

TGX Amplifier System Rack

SR20TGX-EU | SR20TGX-US



Table of contents

1	Safety	4
1.1	Safety messages explained	4
1.2	Important safety instructions	4
1.3	Safety precautions	6
1.4	High frequency interference – FCC/EN55032	6
1.5	Notices	7
2	About this manual	8
2.1	Manual purpose	8
2.2	Digital document	8
2.3	Intended audience	8
3	System overview	9
3.1	Application and intended use	9
3.2	Scope of supply	9
3.3	Front view	10
4	Handling, cooling, and placement	11
4.1	Handling	11
4.2	Cooling and placement	13
5	Power distribution panel	14
5.1	PD32-EU power distribution panel	14
5.2	PD30-US power distribution panel	14
6	Connector panel CP34	15
6.1	Internal wiring	15
6.2	System wiring	17
6.3	Using blank panel for customized connectors on the front	19
7	Maintenance and inspection	20
8	Technical data	21
8.1	System rack SR20TGX	21
8.2	Power distribution panel PD30/PD32	21
8.3	Connector panel CP34	22
8.4	CP 34 block diagram	23
8.5	Dimensions	24

1 Safety

1.1 Safety messages explained

Four types of signs can be used in this manual. The type is closely related to the effect that may be caused if it is not observed. These signs - from least severe effect to most severe effect - are:



Notice!

Containing additional information. Usually, not observing a 'notice' does not result in damage to the equipment or personal injuries.



Caution!

The equipment or the property can be damaged, or persons can be lightly injured if the alert is not observed.



Warning!



The equipment or the property can be seriously damaged, or persons can be severely injured if the alert is not observed.



Danger!

Not observing the alert can lead to severe injuries or death.

1.2 Important safety instructions

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
<p>WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.</p> <p>AVIS: RISQUÉ DE CHOC ELECTRIQUE - NE PAS OUVRIR</p>		
<p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, GROUNDING OF THE CENTRE PIN OF THIS PLUG MUST BE MAINTAINED.</p> <p>ATTENTION: POUR RÉDUIRE LE RISQUE DE CHOC ÉLECTRIQUE LA FICHE CENTRALE DE LA PRISE DOIT ÊTRE BRANCHÉE POUR MAINTENIR LA MISE À LA TERRE.</p>		



Danger!

The lightning symbol inside a triangle notifies the user of high-voltage, uninsulated lines and contacts inside the devices that could result in fatal electrocution if touched.



Warning!

An exclamation mark inside a triangle refers the user to important operating and service instructions in the documentation for the equipment.

1. Read these safety notes.
2. Keep these safety notes in a safe place.
3. Heed all warnings.
4. Observe all instructions.
5. Do not operate the device in close proximity to water.

6. Use only a dry cloth to clean the unit.
7. Do not cover any ventilation slots. Always refer to the manufacturer's instructions when installing the device.
8. Do not place the device close to heaters, ovens, or other heat sources.
9. Note: The device must only be operated via the mains power supply with a safety ground connector. Do not disable the safety ground connection function of the supplied power cable. If the plug of the supplied cable does not fit your mains socket, please contact your electrician.
10. Only use accessories/extensions for the device that have been approved by the manufacturer.
11. Unplug the device if there is risk of lightning strike or in the event of long periods of inactivity. However, this does not apply if the device is to be used as part of an evacuation system!
12. Have all service work and repairs performed by a trained customer service technician only. Service work must be carried out immediately following any damage such as damage to the mains cable or plug, if fluid or any object enters the device, if the device has been used in rain or become wet, or if the device has been dropped or no longer works correctly.
13. Please ensure that no dripping water or spray can penetrate the inside of the device. Do not place any objects filled with fluids, such as vases or drinking vessels, on top of the device.
14. To ensure the device is completely free of voltage, unplug the device from the power supply.
15. When installing the device, ensure the plug is freely accessible.
16. Do not place any sources of open flame, such as lit candles, on top of the device.
17. This PROTECTION CLASS I device must be connected to a MAINS socket with a safety ground connection.

**Caution!**

Use only manufacturer-approved carts, stands, brackets, or tables that you acquired together with the device. When using carts to move the device, make sure the transported equipment and the cart itself cannot tip over or cause injury or material damage.

IMPORTANT SERVICE INFORMATION**Caution!**

This service information is for use by qualified service personnel only. To avoid the risk of electric shock, do not perform any maintenance work that is not described in the operating instructions unless you are qualified to do so. Have all service work and repairs performed by a trained customer service technician.

1. Repair work on the device must comply with the safety standards specified in EN 60065 (VDE 0860).
2. A mains isolating transformer must be used during any work for which the opened device is connected to and operated with mains voltage.
3. The device must be free of any voltage before performing any alterations with upgrade sets, switching the mains voltage, or performing any other modifications.
4. The minimum distance between voltage-carrying parts and metal parts that can be touched (such as the metal housing) or between mains poles is 3 mm, and must be observed at all times.

5. The minimum distance between voltage-carrying parts and circuit parts that are not connected to the mains (secondary) is 6 mm, and must be observed at all times.
6. Special components that are marked with the safety symbol in the circuit diagram (note) must only be replaced with original parts.
7. Unauthorized changes to the circuitry are prohibited.
8. The protective measures issued by the relevant trade organizations and applicable at the place of repair must be observed. This includes the properties and configuration of the workplace.
9. Observe the guidelines with respect to handling MOS components.

**Danger!**

SAFETY COMPONENT (MUST BE REPLACED BY ORIGINAL PART)

1.3**Safety precautions****Speaker system damage and protection of human beings**

Power amps provide extremely high power output that might be dangerous for human beings as well as for the connected speaker systems. High output voltages can damage or even destroy the connected speaker systems, especially, when the amplifier is operated in bridge mode. Prior to connecting any loudspeakers, make sure to check the speaker system's specifications for continuous and peak power handling capacities. Even if amplification has been reduced through lowering the input level controls on the amplifier's front panel, it is still possible to achieve full power output with a sufficiently high input signal.

**Danger!**

Danger at the loudspeaker/power outputs

Power amplifiers are capable of producing dangerously high voltage output that is present at the output connectors.

To protect yourself from electric shock, do not touch any blank speaker cables during operation of the power amp.

**Danger!**

The terminals marked with a lightning bolt are hazardous live and the external wiring connected to these terminals requires installation by an instructed person or the use of ready-made leads of cords.

**Danger!**

In case of using the amplifier with speakers including a primary tapped transformer, it is possible that during operation shock hazard voltages may be present at the taps of the transformer.

