If the DANTE interface is set to "switched", an additional DANTE device can be connected on the secondary port, e.g. a stage box, and operated in the DANTE network.

Redundant:
If the DANTE interface is set to "redundant", the Pan Beam speaker can be connected with a second network cable to the redundantly-configured DANTE network.

6.4.5. Status
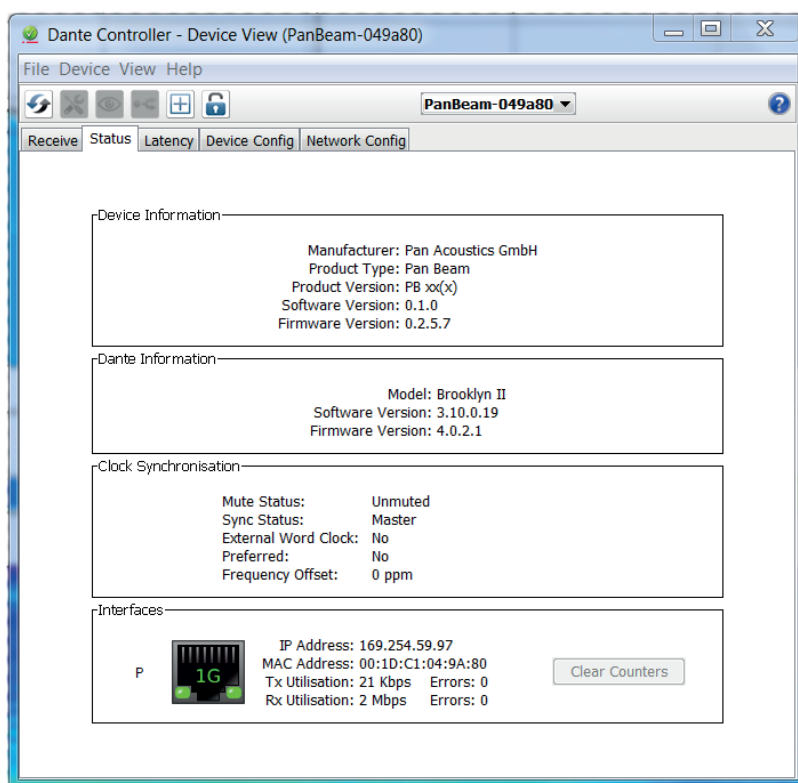
Via the "Status" tab, information can be called up on the device, firmware and software version, clock status and network interface.

6.4.6. Cascading
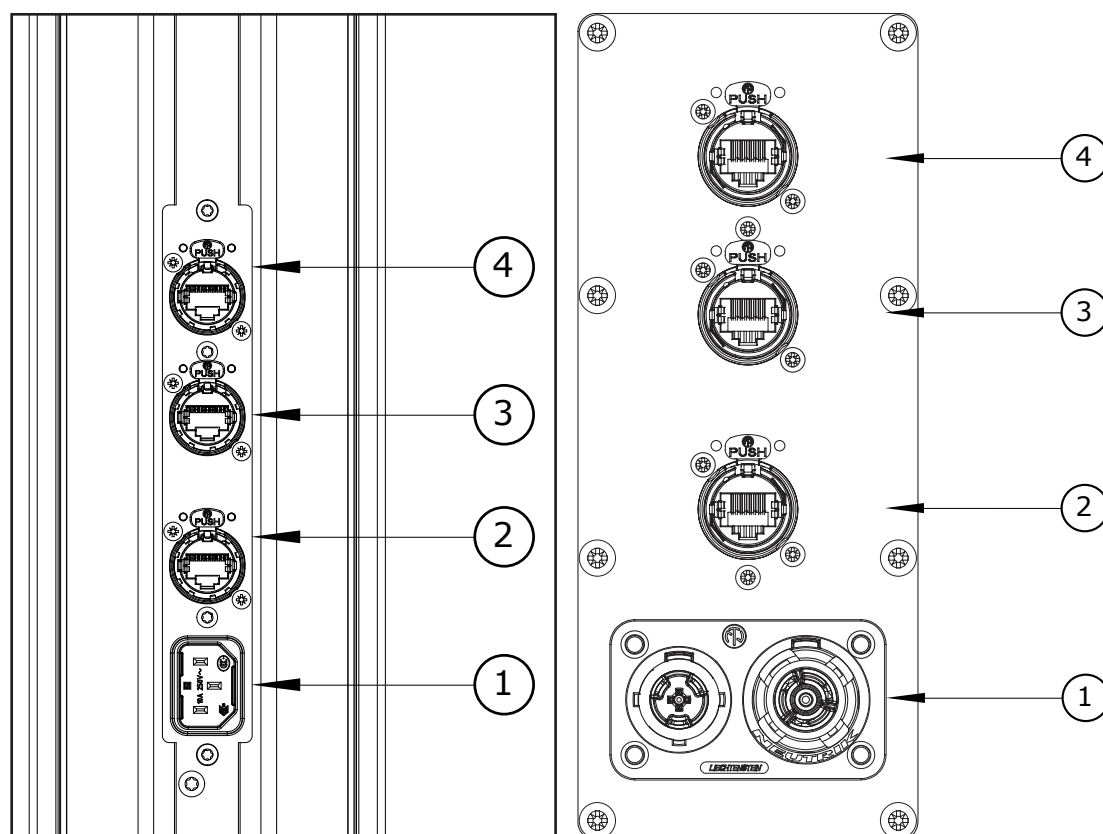
(4) Pan Beam Net-Link

Via the Pan Beam Net-Link RJ45 port, additional Pan Beam speakers can be connected with the AES/EBU interface in a daisy chain procedure.
Pay attention to the proper sequence (Input/Output).

Marking (1) to (4) *See chapter 3.2. "Connector panel for Pan Beam PB 04/08/16/24/32/40 - DANTE" or chapter 3.4. "Connector panel for Pan Beam PB 224 - DANTE"*

6.4.7. Media controller

Via the DANTE audio network, it is possible to activate the saved configurations (presets) via UDP commands.

