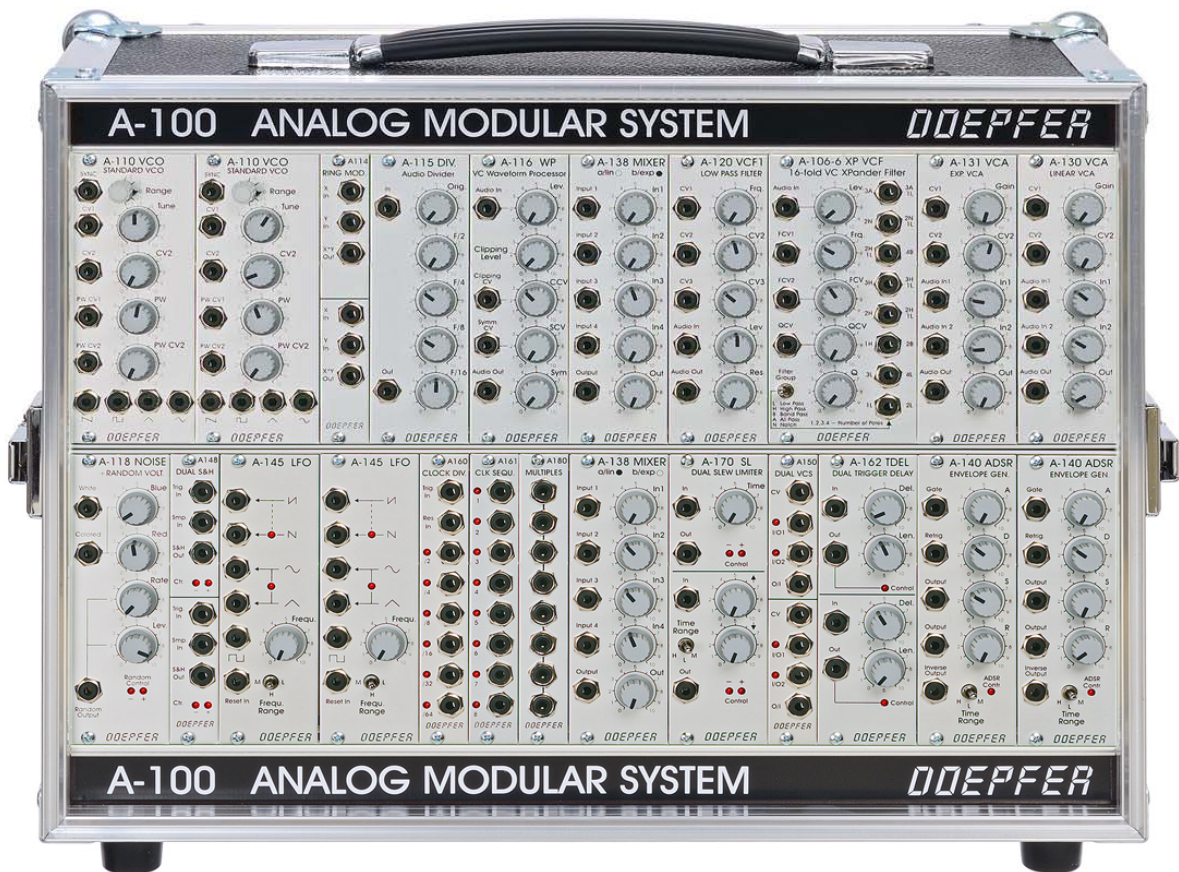


A-100

Analog Modular System

Operating Instructions



DOEPFER MUSIK ELEKTRONIK GMBH

Version for A-100 cases with A-100PSU3 and bus boards version 6 (with boxed pin headers)

Doepfer Musikelektronik Gmbh 2020



Warning:

Inside the A-100 cases are dangerous voltages. It is essential to take careful note of the following safety instructions:

- **Before using any part of the instrument, read these instructions and notes carefully.**
- The instrument may only be used for the purpose described in this operating manual. Due to safety reasons, the instrument must never be used for other purposes not described in this manual. If you are not sure about the intended purpose of the instrument please contact an expert.
- The instrument may only be operated with the voltage specified near the power input on the rear panel.
- Before opening up the case or moving a module or blanking panel, **always take the mains power supply plug out.** This applies also to removing or replacing any panel or module.
- All empty spaces in the rack must be filled with modules or blind panels before the unit is connected to mains voltage.
- The instrument must never be operated outdoors but only in dry, closed rooms. Never use the instrument in a humid or wet environment nor near inflammables.
- Do not use this instrument in damp environments, or close to water.
- No liquids or conducting materials must get into the instrument. If this should happen the instrument must be disconnected from power immediately and be examined, cleaned and eventually be repaired by a qualified person
- Do not use this instrument in close proximity to heat sources such as radiators or ovens. Don't leave it in direct sunlight.
- This instrument must be assembled or installed in a way that guarantees sufficient ventilation and air circulation.
- The instrument must not be exposed to temperatures above 50°C or below -10 °C. In use, the instrument must be at a minimum temperature of 10 °C.
- In case of an A-100G6 case: keep the top side of the instrument free in order to guarantee proper ventilation, otherwise the instrument could be overheated. Never place heavy objects on the instrument.
- This instrument can, without any external amplification or in combination with a headphone or speaker amplifier, produce sound levels which can damage your hearing. Don't work at high sound levels for prolonged periods of time, and don't ever use levels which cause discomfort.
- The instrument's mains power supply lead should be disconnected if it is not used for any substantial period. If there is any damage the cables must be repaired or replaced by an authorized person
- Do not tread on the mains supply lead.
- In disconnecting the lead, pull the plug, not the cable.
- If this instrument is connected to others, check in their manuals for connection instructions.
- Make particularly sure that no object falls into the instrument, and that no liquid gets into it.
- Transport the instrument carefully, never let it fall or overturn. Make sure that during transport and in use the instrument has a proper stand and does not fall, slip or turn over because persons could be injured
- The instrument must be checked and serviced by a qualified technician in the following cases:
 - the power supply lead or connector is damaged in any way,
 - an object or fluid has somehow got into the instrument,
 - the instrument was exposed to rain,
 - the instrument stops working properly or starts to behave erratically,
 - the instrument is knocked over or dropped and/or its case is damaged.
- There are no user-serviceable parts in the instrument.
- All eventual modifications must only be carried out by a qualified person who will follow the valid safety instructions. Every modification should be carried out only at the manufacturer or an authorized service company. Any modification not released by the manufacturer leads to the extinction of the operation permission.

Connecting to the electricity supply

- The system A-100 must only be connected to the mains voltage that is specified at the back of the A-100 case.
- The label next to the mains inlet tells the mains voltage that has to be used to operate the unit:
- The case that includes this manual is already equipped with the new power supply A-100PSU3. This supply features a wide range mains voltage input (100 – 240V AC, 50-60Hz). Only the correct fuse has to be used. In the factory the fuses for 230V are installed. The fuse for 115V is enclosed in a small bag.
- *Until end of 2015 power supplies are used (A-100PSU2) which are manufactured for 230V (220 V - 240 V / 50 Hz) **or** 115V (110 - 120 V / 60 Hz). In these cases the mains voltage is predetermined in the factory and cannot be changed by the customer. Please connect the mains inlet only to the mains voltage specified on the label at the rear panel !*
- If the unit does not work anymore please check if the fuse is blown before you return the unit for repair ! The fuse may blow if the max. output current is exceeded (e.g. by modules installed in the wrong way or if the total current of all modules is beyond the specification of the supply)

Returned units where the only fault is a blown fuse cannot be treated as warranty repairs ! In this case the working time and spare parts are charged to the customer.

- If the fuse has to be replaced only the type of fuse specified at the back of the A-100 frame is allowed. If another fuse is used the warranty is void and the A-100 may be damaged. The fuse is located at the mains inlet on the back of the A-100 case. To replace the fuse one has to disconnect the mains cable and remove the fuse holder (e.g. with the aid of a screw driver). The fuse holder is a small black plastic part that is inserted into the mains inlet.
- There is only one exception: in case of the A-100LC3 the fuse is located inside the case (small green fuse holder on the pc board top left). The fuse value is 2.5A for all voltages because this fuse is used for the secondary circuit.
- The following table shows the fuse values for different kind of cases:

Case type	230V (PSU2)	115V (PSU2)	100-240V (PSU3) 230V	100-240V (PSU3) 115V
A-100G6 19" frame 6U/84HP	400 mA	800 mA	800 mA	1.6A
A-100P6 suitcase version 6U/84HP	400 mA	800 mA	800 mA	1.6A
A-100P9 suitcase version 9U/84HP	400 mA	800 mA	800 mA	1.6A
A-100LC6 low cost suitcase 6U/84HP	400 mA	800 mA	800 mA	1.6A
A-100LC9 low cost suitcase 9U/84HP	400 mA	800 mA	800 mA	1.6A
A-100LCB low cost base frame 2 x 3U/84HP	400 mA	800 mA	800 mA	1.6A
A-100PMS6 monster suitcase 6U/128HP	800 mA	1.6A	1.6A	3.15 A
A-100PMS9 monster suitcase 9U/128HP	800 mA	1.6A	1.6A	3.15 A
A-100PMS12 monster suitcase 12U/128HP	1.6 A	3.15 A	3.15A	6.3 A
A-100PMB monster base frame 2x3U/128HP	800 mA	1.6 A	1.6A	3.15 A

In any case **time lag (slow blow) fuses** 5x20 mm have to be used ! Usually the type of response is abbreviated by a character on the metallic ring of the fuse: **F** (**f**ast), **M** (**m**edium) or **T** (**t**ime lag = slow blow). A fuse coded "T" has to be used ! Medium or fast fast fuses are unsuitable and will blow. The reason for the time lag fuses is the high transient current during power on that is ignored by the slow fuses.