Therefore, the taps have to be insulated sufficiently in accordance with applicable safety regulations.

1.4**High frequency interference – FCC/EN55032**

IMPORTANT: Do not modify this unit! Changes or modifications not expressly approved by the manufacturer could void the user's authority, granted by the FCC, to operate the equipment.

**Notice!**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules and EN55032. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

1.5**Notices****Old electrical and electronic appliances**

Electrical or electronic devices that are no longer serviceable must be collected separately and sent for environmentally compatible recycling (in accordance with the European Waste Electrical and Electronic Equipment Directive).

To dispose of old electrical or electronic devices, you should use the return and collection systems put in place in the country concerned.

Copyright and disclaimer

All rights reserved. No part of this document may be reproduced or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. For information on getting permission for reprints and excerpts, contact Dynacord.

All content including specifications, data, and illustrations in this manual are subject to change without prior notice.

2 About this manual

2.1 Manual purpose

The purpose of this manual is to provide information required for installing, configuring, operating and maintaining TGX amplifier system racks.

Read through this manual to familiarize yourself with the safety information, features, and applications before you use these products.

2.2 Digital document

This manual is available as a digital document in the Adobe Portable Document Format (PDF).

You can find information about Dynacord products on the product related information at www.dynacord.com.

2.3 Intended audience

This manual is intended for operators and users of the TGX amplifier system racks.

3 System overview

3.1 Application and intended use

The TGX amplifier system racks (SRTGX) are designed to power pro sound loudspeaker systems in mobile applications such as concerts and corporate or cultural events. They are not designed for use in residential areas. SRTGX contain three TGX20 power amplifiers, a power distribution panel (PD32-EU or PD30-US), a connector panel for audio and OMNEO network (CP34) and two managed Ethernet switches mounted on a 19-inch tray, completely pre-wired.

3.2 Scope of supply

Before starting to use the TGX system racks, please verify the shipment for completeness and proper condition of each item.

Quantity	Component
1	System rack TGX fully equipped
2	Connector rails (to attach the dolly board)
1	Dolly board
1	Safety Instructions manual
1	TGX Amplifier System Rack manual
1	PD32/PD30 Mains Power Distributor manual
1	TGX 4-Channel Power Amplifier manual
1	Network switch quick start guide

There are two versions of the system rack for use with either 230 V or 208 V 3-phase mains power.

	SR20TGX-EU	SR20TGX-US
SR10F, system rack	1	1
TGX20 amplifier	3	3
PD32-EU power distro	1	-
PD30-US power distro	-	1
CP34-connector panel	1	1
Network switch	2	2
2U blank panel	1	1

3.3

Front view

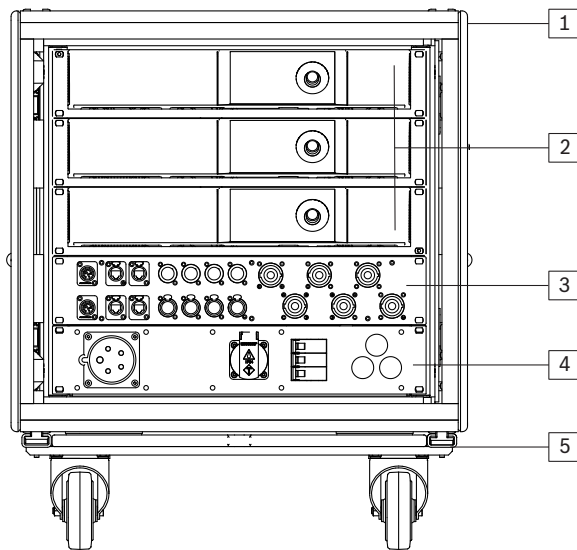


Figure 3.1: TGX system rack front view

1. System rack, SR10F
2. TGX20 amplifiers
3. CP34 connector panel
4. CP32-EU (shown) or CP30-US
5. Dolly board with connector rails
6. 2U blank panel (not shown on the rear)
7. 2U tray with two network switches (not shown on the rear)

4 Handling, cooling, and placement

4.1 Handling



Caution!

Before transportation or use of the SRTGX rack make sure that the equipment is in good condition. Examine the rack for damage to the wheels, connector bars, connector rails, and doors.

Damage to the rack can cause accidents that lead to injuries and equipment damage.



Caution!

Do not move the system rack if the doors are not closed or have not been fully moved back into the latching stop.

Partially recessed doors might cause damage to the other equipment or lead to injuries and finally a damage of the door and/or its sliders.

Opening the system rack door

The amplifier system rack is equipped with two sliding doors.

To open the system rack door, do the following:

1. Using the cutout, pull the door open.
2. Open the door to a right angle.
3. Push the door back until it reaches its latching stop.

The latching prevents the door from siding outside.

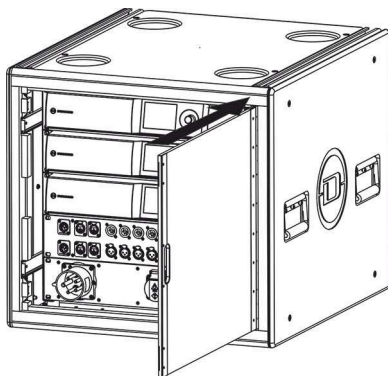


Figure 4.1: Opening the front door and sliding it back

Stacking the system racks

The amplifier system rack is designed for stacking. The system racks are connected by rigging bars, which fit in the rigging rails on each side of the rack. The rigging bars are also used to connect the dolly board to the system rack. This modular system allows to stack two or three system racks in the footprint of just one.



Caution!

Do not use more than two racks on the dolly board. Moving two stacked racks on the dolly board requires two people. A stack of three loaded racks is only safe to use straight on an even ground. A stack of three empty racks is not permissible.

The center of gravity is high compared to footprint, so the stack can easily tip over and create serious damage to equipment and injuries to personnel.

**Caution!**

A stack of three loaded racks is only safe to use straight on an even ground. A stack of three empty racks is not permitted.

The center of gravity is high compared to footprint, so the stack can easily tip over and create serious damage to equipment and injuries to personnel.

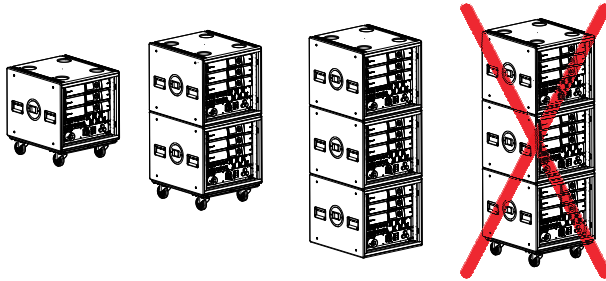


Figure 4.2: System rack stack of two or three. Do not use more than two racks on the dolly board.