The following control commands must be transmitted completely. It is important to take the below timing into account. There is no feedback message. All Pan Beam speakers in the audio network execute the command.

Timing
A wait interval of at least 3 s must be adhered to between the individual commands.

Network address and port
Address: 224.0.1.4
Port: 4712

Calling up presets	String (HEX)
Preset 1	50 41 4e 41 43 4f 55 53 54 49 43 53 02 46 46 46 45 52 1c 30 31 1c 30 32 30 32 0d
Preset 2	50 41 4e 41 43 4f 55 53 54 49 43 53 02 46 46 46 45 52 1c 30 32 1c 30 32 30 33 0d
Preset 3	50 41 4e 41 43 4f 55 53 54 49 43 53 02 46 46 46 45 52 1c 30 33 1c 30 32 30 34 0d
Preset 4	50 41 4e 41 43 4f 55 53 54 49 43 53 02 46 46 46 45 52 1c 30 34 1c 30 32 30 35 0d
Preset 5	50 41 4e 41 43 4f 55 53 54 49 43 53 02 46 46 46 45 52 1c 30 35 1c 30 32 30 36 0d

6.4.8. Alarm contact (alarm loop)
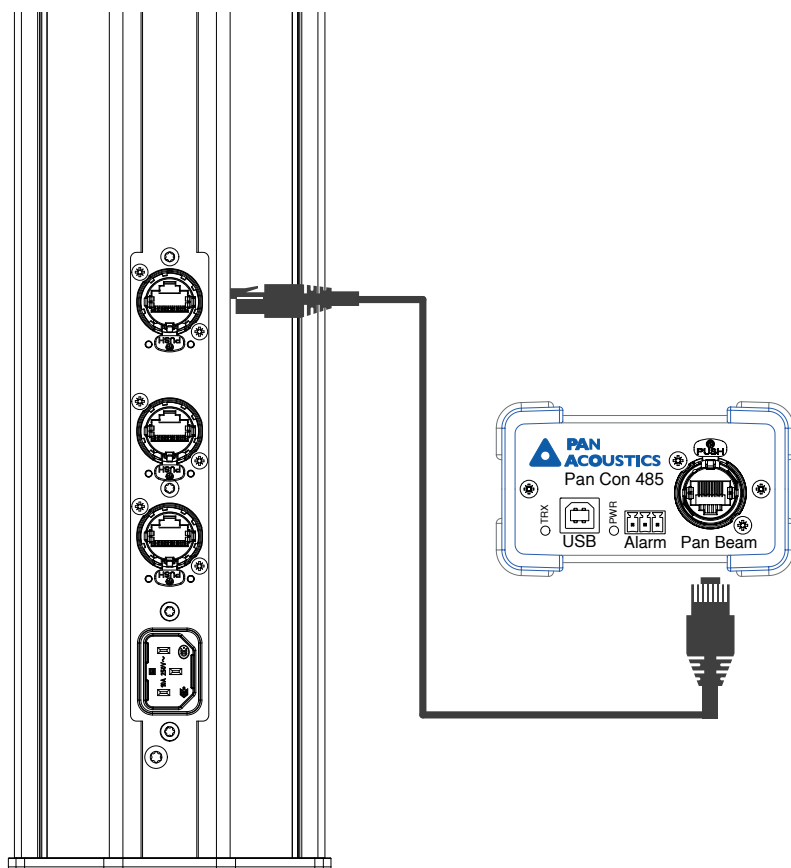
Each Pan Beam speaker has an alarm contact. Via this alarm contact, the speaker can report a detected error. For this purpose, a switch relay is installed in the speaker, which is closed in normal operating status. If the speaker is not in operation, there is no power supply, or if an internal error is signalled via the DSP, the relay is opened.

Pan Beam speakers connected to a DANTE network also have this function. This function can be used via the Pan Beam Net-Link interface. This is achieved by connecting the speaker to an appropriate interface, e.g. Pan Con, via the Pan Beam Net-Link interface by means of a network cable.

Via the alarm contact on the Pan Con interface, the alarm contact status can be monitored by means of a GPI on the media controller.

7. Interfaces

Various interfaces are available for the operation and setup of a Pan Beam network.

