TI 602
WR/SVS/SWR variants of d&b loudspeakers
1.12 en

1. Applications

A number of d&b loudspeakers are available in special options suitable for different types of installed applications and environmental conditions.

1.1 WR (Weather Resistant)

The WR option enables permanent outdoor operation of d&b loudspeakers. WR variants have identical dimensions and are fully acoustically compatible with their standard versions. A physical protection against direct exposure to the elements (e.g. roof) is recommended, it will maintain the visual appearance of the loudspeaker enclosure and grill. When cabinets are mounted without protection, an upward tilt of 15° must not be exceeded. Cardioid subwoofers, however, shall not be tilted.

1.2 SVS (Variants for stadiums)

SVS variants of loudspeakers have no integral rigging components but threaded inserts in their side panels. The cabinets will be mechanically supported by metal brackets specifically designed for the respective application. SVS loudspeakers are fully acoustically compatible with their standard versions. SVS variants are suitable for permanent outdoor operation. A physical protection against direct exposure to the elements (e.g. roof) is recommended, it will maintain the visual appearance of the loudspeaker enclosure and grill. When cabinets are mounted without protection, an upward tilt of 15° must not be exceeded. Cardioid subwoofers, however, shall not be tilted.

1.3 SWR (Sea Water Resistant)

SWR loudspeaker models provide the highest grade of environmental protection and withstand outdoor operation in wet and acid or salty environments like on cruise ships or sea side locations. They are based on WR or SVS variants where available but provide extended sea water resistance. SWR loudspeakers are fully acoustically compatible with their standard versions. A physical protection against direct exposure to the elements will maintain the visual appearance of the loudspeaker enclosure and grill. When cabinets are mounted without protection, an upward tilt of 15° must not be exceeded. Cardioid subwoofers, however, shall not be tilted.

2. IP Rating

The IP rating of d&b WR, SVS and SWR loudspeakers in accordance with IEC 529 is either IP54 or IP55 depending on the model and the physical setup of its acoustic or electrical components. See tables in section 7.

3. UV resistance

Paints and cabinet coatings used on d&b WR, SVS and SWR loudspeakers undergo an accelerated weathering test according to ISO 16474-2 (2000 h Xenon-arc radiation, no removal of coating, residual gloss ≥ 50%).

Grills are backed with UV resistant cell foam or nano coated fabric (ISO 105-B01, rating 6 or better).

4. Mechanical design, materials and coatings

- Metal parts are either non-corrosive by nature, KTL finished and/or powder-coated. KTL is an electrophoretic coating process which is widely applied in the automotive industry to prevent the autobody and other exposed parts from corrosion.
- Hybrid polyester epoxy powder coating conforms to the European DIN 55633 standard on corrosion protection of steel structures.
- All screws for loudspeakers, fittings and grills meet automotive corrosion standard GMW4700 Type A Code G. SWR cabinets come with V4A Stainless steel screws.
- Wooden enclosures are made of plywood conforming to EN 314-2 Class 3 and DIN 68705 Part 3/BFU 100 providing DIN 4102 flammability class B2. Wood joints are bonded waterproof according to EN 204 durability class D3. Wooden enclosures are finished with a special polyurea based cabinet coating "PCP" with proven excellent outdoor qualities.
- Models with synthetic enclosures are finished with two component PU paint (seaworthy, chemical resistant and temperature resistant up to 110°C).
- Loudspeaker components are weather protected and equipped with coated cones. SWR variants come with marine grade components.

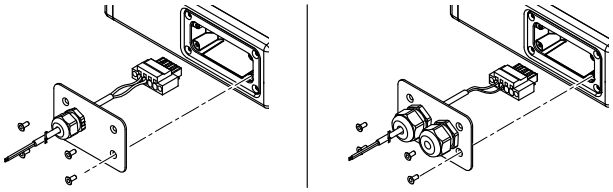
5. General overview

	WR	SVS	SWR
Standard color	black (RAL9005)	black (RAL9005)	white (RAL9010)
Special color	optional		
Connector	2x Faston type connector 6,3 mm, female plus cover plate with cable gland PG 13.5 or 4-pole Phoenix connector socket plus cover plate with two cable glands M16 (A-Series) or a single cable gland M20 (KSLi)		
Cable	optional (see section 6.)		
Grill	Steel, KTL, hybrid powder, structured	Steel, KTL, hybrid powder, structured	V4A, polyester powder, smooth matte
Metal parts	Steel, KTL or aluminum	Steel, KTL or aluminum	V4A Stainless steel or aluminium

6. Connector and cables

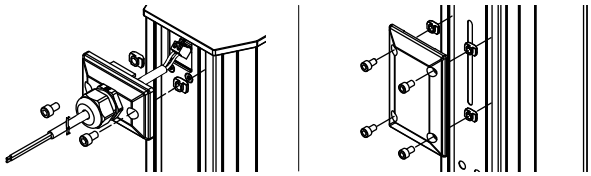
All WR, SVS and SWR cabinets are equipped with one of the following connector panels:

- **A-Series, KSLi, XSLi, CCLi, Bi10/12-SUB:** 4-pole Phoenix connector socket (Type: DFK PC 4/4 GF) and a cover which accepts single or dual cable glands type M16 (cable diameter 4-10 mm) or a single cable gland type M20 (cable diameter 7-13 mm). Optional WR/SWR cables 2x 2.5 mm^2 or 4x 4 mm^2 are available (K3112.000, K3116.100, length as requested).