**Caution!**

The wheels of the dolly board are designed for solid, even surfaces. Do not push the rack on loose ground, for example grass, sand, or gravel.

Uneven surfaces may cause the rack to tip over and create serious damage to equipment and injuries to personnel.

**Caution!**

Always ensure that the rack bars are fully fitted and the safety pins are latched.

Non-latched safety pins and moving rack rails can cause damage to equipment and lead to injuries.

**Caution!**

Two or more person lift and placement is recommended for stacking system racks.

Never attempt to move a loaded rack alone. Single person lift and placement of the loaded system rack could cause injury.

To stack the system racks, do the following:

1. Remove the rigging bars that attach the dolly board to the rack by lifting the safety pins and moving them out.
2. Carefully place a rack on top of the first rack.
3. Insert the rigging bars in the rigging rails.
Keep the side with the safety hole on the rear of the rack.
4. Push the rigging bars all the way in.
5. Latch the safety pins on the system rack rails into the holes of the rigging bars.
Make sure the safety pins are latched securely to the rigging bars.

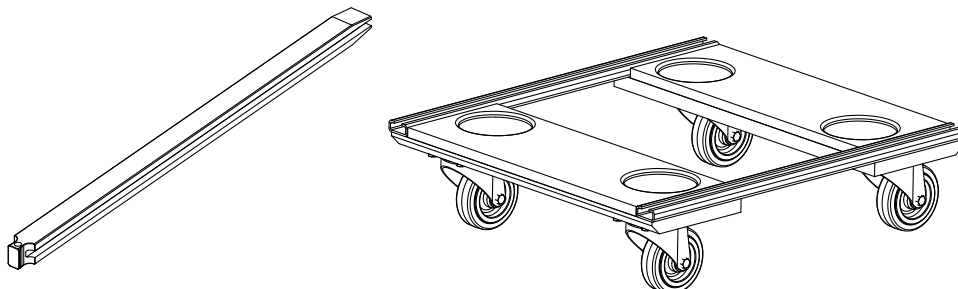


Figure 4.3: Connector bar with locking hole to latch the safety pins (left) Dolly with rigging rails (right)

4.2 Cooling and placement

When placing the TGX amplifier system racks make sure to provide a minimum space of 0.6 m (2 ft.) to the front and rear of the rack to allow sufficient airflow. In operation both doors have to be fully opened.

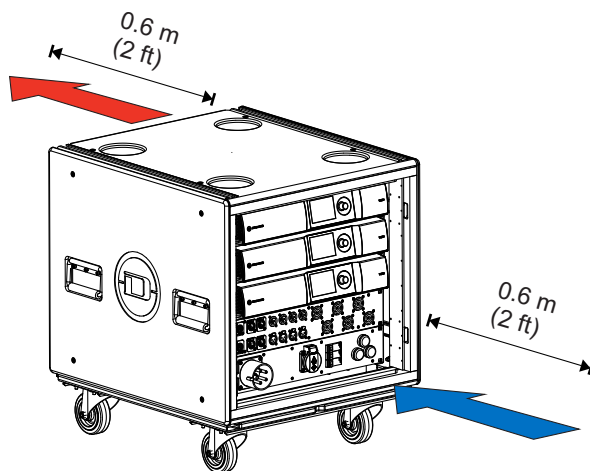


Figure 4.4: Allow a minimum of 0.6 m (2 ft.) space for sufficient airflow

5 Power distribution panel

The TGX amplifier system racks have a power distribution panel that allows to drive the TGX amplifiers as well as the integrated network switches from one 3-phase mains connection. There are two versions available.

5.1 PD32-EU power distribution panel

The PD32-EU is designed for a mains supply network configuration of: 3-phase, 230/400V~ -50/60Hz - 32Amax. It has a 32A CEE (CEKON) male connector that accepts the corresponding CEE female connector.

5.2 PD30-US power distribution panel

The PD30-US is designed for a mains supply network configuration of: 30A 3 ϕ Y 120/208V~ VAC ~ 60Hz. It has a NEMA 30A 3 ϕ Y 120/208V VAC male connector that accepts the corresponding NEMA female connector.

For more information, refer to the PD32/PD30 Mains Power Distributer manual.

6 Connector panel CP34

The TGX system racks features the CP34 connector panel, designed for three 4-channel amplifiers with OMNEO networking. All connections for the OMNEO network (incl. Dante audio and OCA), additional analogue and AES-3 inputs and the outputs to the speakers are available. The three TGX amplifiers are connected via the network switches for glitch free redundancy.

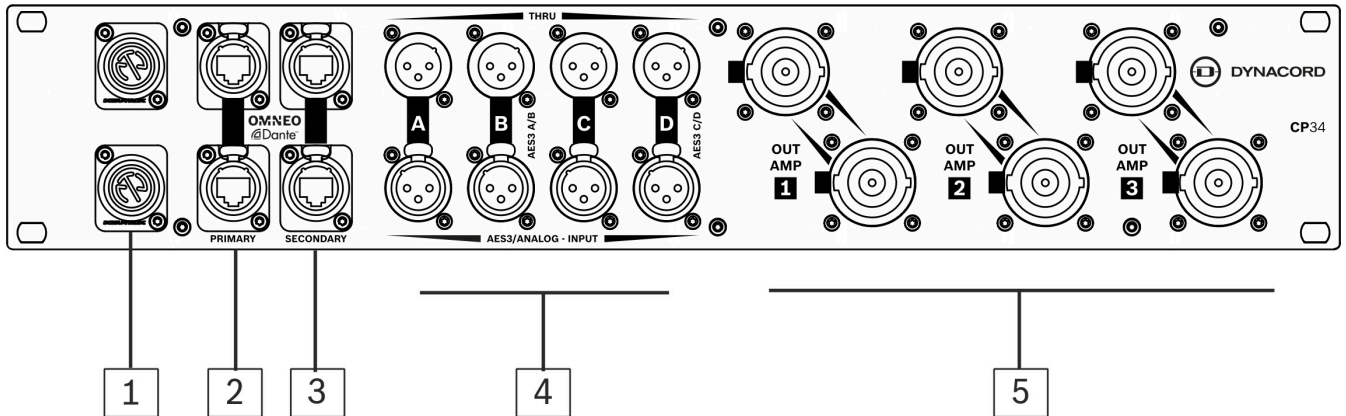


Figure 6.1: CP34 connector panel, front view

1. Blank cover for customer options (e.g. optical network connectors)
2. Primary OMNEO/Dante network connection on etherCon RJ45
3. Secondary OMNEO/Dante network connection on etherCon RJ45
4. XLR audio connections (inputs and through) for analogue line level and AES-3
5. NL8 speaker connectors (2 in parallel) Pins 1 - 4 for channels A - D

6.1 Internal wiring

The SRTGX system racks are pre-wired and pre-configured for use via the connector panel.