7.1. Pan Con
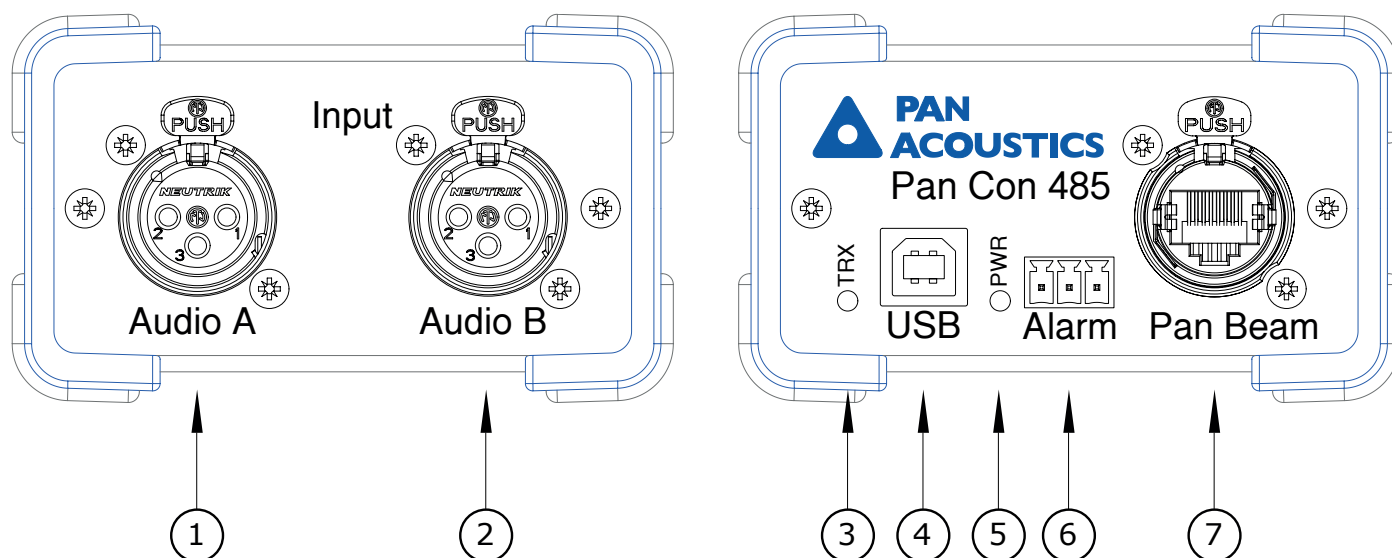
(1) Audio A
Audio input A for analog audio signals

(2) Audio B
Audio input B for analog and digital audio signals

(3) LED TRX
Illuminated orange during data transfer

(4) USB (B) connector
for link to PC

(5) LED PWR
Illuminated green when voltage detected via USB port

(6) Alarm
--> *see chapter 6.2. "Alarm contact"*

(7) Pan Beam
RJ45 connector for Pan Beam speakers

7.2. Pan Splitter 4/4
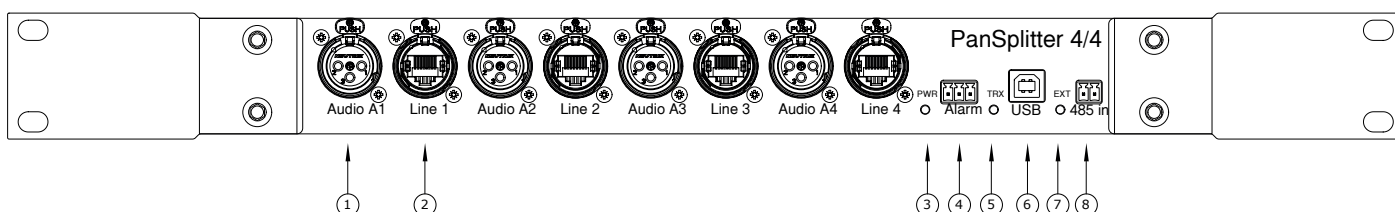
(1) Audio A
Audio input A for analog audio signals

(2) Pan Beam
RJ45 connection for Pan Beam speakers

(3) LED PWR
Illuminated green when voltage detected via USB port

(4) Alarm
--> *see chapter 6.2. "Alarm contact"*

(5) LED TRX
Illuminated orange during data transfer

(6) USB (B) connector
for link to PC

(7) LED EXT
Illuminated when externally controlled via (8)

(8) RS485 Input
2-pin connection for media controller
--> See *chapter 6.3. "Media Controller"*

7.3. Pan Splitter 2/6
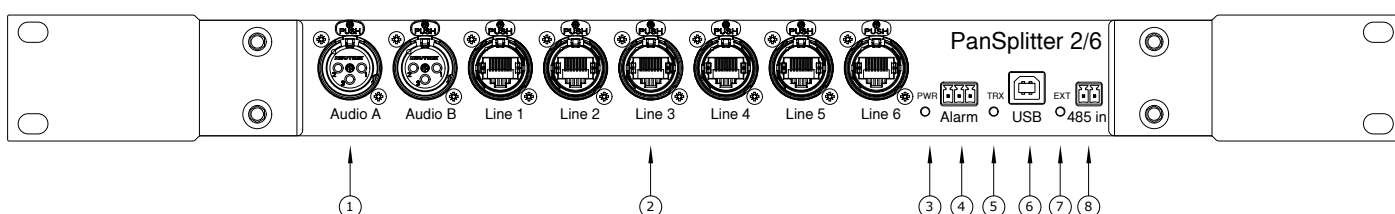
(1) Audio A
Audio input A for analog audio signals

(2) Pan Beam
RJ45 connection for Pan Beam speakers

(3) LED PWR
Illuminated green when voltage detected via USB port

(4) Alarm
--> *see chapter 6.2. "Alarm contact"*

(5) LED TRX
Illuminated orange during data transfer

(6) USB (B) connector
for link to PC

(7) LED EXT
Illuminated when externally controlled via (8)

(8) RS485 Input
2-pin connection for media controller
--> See *chapter 6.3. "Media Controller"*

⚠ NOTICE

For media control operation, Pan Splitter 2/6 and Pan Splitter 4/4 are to be powered via the USB port.

⚠ NOTICE

Pan Splitter 2/6 and Pan Splitter 4/4 are not AES/EBU-capable. Digital audio signals (AES/EBU) can only be fed in into a Pan Beam network via the Pan Con interface. Parallel operation of analog and digital signals in one network is to be avoided in order to prevent defects in the speakers.

8. Pan Beam Net

8.1. Configuration

Pan Beam Net is a line bus system with which the Pan Beam speakers are connected to one another in so-called daisy-chain cabling. For the linking of speakers, a category CAT 5e or higher twisted-pair cable (network cable) should be used. The audio signals (analog or digital), the control data and the alarm loop are transferred via this cable.

The Pan Beam Net is configured to enable continued signal transfer in case a speaker in the line should fail. In case of failure, the alarm loop is interrupted accordingly and the error status in the system can be evaluated on an appropriate interface. For this purpose, the Pan Net jumper plug is to be used according to the cabling examples.

Pan Beam Net enables up to 256 Pan Beam speakers per line to be operated over a total length per line of up to 300m.

Cabling examples for the various interfaces are displayed below.

8.2. Pan Con cabling example

Input
Audio A   Audio B

Input   Input
Audio A   Audio B

Setup and remote via Pan Beam Setup
and power supply for operation on
media controller

Alarm contact for status message,
e.g. on media controller

Network cable CAT 5e or higher

Daisy-chain cabling on additional
Pan Beam speakers

8.3. Pan Con cabling example (alarm contact)

Input
Audio A   Audio B

Input   Input
Audio A   Audio B

Setup and remote via Pan Beam Setup
and power supply for operation on
media controller

Alarm contact for status message,
e.g. on media controller

Netzwerkkabel CAT 5e oder besser

> 1   Alarm loop ---> etherCon Pin 6
> 2   Alarm loop ---> etherCon Pin 3

Daisy-chain cabling on additional
Pan Beam speakers

PB xx   PB xx   PB xx

⚠ NOTICE

The Pan Net jumper plug is to be plugged into the open RJ45 slots on the Pan Beam speaker. This completes the return path for the alarm loop.