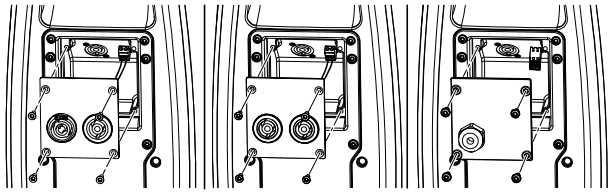
Phoenix connector with single or dual cable gland

- **xC-Series:** 2-pole Phoenix connector socket and a cover which accepts single cable glands type M16 (cable diameter 4 - 10 mm) and an additional cover for the HF array adjustment.



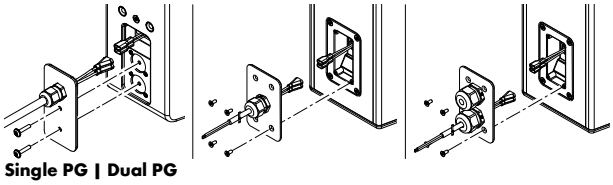
2-pole Phoenix connector socket with single cable gland

- **Ux-Series:** 2-pole Phoenix connector socket (part of the serial product contents of the package) and a cover which accepts a single cable gland type M20 (cable diameter 7-13 mm).



2-pole Phoenix connector socket | single cable gland

- **All other models:** Faston type connector (2x 6.3 mm, female) and a cover which accepts single (standard) or dual (optional, not for 4S/5S/44S) PG cable glands (Type PG13.5 for cable diameters from 6-12 mm).
  An optional WR cable (Z5763.000 - H07-RN-F 2x 2.5 mm^2 / AWG 13, Faston connector type 2 x 6.3 mm male) with a standard length of 5.5 m is available. Other lengths are available on request (Z5763.900).



Single PG | Dual PG

7. Available models

7.1 WR variants

Model	IP rating	Enclosure	Grill backing
4S WR	IP55	polycarbonate	foam
5S WR	IP55	polycarbonate	foam
8S WR	IP54	birch plywood	foam
44S WR	IP55	Noryl	n/a
42S WR	IP55	PC/ABS	n/a
10S/10S-D WR	IP55	birch plywood	foam
10A/10A-D WR	IP55	birch plywood	foam
10AL/10AL-D WR	IP55	birch plywood	foam
12S/12S-D WR	IP55	birch plywood	foam
24S/24S-D WR	IP55	birch plywood	foam
12S-SUB WR	IP55	birch plywood	foam
18S-SUB WR	IP55	birch plywood	foam
21S-SUB WR	IP55	birch plywood	foam
27S-SUB WR	IP54	birch plywood	foam
18A-SUB WR	IP55	birch plywood	foam
27A-SUB WR	IP54	birch plywood	foam
16C WR	IP55	aluminum	n/a
24C WR	IP55	aluminum	n/a
24C-E WR	IP55	aluminum	n/a
ALi60/ALi90 WR	IP55	birch plywood	Fabric, nano coated
Bi6-SUB WR	IP55	birch plywood	foam
Bi8-SUB WR	IP55	Birch plywood	foam
E6 WR	IP54	polycarbonate	mesh
E8 WR	IP54	polyurethane	foam
E12/E12-D WR	IP54	polyurethane	foam
E12X-SUB WR	IP55	birch plywood	foam
E15X-SUB WR	IP55	birch plywood	Foam
Ti10L WR	IP55	polyurethane	foam
Ti10P WR	IP55	polyurethane	foam
Ti-SUB WR	IP55	birch plywood	foam
Yi8/Yi12 WR	IP55	birch plywood	foam
Yi7P/Yi10P WR	IP55	birch plywood	foam
Yi-SUB WR	IP54	birch plywood	foam
Vi8/Vi12 WR	IP55	birch plywood	foam
Vi7P/Vi10P WR	IP55	birch plywood	foam
Vi-(G)SUB WR	IP54	birch plywood	foam
KSLi8/12 WR	IP55	birch plywood	fabric, nano coated
KSLi-SUB WR	IP54	birch plywood	fabric, nano coated
XSLi8/12 WR	IP55	PC/ABS	fabric, nano coated

7.2 SVS variants

Model	IP rating	Enclosure	Grill backing
ALi60/ALi90 SVS	IP55	birch plywood	fabric, nano coated
Yi8/Yi12 SVS	IP55	birch plywood	fabric, nano coated
Vi8/Vi12 SVS	IP55	birch plywood	fabric, nano coated
Vi7P/Vi10P SVS	IP55	birch plywood	fabric, nano coated
Vi-GSUB SVS	IP54	birch plywood	fabric, nano coated
KSLi8/12 SVS	IP55	birch plywood	fabric, nano coated
KSLi-SUB SVS	IP54	birch plywood	fabric, nano coated
XSLi8/XSLi12 SVS	IP55	PC/ABS	fabric, nano coated