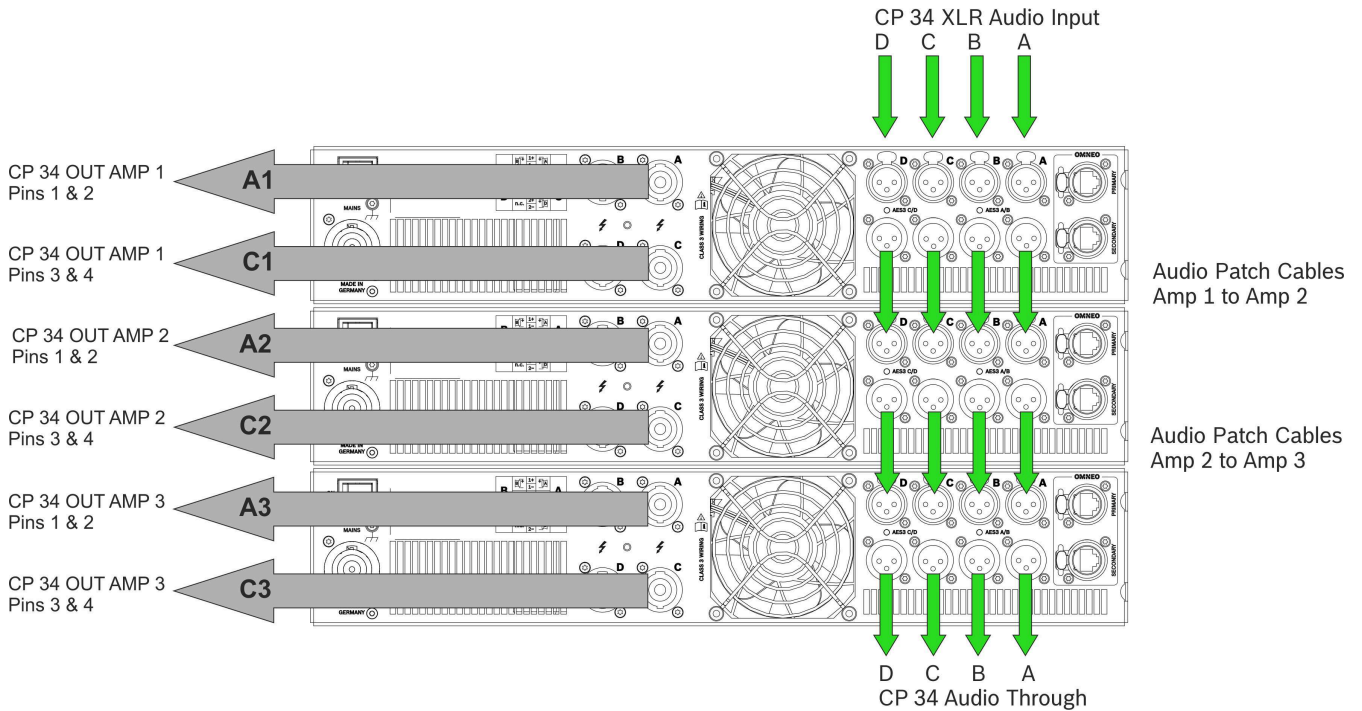


Figure 6.2: Audio wiring scheme: analogue/AES3 inputs and amplifier outputs

Input signals (analogue or AES3) from the CP34 connector panel are connected to the top amplifier and linked through. The audio outputs from the bottom amplifier are connected to the THROUGH sockets on the CP34.

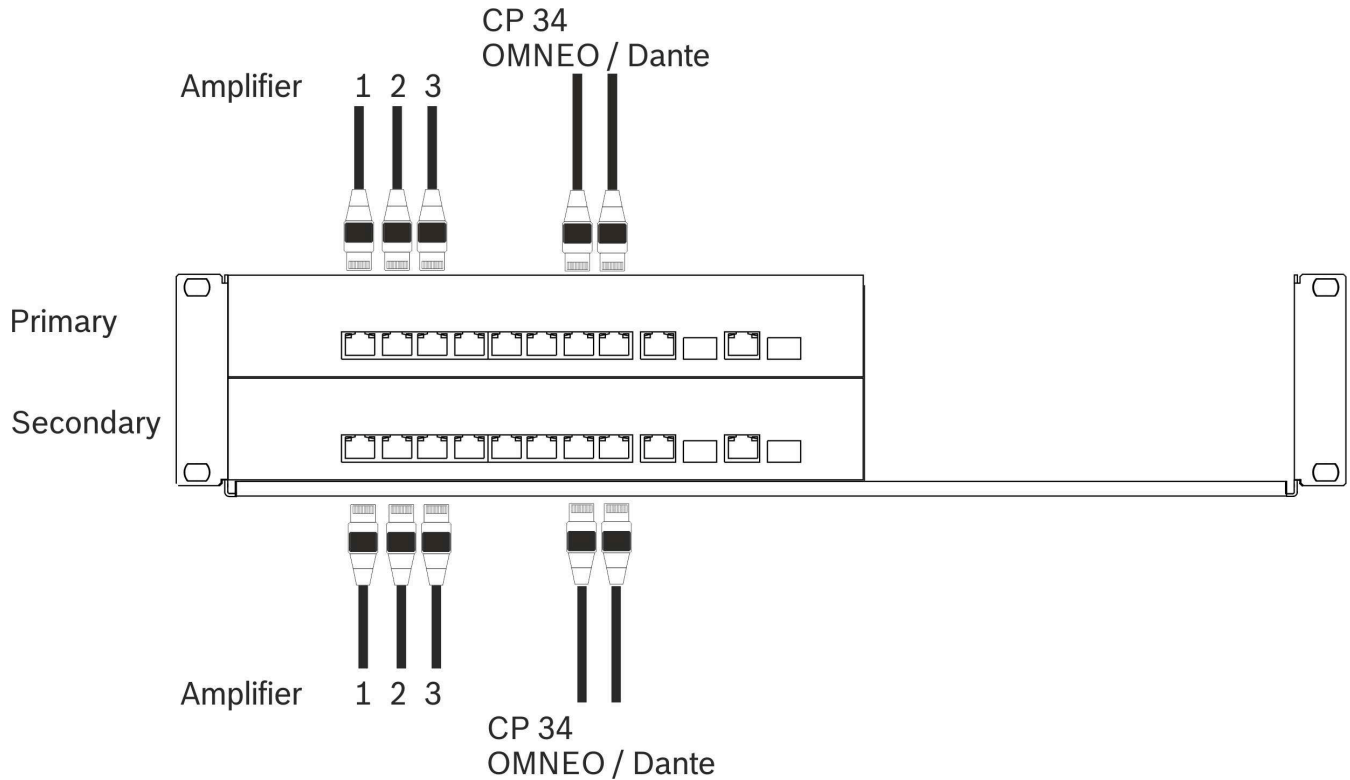


Figure 6.3: Switch tray and network wiring scheme: OMNEO (Dante audio + OCA control)