8.4. Pan Splitter 2/6 cabling example

8.5. Pan Splitter 2/6 cabling example (alarm contact)

⚠ NOTICE

The Pan Net jumper plug is to be plugged into the open RJ45 slots on the Pan Beam speaker. This completes the return path for the alarm loop.

8.6. Pan Splitter 4/4 cabling example

PanSplitter 4/4

Audio A1 Line 1 Audio A2 Line 2 Audio A3 Line 3 Audio A4 Line 4 PWR Alarm TRX USB EXT 485 in

Input
Audio A1

Input
Audio A2

Input
Audio A3

Input
Audio A4

RS-485 input for
media controller

Setup and remote via Pan Beam Setup
and power supply for operation
on media controller

Alarm contact for status message,
e.g. on media controller

Network cable CAT 5e or higher

Network cable CAT 5e or higher

Network cable CAT 5e or higher

Network cable CAT 5e or higher

PB xx   PB xx   PB xx   PB xx

PB xx   PB xx   PB xx   PB xx

Daisy-chain cabling on
additional Pan Beam speakers

Daisy-chain cabling on
additional Pan Beam speakers

Daisy-chain cabling on
additional Pan Beam speakers

Daisy-chain cabling on
additional Pan Beam speakers

8.7. Pan Splitter 4/4 cabling example (alarm contact)

Input
Audio A1

Input
Audio A2

Input
Audio A3

Input
Audio A4

RS-485 input for
media controller

Setup and remote via Pan Beam Setup
and power supply for operation
on media controller