7.3 SWR variants

Model	IP rating	Enclosure	Grill backing
5S SWR	IP55	polycarbonate	fabric, nano coated
8S SWR	IP54	birch plywood	fabric, nano coated
44S SWR	IP55	Noryl	n/a
42S SWR	IP55	PC/ABS	n/a
10S/10 S-D SWR	IP55	birch plywood	fabric, nano coated
10AL/10AL-D SWR	IP55	birch plywood	fabric, nano coated
12S/12S-D SWR	IP55	birch plywood	fabric, nano coated
ALi60/ALi90 SWR	IP55	birch plywood	fabric, nano coated
Bi6-SUB SWR	IP55	birch plywood	fabric, nano coated
Bi8-SUB SWR	IP55	birch plywood	fabric, nano coated
B22-SUB SWR	IP55	birch plywood	fabric, nano coated
E6 SWR	IP54	polycarbonate	fabric, nano coated
E8 SWR	IP54	polyurethane	fabric, nano coated
E12 SWR	IP54	polyurethane	fabric, nano coated
E12X-SUB SWR	IP55	birch plywood	fabric, nano coated
M4 SWR	IP54	birch plywood	fabric, nano coated
Yi8/Yi12 SWR	IP55	birch plywood	fabric, nano coated
Vi8/Vi12 SWR	IP55	birch plywood	fabric, nano coated
Vi7P/Vi10P SWR	IP55	birch plywood	fabric, nano coated
Vi-GSUB SWR	IP54	birch plywood	fabric, nano coated

7.4 Standard variants

For a couple of models there are no dedicated WR/SWR variants. Weather resistance is achieved through accessories.

Model	IP rating	Enclosure	Grill backing
CCLi8/12[1]	IP54	PC/ABS	fabric, nano coated
CCLi-SUB[1]	IP54	birch plywood	fabric, nano coated
Bi12-SUB[1]	IP54	birch plywood	fabric, nano coated
Bi10-SUB[1]	IP55	birch plywood	fabric, nano coated
U3/U5/U7[2]	IP54	PC/ABS	fabric, nano coated
U3N/U5N/U7N[3]	IP53	PC/ABS	fabric, nano coated
Bi10N-SUB[3]	IP53	birch plywood	fabric, nano coated

1) Z5829 Cable gland
2) Z1031 Cable gland
3) Powered speaker models. Operation in wet environments only with optional Z1033 UxN Outdoor kit.

7.5 NLT4 variants

Mobile models equipped with NLT4 connectors generally fulfill IP54. This is valid with connectors in mated condition with NLT4 cable connectors. Unused sockets need to be protected with a cover plug like Neutrik SCL or similar.

NLT4 is the standard or an optional connector for the following models:

- A-Series (AL60, AL90)
- U-Series (U3, U5, U7)
- SL-Series (GSL8/12, KSL8/12, XSL8/12, SL-SUB, KSL-SUB, XSL-SUB)
- CL-Series (CCL8/12, CCL-SUB)
- V-Series (V8/12, V7P, V10P, V-SUB)
- Y-Series (Y8/12, Y7P, Y10P, Y-SUB)
- M-Series (M2, M4, M6, MAX2)
- T-Series (T10, T-SUB)
- E-Series (E6, E8, E12, E12X-SUB, E15X-SUB)
- Subwoofers (B6-SUB, B8-SUB, B10-SUB, B12-SUB, B22-SUB)

8. Temperature and humidity

Ambient temperature and humidity may impact on the operation and durability of a loudspeaker. Therefore d&b recommends to observe the following rules.

8.1 Operation

d&b loudspeakers are best operated in the temperature range between 0°C and 40°C, humidity not exceeding 95% RH.

At ambient temperatures above 40°C, there is a risk of overheating the electrical components of a loudspeaker. Therefore the systems should not be continuously operated at their level limits. Avoid levels that excessively trigger the amplifiers' protection circuits (GR, OVL).

When exposed to temperatures below 0°C, there is a risk of ambient humidity freezing thus affecting the moving parts of the loudspeaker drivers. In this case, do not immediately put the loudspeakers into operation at high input levels. We recommend a slow warm up of the driver assembly at low levels for 15 minutes.

For permanent outdoor use at low temperatures or with significant temperature fluctuations, the loudspeakers may be kept in operation using low level (pink) noise during standby periods in order to keep the components at a moderate temperature and to prevent condensation.

8.2 Storage

Please note that consistently high or low temperatures or humidity pose less of a problem than fluctuations. In particular frequent and drastic changes in air humidity have an effect on the durability materials of a cabinet, coatings, and glues.

While temperature during transport may range from –20°C to +70°C permanent storage should be done at typical room temperature levels at a constant humidity below 65% RH.

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