The SRTGX racks feature a fully redundant network connection. The two Ethernet switches are configured identically as primary and secondary distribution, the cabling to the amplifiers is accordingly. The two SFP ports are not utilized in the factory default configuration. They can be used in conjunction with the blank sockets on the CP34 for individual, customer specific retrofits with optical network connectors.

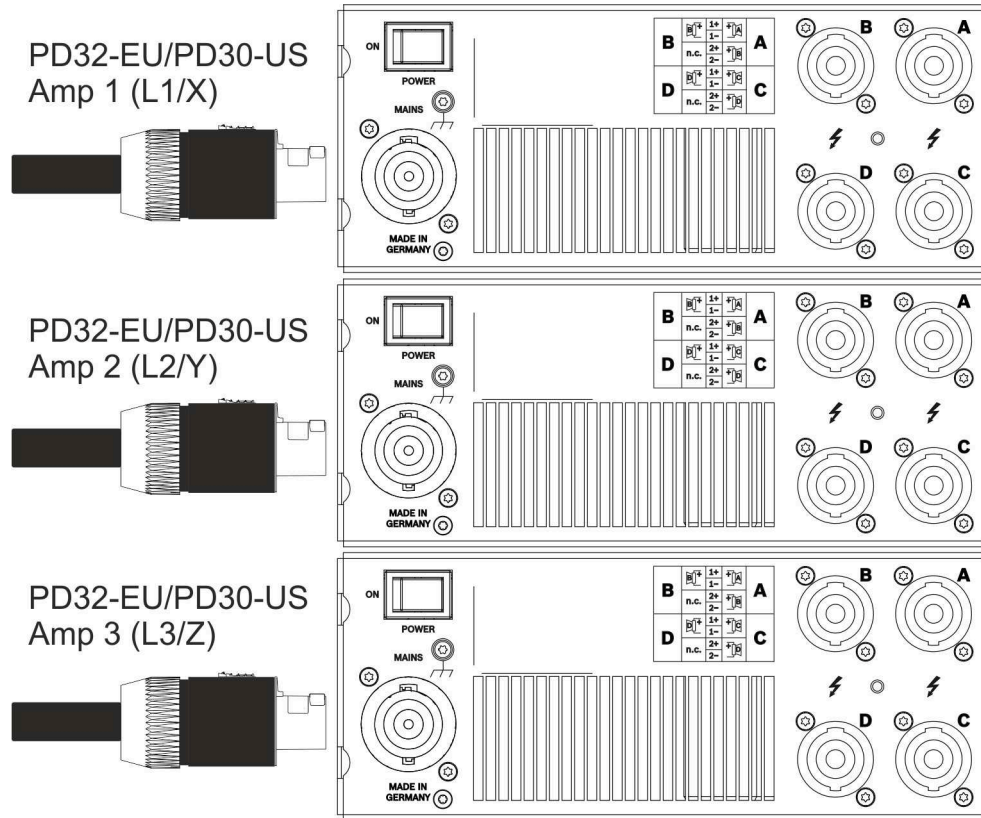


Figure 6.4: Power cabling, top to bottom phase L1, L2, L3, respect. X, Y, Z

The amplifiers are connected to the power outlets of the PD32-EU / PD30-US for an optimized power input of the amplifiers.

For more information, refer to the PD32/PD30 Mains Power Distributer manual.

6.2 System wiring

The SRTGX racks are designed for an easy set-up of larger systems that contain multiple system racks by daisy-chaining audio signal and remote control data.

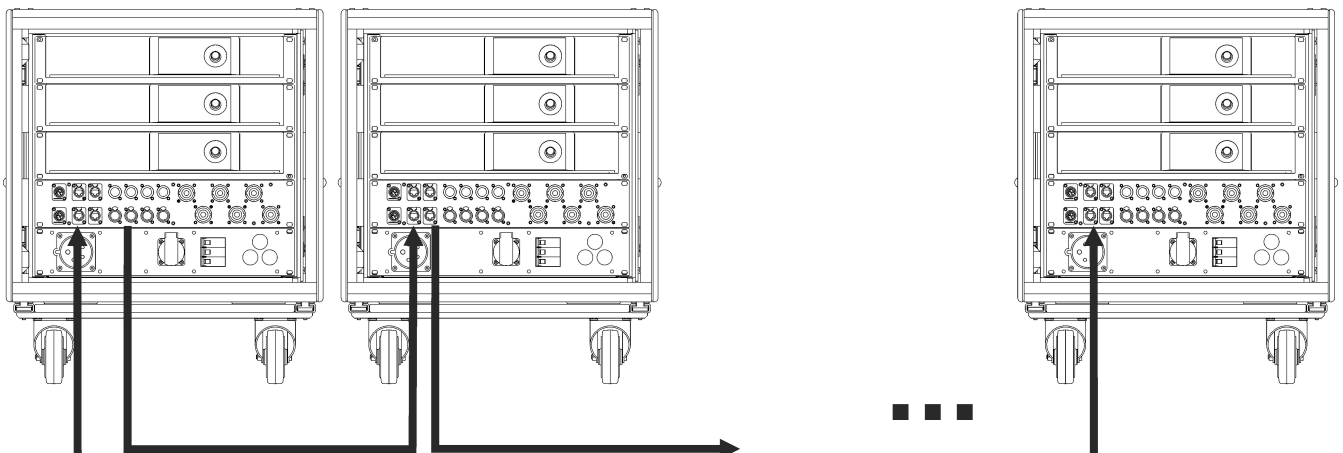


Figure 6.5: Daisy-chain of multiple system racks in a larger system

An advantage of the OMNEO network protocol is the combination of Dante audio and OCA remote control data in once network cable. Using the primary and secondary line the system has full redundancy for audio (glitch-free) as well as remote control and supervision with simply daisy-chaining two network cables between the system racks. It is highly recommended to always use that built-in redundancy and run redundant cabling for a reliable performance.