Network cable CAT 5e or higher

Network cable CAT 5e or higher

Network cable CAT 5e or higher

Network cable CAT 5e or higher

Alarm contact for status message,
e.g. on media controller

> 1   Alarm loop ---> etherCon Pin 6
> 2   Alarm loop ---> etherCon Pin 3

PB xx   PB xx   PB xx   PB xx

Daisy-chain cabling on
additional Pan Beam speakers

Daisy-chain cabling on
additional Pan Beam speakers

Daisy-chain cabling on
additional Pan Beam speakers

Daisy-chain cabling on
additional Pan Beam speakers

PB xx   PB xx   PB xx   PB xx

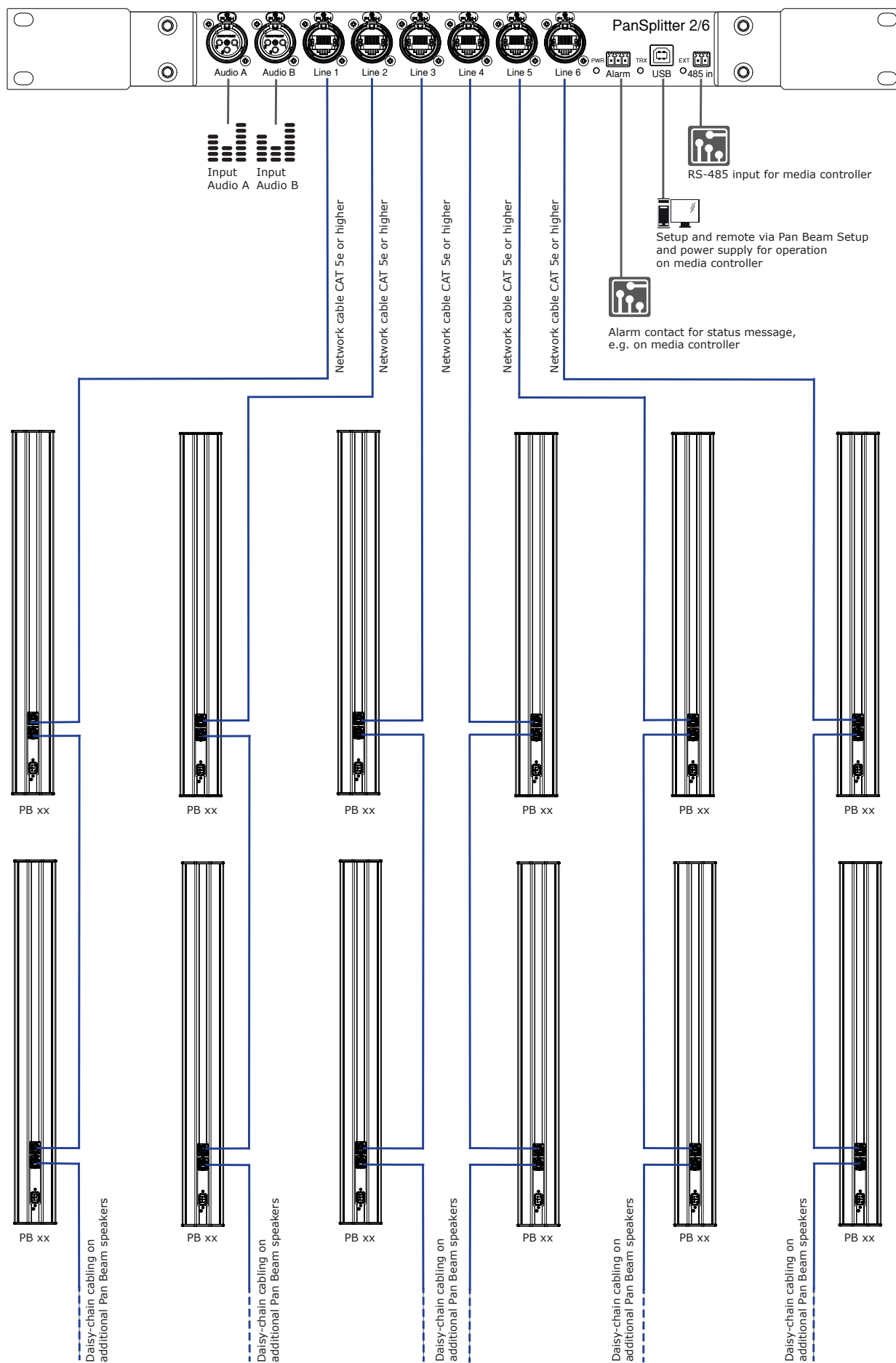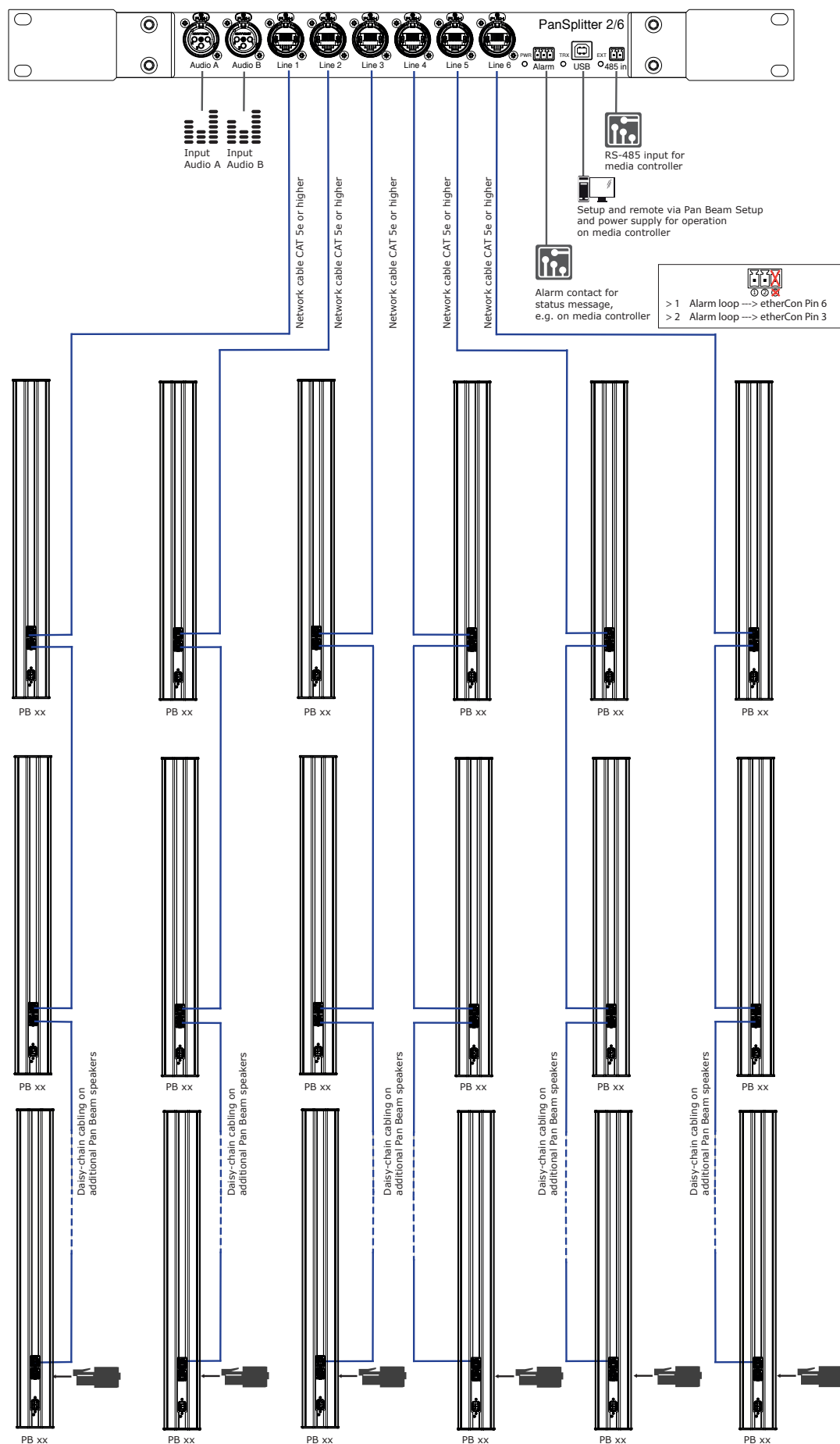PB xx   PB xx   PB xx   PB xx
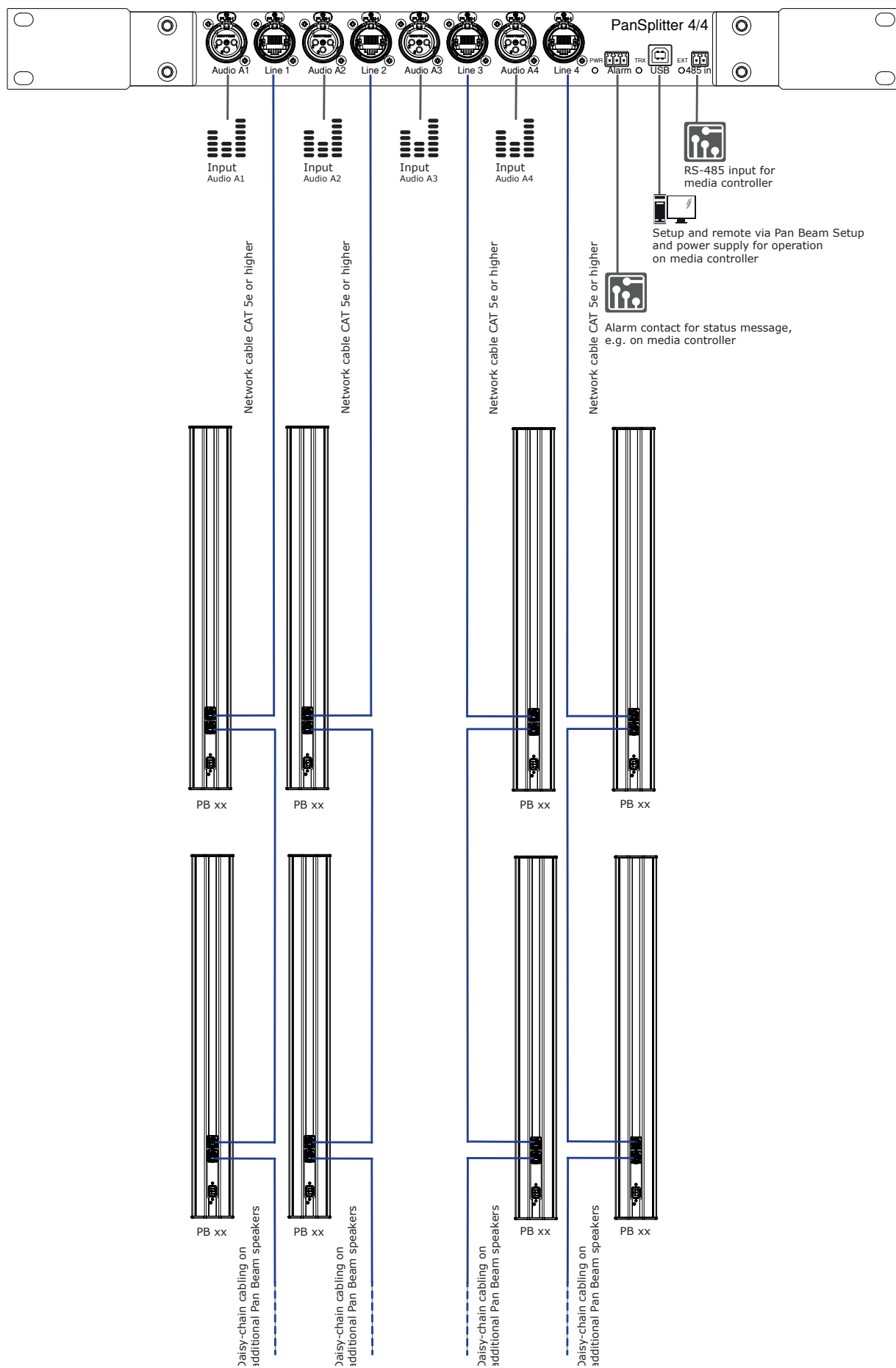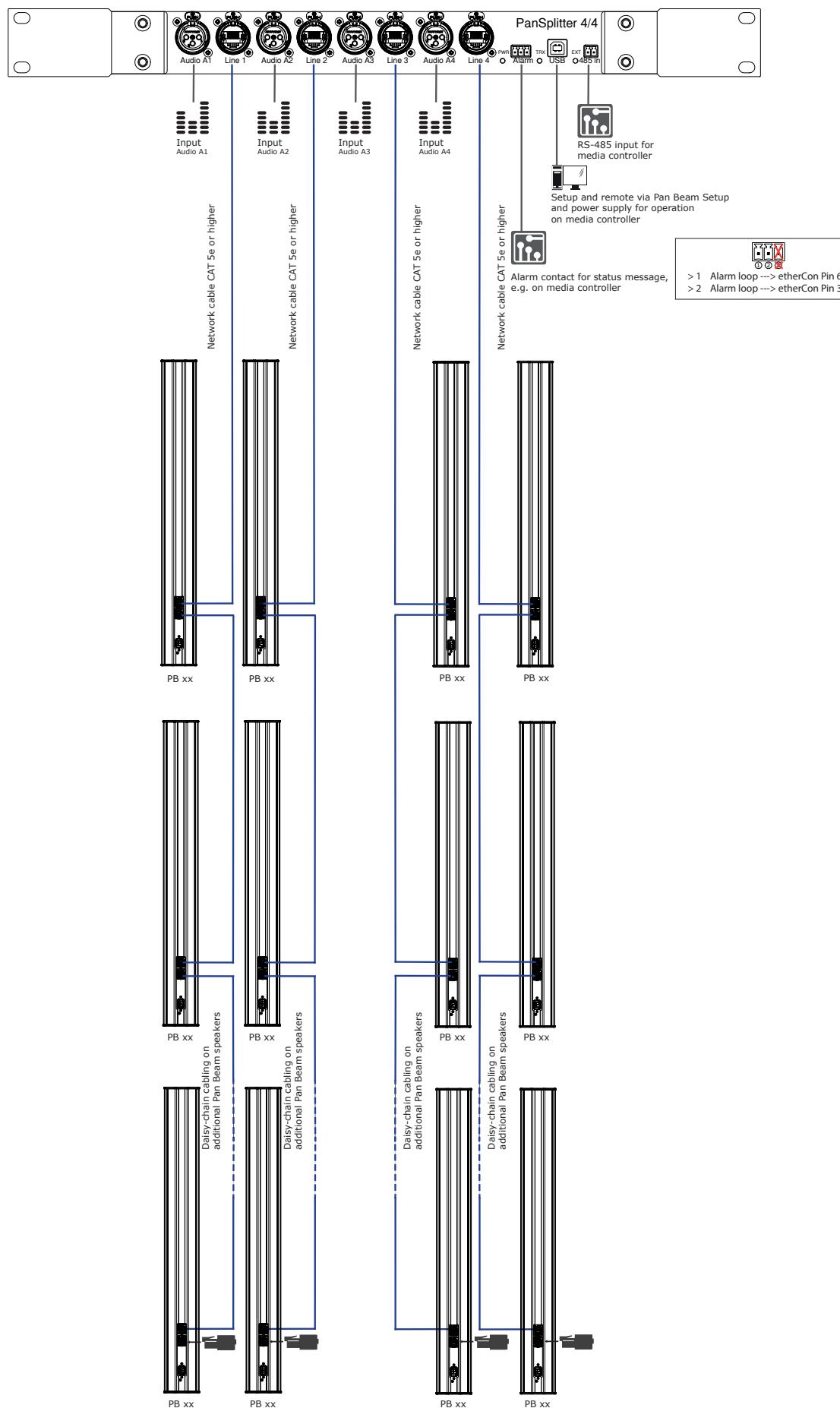
⚠NOTICE