Even the **A-100 DIY kit 1** contains a fuse. There is no difference between 115V and 230V for the fuse value as the fuse is used to protect the secondary circuit of the supply (i.e. the low voltage). The required value is 2.5A T (time lag / slow blow) and is valid for the transformers that are available from us for the DIY kit.

Technical note concerning the +5V fuse of A-100PSU3

The +5V circuit of the A-100PSU3 is equipped with a separate (hidden) fuse. The fuse is located on the pc board of the A-100PSU3 next to the +5V terminals. To reach the fuse it may be necessary to remove the power supply cover (2 screws). It's essential that the mains cable is disconnected before the cover is removed ! It's not sufficient to operate the mains switch only ! From the factory the A-100PSU3 is equipped with a 2A fuse (F/fast). If required the value can be increased up to max. 4A. But this is recommended only if really a higher current than 2A is required.

Package

We strictly recommend to keep the original carton to have available a suitable package for the return consignment e.g. in case of a repair.

Usage of the A-100 Cases

All A-100 cases are allowed only for the installation of A-100 modules or 100% compatible modules. Especially the cases must not be used for the transportation of other goods (including the power cord or patch cords)! Otherwise components of the cases may be damaged (e.g. power supply or bus boards).

Installation

- Do not expose the A-100 to rain or moisture.
- Operation is allowed only in a dry environment in a closed room but not in the open country.
- The installation near a large amplifier or other equipment which uses powerful mains transformers may cause hum.
- Do not install the A-100 in close proximity to equipment which produces an electromagnetic field (monitors, computers, etc.), to avoid the possibility of mutual interference.
- Do not connect the A-100 to a socket or outlet which is also being used by equipment such as electric motors, lighting dimmers, etc, which can cause interference. Use a separate outlet for the A-100.
- Use in a dusty environment should be avoided.

Care and maintenance

- Apart from cleaning the instrument, no other user maintenance is recommended, of the modules or system busses. Internal maintenance should be carried out only by qualified technicians.
- For regular cleaning, use a soft, dry, or slightly damp cloth. To remove dirt, if necessary, use a cloth slightly moistened with a very diluted mild detergent. This should be more than sufficient to clean the instrument. Never use solvents like petrol, alcohol, or thinners.

Mechanical and electrical conception

The modular system consists of a case (e.g. 19" case A-100G6 or one of the suitcase versions A-100P6/P9 or one of the low-cost cases A-100LC6/LC9/LCB or one of the "monster" cases A-100PMS6/PMS9/ PMS12/PMD12/PMB) and the modules that are installed into the case in question.

Each case contains one or more bus A-100 boards. The modules are connected to the bus boards via ribbon cables. The bus is used to supply the modules with the required supply voltages. For some modules the bus board can be used also to carry the CV and the Gate signal (for details please refer to the user manuals of the modules in question).

The A-100 case you received is already equipped with the new version of the A-100 bus board (labeled Version 6 / 2019). These bus boards feature boxed pin headers which are equipped with a reverse protection (gap for the "nose" of the socket of the bus cable). When the bus cable coming from the module is connected to the boxed header in question the "nose" has to point to the right. The polarity of the cable is correct if the **red wire** of the bus cable then points to the **bottom** (to the continuous line labeled "RED WIRE" on the bus board). If this is not the case please do not connect the module to the bus board ! Otherwise both the module and the power supply may be damaged ! In that case please contact the manufacturer of the module and ask for a suitable bus cable with the correct polarity of the connector.

The bus cables of A-100 modules manufactured by Doepfer are equipped with suitable bus cables since 2012. Only for older A-100 modules manufactured before 2012 it may happen that the polarity of the 16 pin female connector of the bus cable is wrong (nose points to the left when red wire points to the bottom). This is because in the past unboxed pin headers were used and the position of the "nose" did not matter. In such a case please contact Doepfer or one of their dealers and order a suitable bus cable.

Each case contains also one or more power supplies. The power supplies provide the supply voltages +12V and –12V that are required to run the A-100 modules. In addition the A-100PSU3 has +5V available. Only a few older A-100 modules require +5V (e.g. A-190-1, A-191 and A-113 version 1). But some modules from other manufacturers also require +5V.