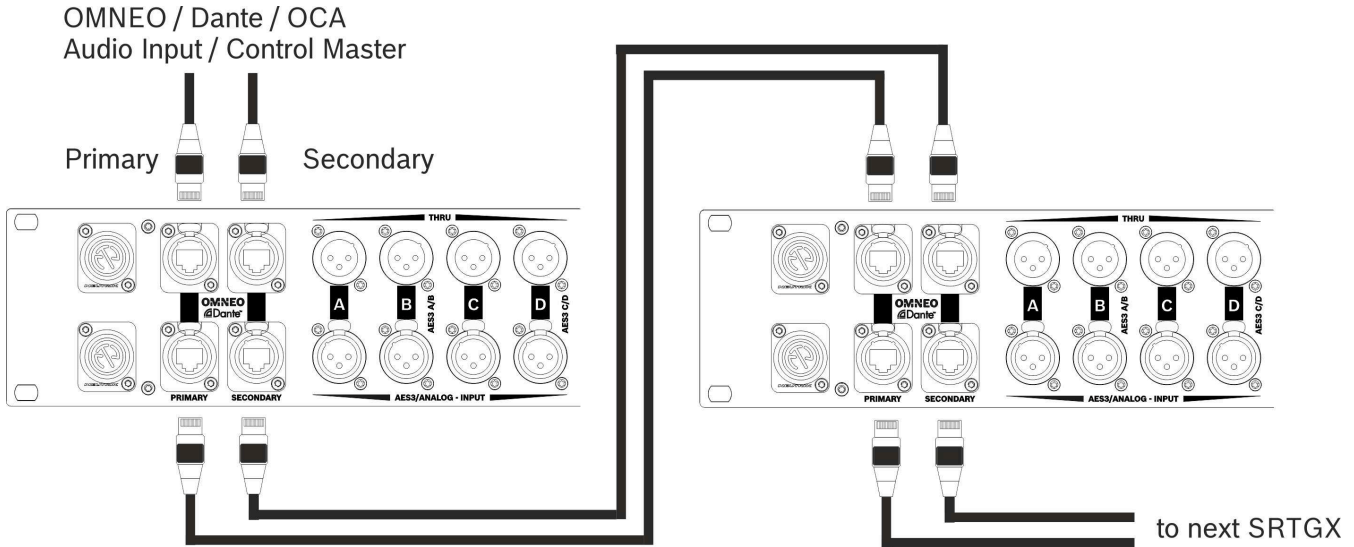


Figure 6.6: OMNEO / Dante / OCA connection of multiple system racks with primary and secondary line

If no Dante audio signal is used, or as an additional (third level) back-up, digital audio signal in AES3 format can also be connected throughout multiple racks by daisy-chaining.

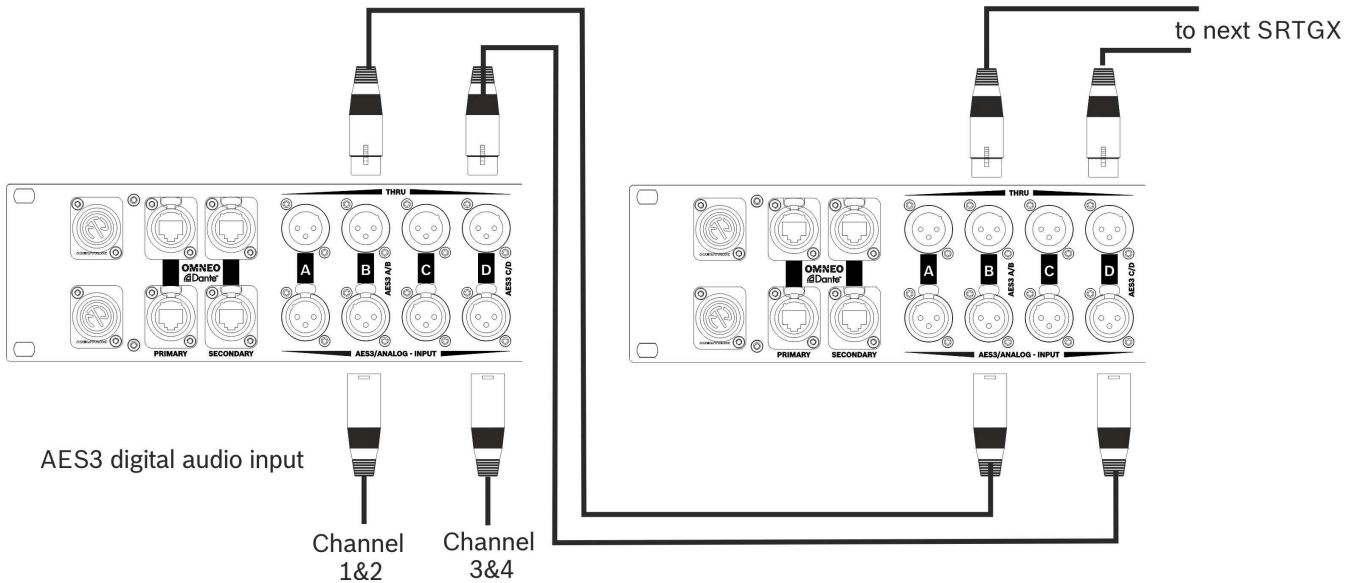


Figure 6.7: AES3 digital audio signal connection of multiple racks

In addition to the OMNEO cabling audio signal can be fed as digital signal in AES3 format as well as analogue line level. Note the AES3 format is using 2 signals on one connector, which is B for amplifier channels A & B and D for amplifier channels C & D.

The same schematic applies to analogue line level signals, just with one signal per connector.



Notice!

For reliable performance it is important to use only high-quality cabling throughout the entire system. System performance is depending on the entire cabling to work within specifications. System performance is depending on the entire cabling to work within specifications. For network cabling shielded cables with at least CAT5e specification must be used, we recommend to use shielded CAT6 cabling.

6.3 Using blank panel for customized connectors on the front

Use the blank panel on the front for customer specific connectors (e.g. loudspeaker multicores) with SRTGX rack, it is possible to re-arrange the power distribution (PD30 / PD32) with the switch tray that is covered by a 2U 19-inch blank panel.