The Pan Net jumper plug is to be plugged into the open RJ45 slots on
the Pan Beam speaker. This completes the return path for the alarm
loop.

9. Scope of delivery and accessories

In its standard configuration, the Pan Beam series consists of the modules PB 04 and PB 08 as well as PB 224. As already mentioned in Chapter *4.2. "Installation of speakers, consisting of several modules"* the modules PB 08 and PB 224 can be connected to longer arrays. Depending upon the length of the array, the delivery scope of the speakers consists of the following:

9.1. Delivery scope of speakers

9.1.1. PB 04

Description	*Quantity*
PB 04 module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.2. PB 04 - AES/EBU

Description	*Quantity*
PB 04 - AES/EBU module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.3. PB 04 - D

Description	*Quantity*
PB 04 - D module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.4. PB 08

Description	*Quantity*
PB 08 module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.5. PB 08 - AES/EBU

Description	*Quantity*
PB 08 - AES/EBU module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.6. PB 08 - D

Description	*Quantity*
PB 08 - D module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.7. PB 16

Description	Quantity
PB 08 module (bottom)	1
PB 08 module (top)	1
Connection set PB xx	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.8. PB 16 - AES/EBU

Description	Quantity
PB 08 - AES/EBU module (bottom)	1
PB 08 - AES/EBU module (top)	1
Connection set PB xx	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.9. PB 16 - D

Description	Quantity
PB 08 - D module (bottom)	1
PB 08 - AES/EBU module (top)	1
Connection set PB xx	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.10. PB 16 (one enclosure)

Description	Quantity
PB 16 module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.11. PB 16 - AES/EBU (one enclosure)

Description	Quantity
PB 16 - AES/EBU	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.12. PB 16 - D (one enclosure)

Description	Quantity
PB 16 - D	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.13. PB 24

Description	Quantity
PB 08 module (bottom)	1
PB 08 module (middle)	1
PB 08 module (top)	1
Connection set PB xx	2
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.14. PB 24 - AES/EBU

Description	Quantity
PB 08 - AES/EBU module (bottom)	1
PB 08 - AES/EBU module (middle)	1
PB 08 - AES/EBU module (top)	1
Connection set PB xx	2
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.15. PB 24 - D

Description	Quantity
PB 08 - D module (bottom)	1
PB 08 - AES/EBU module (middle)	1
PB 08 - AES/EBU module (top)	1
Connection set PB xx	2
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.16. PB 24 (one enclosure)

Description	Quantity
PB 24 module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.17. PB 24 - AES/EBU (one enclosure)

Description	Quantity
PB 24 - AES/EBU module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.18. PB 24 - D (one enclosure)

Description	Quantity
PB 24 - D module	1
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.19. PB 32

Description	Quantity
PB 08 module (bottom)	1
PB 08 module (middle)	2
PB 08 module (top)	1
Connection set PB xx	3
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.20. PB 32 - AES/EBU

Description	Quantity
PB 08 - AES/EBU module (bottom)	1
PB 08 - AES/EBU module (middle)	2
PB 08 - AES/EBU module (top)	1
Connection set PB xx	3
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.21. PB 32 - D

Description	Quantity
PB 08 - D module (bottom)	1
PB 08 - AES/EBU module (middle)	2
PB 08 - AES/EBU module (top)	1
Connection set PB xx	3
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.22. PB 40

Description	Quantity
PB 08 module (bottom)	1
PB 08 module (middle)	3
PB 08 module (top)	1
Connection set PB xx	4
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.23. PB 40 - AES/EBU

Description	Quantity
PB 08 - AES/EBU module (bottom)	1
PB 08 - AES/EBU module (middle)	3
PB 08 - AES/EBU module (top)	1
Connection set PB xx	4
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.24. PB 40 - D

Description	Quantity
PB 08 - D module (bottom)	1
PB 08 - AES/EBU module (middle)	3
PB 08 - AES/EBU module (top)	1
Connection set PB xx	4
IEC-60320 C13 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.25. PB 224

Description	Quantity
PB 224 module	1
Pre-mounted connection plate for fastening a bracket	1
PowerCON TRUE1 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.26. PB 224 - AES/EBU

Description	Quantity
PB 224 - AES/EBU module	1
Pre-mounted connection plate for fastening a bracket	1
PowerCON TRUE1 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.27. PB 224 - D

Description	Quantity
PB 224 - D module	1
Pre-mounted connection plate for fastening a bracket	1
PowerCON TRUE1 power cord	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.28. PB 248

Description	Quantity
PB 224 module	2
Pre-mounted connection plate for fastening a bracket	2
Connection set PB xxx	1
PowerCON TRUE1 power cord	1
Connection cable set PB xxx PB xxx	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.29. PB 248 - AES/EBU

Description	Quantity
PB 224 - AES/EBU module	2
Pre-mounted connection plate for fastening a bracket	2
Connection set PB xxx	1
PowerCON TRUE1 power cord	1
Connection cable set PB xxx	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.30. PB 248 - D

Description	Quantity
PB 224 - D module	1
PB 224 - AES/EBU module	1
Pre-mounted connection plate for fastening a bracket	2
Connection set PB xxx	1
PowerCON TRUE1 power cord	1
Connection cable set PB xxx	1
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.31. PB 272

Description	Quantity
PB 224 module	3
Pre-mounted connection plate for fastening a bracket	3
Connection set PB xxx	2
PowerCON TRUE1 power cord	1
Connection cable set PB xxx	2
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.32. PB 272 - AES/EBU

Description	Quantity
PB 224 - AES/EBU module	3
Pre-mounted connection plate for fastening a bracket	3
Connection set PB xxx	2
PowerCON TRUE1 power cord	1
Connection cable set PB xxx	2
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.33. PB 272 - D

| Description	Quantity
PB 224 - D module	1
PB 224 - AES/EBU module	2
Pre-mounted connection plate for fastening a bracket	3
Connection set PB xxx	2
PowerCON TRUE1 power cord	1
Connection cable set PB xxx	2
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.34. PB 296

| Description	Quantity
PB 224 module	4
Pre-mounted connection plate for fastening a bracket	4
Connection set PB xxx	3
PowerCON TRUE1 power cord	1
Connection cable set PB xxx	3
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.35. PB 296 - AES/EBU