The power supply A-100PSU2 (used until end of 2015) outputs 1200 mA current at +12V and 1200 mA at –12V. The very first A-100 power supply named A-100NT12 had only 650mA available and was used until 2001.

The new power supply A-100PSU3, which is installed in the case that comes with this manual, has available 2000 mA at +12V, 1200 mA at –12V and 2000 mA (2A) at +5V. If required the current at +5V can be increased up to 4000 mA (4A). For this the internal +5V fuse has to be replaced by a 4A type (see page 5 for details).

If your case contains the A-100PSU2 or A-100PSU3 can be recognized by the mains voltage label at the rear panel. If the label says 230V or 115V the A-100PSU2 is built in. If the label says 100-240V (wide range input) the A-100PSU3 is installed.

When a system is planned the sum of all module currents has to be less than the max. current of the power supply (or supplies):

- The cases A-100G6/P6/P9/LC6/LC9/LCB are equipped with one power supply (A-100PSU2 or A-100PSU3).
- The cases A-100PMS6/PMS9/PMB are equipped with two power supplies (A-100PSU2 or A-100PSU3).
- Case A-100PMS12 contains four power supplies (A-100PSU2 or A-100PSU3).

With the exception of a few very "exotic" module sets this is sufficient for all reasonable module combinations.

In the monster cases A-100PMx the modules have to be distributed to the power supplies and bus boards that the sum of all module currents has to be less than the max. current of the power supply in question. With the exception of a few very "exotic" module sets this is sufficient for all reasonable module combinations within the A-100. But one has to pay attention if modules from other manufacturers are used that the max. current is not exceeded. Some of these modules have very high current consumptions !

Installing modules

- To be on the safe side please calculate the total current requirement of existing modules plus the new module/s.
- Check that this total is less than the current that is provided by the supply (in case of A-100G6/P6/P9/LC6/LC9/LCB) or the supplies (for monster cases).
- Normally this will apply, provided that only A-100 modules are used.
- If that's OK: **First of all, take the A-100's plug out of the wall socket.**
- Check if each module is equipped with a ribbon cable with a 16 pin female connector at the open end. The ribbon cable can be 10 or 16 pin but the female connector has to be 16 pin !
- Now join the free end of the ribbon cable to the nearest available position on the system bus board
- For this one has to plug the female 16 pin connector at the free end of the ribbon cable to one of the pin headers of the bus (these are also 16 pins). Use a pin header of the bus board that is close to the position where the module has to be mounted later.
- Check very carefully that it is connected so that the **coloured marking** on the ribbon cable is at the **bottom of the bus connector**. The coloured marking has to align with the "-12V" printing on the bus board next to the pin header.
- Check also very carefully that it is **pushed fully home, not at a slight angle and not vertically or horizontally displaced** .
- Failure to check this may result in the module's instant destruction as soon as the power is turned back on! Even the power supply may be damaged or the fuse may blow.
- When you're installing extra modules, it may be necessary to take another module or two out, to allow you easier access to the bus board.
- Place the module carefully into the space in the rack, and fasten it firmly in place with the supplied screws (M3x6).
- Repeat this procedure until all modules (and possibly blind panels) are installed and the front of the A-100 case is fully closed.
- Now plug the system A-100 back into the main power supply, and switch it on.
- Test out the newly installed modules.
- If it doesn't seem to be working as expected, immediately disconnect the system from the power supply again.
- In this case, double-check all connections, making completely sure that the ribbon cables are the right way round where they connect to the bus.

Interconnecting modules

For connecting modules to each other, you need **mono mini-jack (3.5 mm) patch leads**. We offer patch leads in different lengths (from 15 cm to 2 m) and colors.

Additional Information

General information about the available modules is available on our website:

www.doepfer.com → Products → A-100 → Module Overview → Module in question

The complete A-100 user's guide is available for download on our website:

www.doepfer.com → Manuals → A-100 → A100_Manual_complete.pdf.

Here you find also the links to user manuals of single modules.

For modules where the manual is not yet available you find all information that is necessary to operate the module on the info page of the module in question:

www.doepfer.com → Products → A-100 → Module Overview → Module in question

The manual is also available at extra charge in printed form in a ring binder. Please contact your local dealer if you want to order the printed version of the manual.

More detailed information about electrical and mechanical details of the A-100 is also available on our website:

www.doepfer.com → products → A-100 → Technical Details

and

www.doepfer.com → products → A-100 → Mechanical Details

The page www.doepfer.com → products → A-100 also contains links to additional information around the A-100 system, e.g. complete A-100 module overview, basic systems, system suggestions or a system planner.

On the FAQ page of our website some special questions have been answered also:

www.doepfer.com → FAQ → A-100