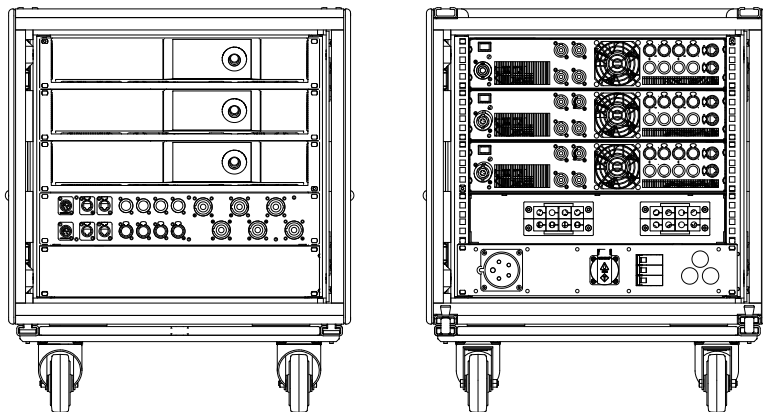


Figure 6.8: SRTGX with switch-tray on the front and power distribution on the rear

7 Maintenance and inspection

Cleaning of the rack, its doors, attachments and mounted equipment shall only be done using a dry cloth. The outer wooden rack shell can also be cleaned using a light brush. Check regularly (best before and after use) that the wheels on the dolly boards are rotating easily. Blocking and even partially blocking wheels shall be replaced. Check regularly (best before and after use) that all rigging rails and safety pins are available and fully functional. Damaged or missing parts have to be replaced immediately.

The overview for global service and spare parts is available on www.dynacord.com

8 Technical data

8.1 System rack SR20TGX

Amplifier channels	12
Audio Connections	
Balanced line level input / AES3	4 / 2 XLR f (Neutrik)
Balanced line level out / AES3	4 / 2 XLR m (Neutrik)
Amplifier outputs	3 x 2 NL8 (Neutrik speakON)
Ethernet Connections	2 x 2 RJ45 (Neutrik etherCON) Primary and secondary
Network switches	Managed GB switches, Layer-3, 10-port, pre-configured for OMENO/Dante
Mains Power Inlet -EU	CEE 32A-3phase-230/400V
Main Power Inlet -US	NEMA L21-30, 208 VAC
Ambient Temperature Limits	+5°C to +40°C (40°F to 105°F)
Color	Black
Dimensions (W x H x D) w/o dolly board in mm	600 x 558 x 655
Dimensions (W x H x D) with dolly board in mm	600 x 718 x 655
Weights with/without dolly board	
SRTGX20-EU	123,7 kg (272.7 lb)/112,7 kg (248.5 lb)
SRTGX20-US	123,8 kg (272.9 lb)/112,8 kg (248.7 lb)
System rack empty with/without dolly board	53,0 kg (116.9 lb)/42,0 kg (92.6 lb)
Payload (max. weight allowed to be loaded)	70,7 kg (155.9 lb)
Shipping weight	158 kg (350 lb)

8.2 Power distribution panel PD30/PD32

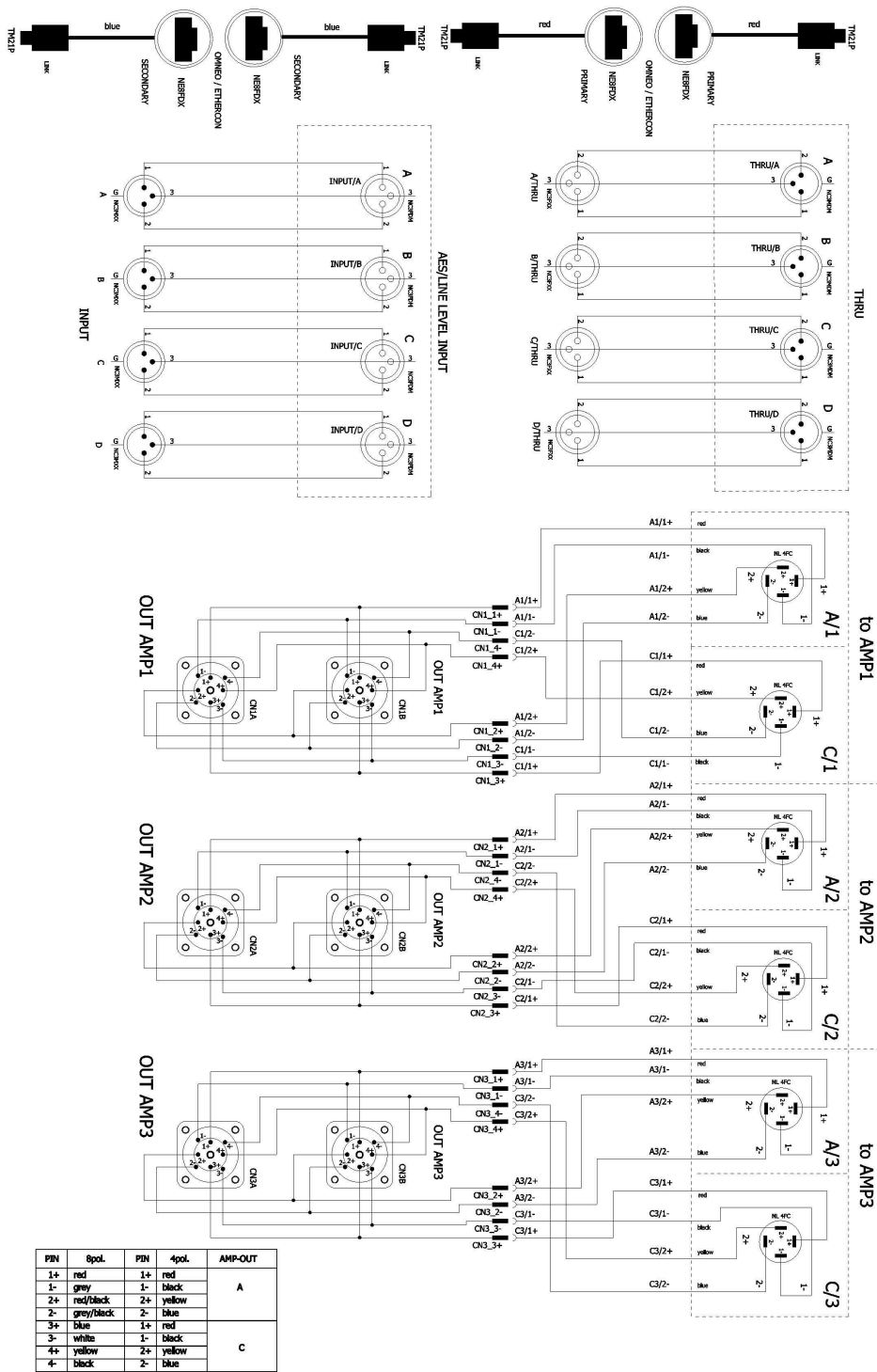
Power distribution panel	PD30-US	PD32-EU
Mains power inlet	NEMA L21-30, 208 VAC	CEE 32A-3phase-230/400 V
Mains power outputs	3 x 30 A, 208 V~	3 x 32 A, 230 V~
Mains power outlet	3x Neutrik NAC3FC-HC	
Aux power outputs	3 x 15 A, 120 V~	3 x 16 A, 230 V~
Ambient temperature limits	+5°C to +40°C (40°F to 105°F)	
Color	Black	
Dimensions (W x H x D) in mm	482 x 88 x 160	
Weight	5.7 kg (12.6 lb)	5.8 kg (12.8 lb)