Description	Quantity
PB 224 - AES/EBU module	4
Pre-mounted connection plate for fastening a bracket	4
Connection set PB xxx	3
PowerCON TRUE1 power cord	1
Connection cable set PB xxx	3
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.1.36. PB 296 - D

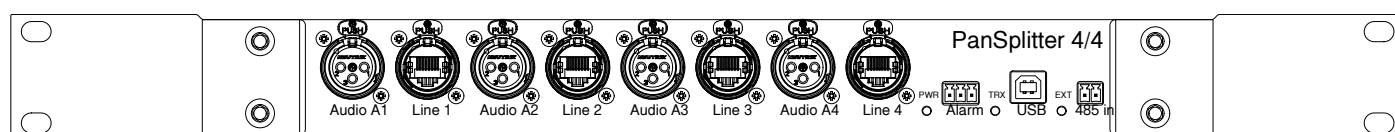| Description	Quantity
PB 224 - D module	1
PB 224 - AES/EBU module	3
Pre-mounted connection plate for fastening a bracket	4
Connection set PB xxx	3
PowerCON TRUE1 power cord	1
Connection cable set PB xxx	3
Closure cap (rubber) for RJ45 interface	1
Quick start instructions	1

9.2. Pan Net interfaces

9.2.1. Pan Con
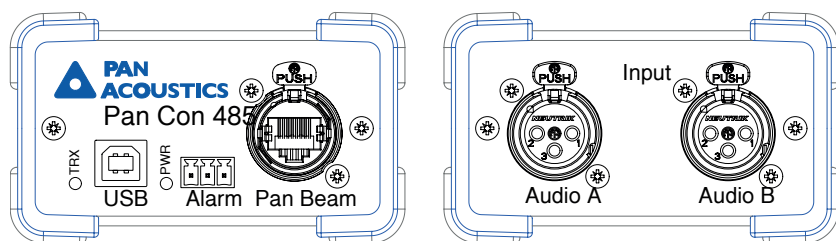
9.2.2. Pan Splitter 2/6
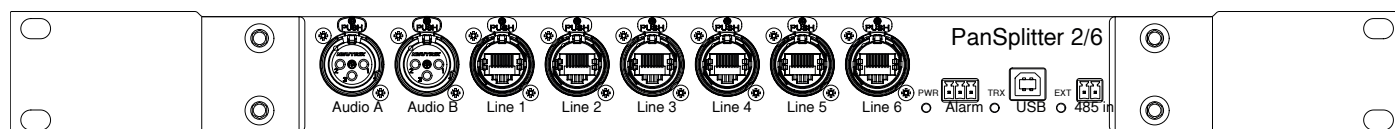
9.2.3. Pan Splitter 4/4
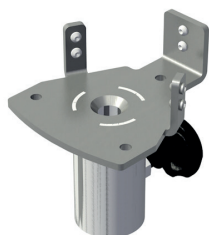

9.3. Brackets

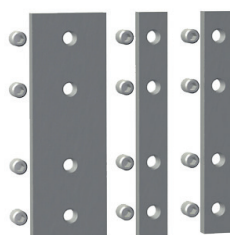Wall bracket, fixed, PB xx
Article no.: 801839

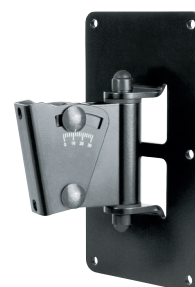Wall bracket, can be moved horizontally, PB xx (TWM II)
Article no.: 801840

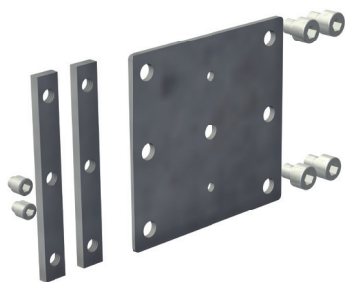Wall bracket, horizont. and vertic. adjustable by +/- 5°, PB xx (TWM III)Article no.: 801841

Tripod attachment, PB xx
Article no.: 801843

Connection set, PB xx
Article no.: 801924

Wall bracket, swiveling/tilt-able, PB 224
Article no.: 801314

Fastening plate, PB 2xx
Article no.: 800388

Tripod attachment, PB 224
Article no.: 800392

Connection set, PB 2xx
Article no.: 800393

Universal wall mount, swivel-
ing/tiltable
Article no.: 801365

Wall bracket, swiveling/tiltable
Article no.: 801449

Base stand for speakers,
"RingLock"
Article no.: 801488

Base stand for speakers
Article no.: 801581

Ceiling bracket (fixed), PB xx
Article no.: 801451

Ceiling bracket (expandable),
PB xx
Article no.: 801285

The accessories with the article numbers: 801365, 01449, 801451, 801581 are also available in the color RAL 9010 (white).

10. Performance Specifications

Please refer to the corresponding data sheets of the speakers for performance specifications.
These are available at www.pan-acoustics.de.

PAN ACOUSTICS

TECHNOLOGY

PAN POWERLINE

Audio, data and power over only 2-wire-system, e.g. I-Y(ST)Y of existing 100V-system. Pan Powerline is an option for several products of the Pan Beam series.

PASSIVE COLUMN SPEAKER

PAN SPEAKER

Shapely. Versatile. Functional..
Solid. Different performance levels.
Applications: Live and fixed installations.

**PAN ACOUSTICS COMBINES
EXPERTISE AND KNOW-HOW**
We create products with a unique sound performance.
We create solutions for acoustics challenges.
We create products with **weatherproof** option (IP 54/ IP 65),
seawater proof and **temperature resistant** (-30°C - 80°C).

All products are designed, developed and manufactured with high-quality materials according to the strict criteria by Pan Acoustics from Germany.

QUALITY - MADE IN GERMANY

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www.pan-acoustics.de

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