8.3 Connector panel CP34

Audio inputs	4 XLR f (line level, 2 for AES-3)
Audio outputs (through)	4 XLR m (line level, 2 for AES-3)
Network connection	2 x 2 RJ45 (Neutrik etherCON)
Blank for customer options	2
Amplifier outputs	3 x 2 SpeakON NL8
Dimensions	483 x 88 x 160
Weight	5,6 kg (12.4 lb)

For more information, refer to the PD32/PD30 Mains Power Distributer manual.

8.4 CP 34 block diagram



8.5

Dimensions

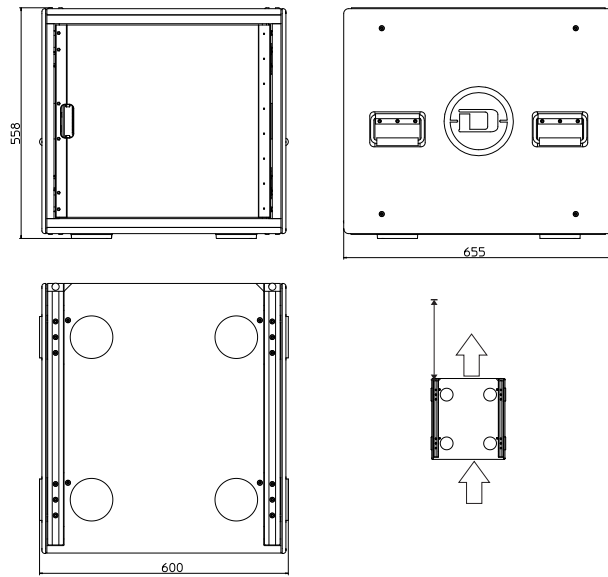
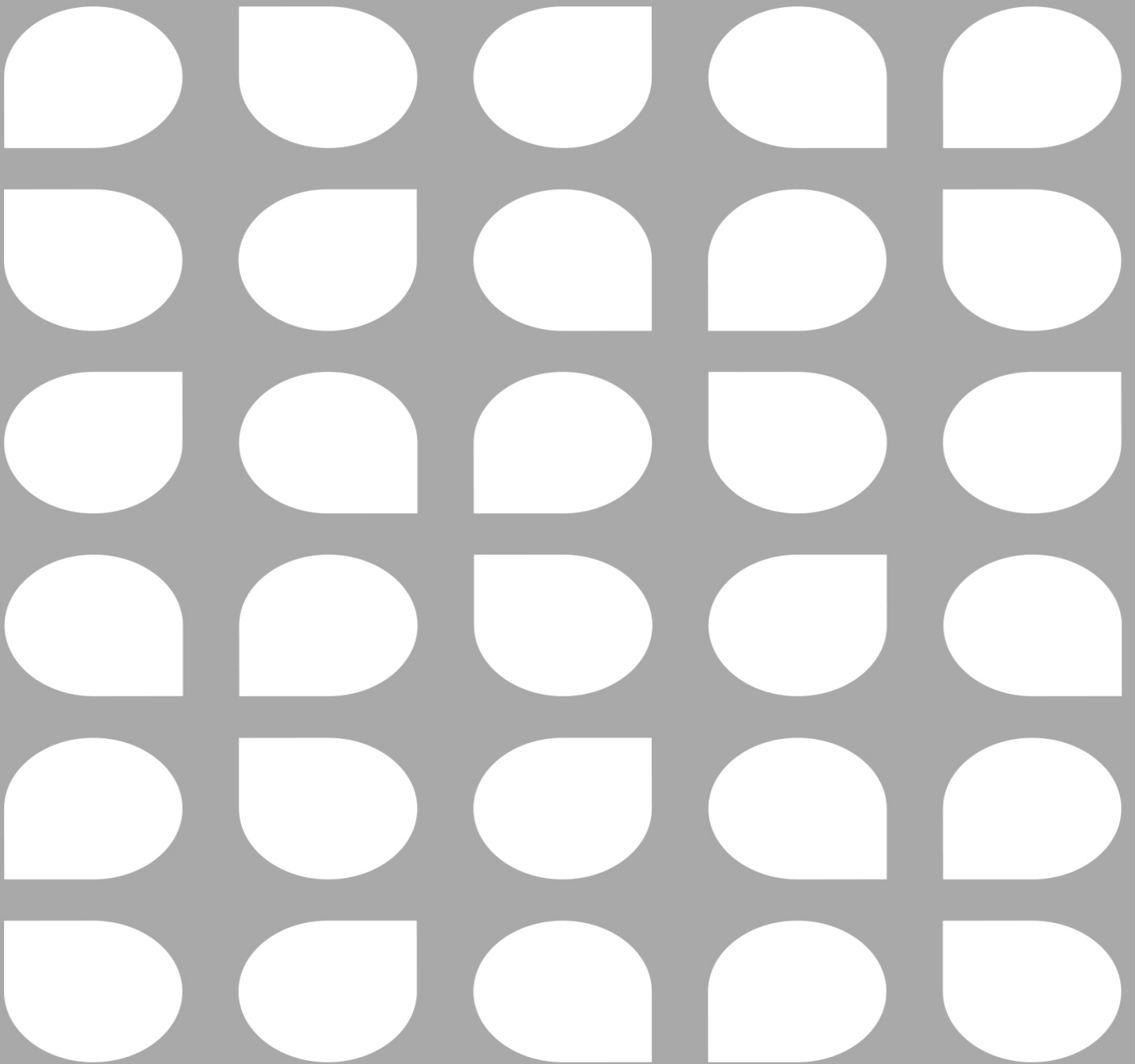


Figure 8.1: Dimensions: SR20TGX amplifier system rack



Bosch Security Systems, Inc.

130 Perinton Parkway
Fairport, NY 14450
USA

www.dynacord.com

© Bosch Security Systems, Inc., 2019