



# OnAir 2000 Modulo

*Digital Mixing Console*  
*SW Version 4.0*

**Installation and Service Instructions**

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## A Safety Information



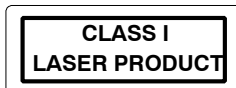
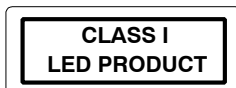
To reduce the risk of electric shock, do not remove covers (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.



This symbol is intended to alert the user to presence of un-insulated *dangerous voltage* within the equipment that may be of sufficient magnitude to constitute a risk of electric shock to a person.



This symbol is intended to alert the user to the presence of *important instructions* for operating and maintenance in the enclosed documentation.



Assemblies or sub-assemblies of this product can contain opto-electronic devices. As long as these devices comply with Class I of laser or LED products according to EN 60825-1:1994, they will not be expressly marked on the product. If a special design should be covered by a higher class of this standard, the device concerned will be marked directly on the assembly or sub-assembly in accordance with the above standard.

### A1 First Aid

#### In Case of Electric Shock:

Separate the person as quickly as possible from the electric power source:

- By switching off the equipment,
- By unplugging or disconnecting the mains cable, or
- By pushing the person away from the power source, using dry insulating material (such as wood or plastic).
- After having sustained an electric shock, *always* consult a doctor.



**Warning!** *Do not touch the person or his clothing before the power is turned off, otherwise you stand the risk of sustaining an electric shock as well!*

#### If the Person is Unconscious:

- Check the pulse,
- Reanimate the person if respiration is poor,
- Lay the body down, turn it to one side, call for a doctor immediately.

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## **B General Installation Hints**

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Please consider besides these general hints also any product-specific hints in the "Installation" chapter of this manual.

### **B1 Unpacking**

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Check the equipment for any transport damage. A unit that is mechanically damaged or that has been penetrated by liquids or foreign objects must not be connected to the AC power outlet or must be immediately disconnected by unplugging the power cable. Repairs must only be performed by trained personnel in accordance with the applicable regulations.

### **B2 Installation Site**

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Install the unit in a place where the following conditions are met:

- The temperature and the relative humidity of the environment must be within the specified limits during operation of the unit. Relevant air values are the ones at the air inlets of the unit.
- Condensation must be avoided. If the unit is installed in a location with large variation of ambient temperature (e.g. in an OB-van), feasible measures must be taken before and after operation (for details on this subject, refer to Appendix 1).
- Unobstructed air flow is essential for proper operation. Air vents of the unit are a functional part of the design and must not be blocked in any way during operation (e.g. by objects placed upon them or placement of the unit on a soft support).
- The unit must not be heated up by external sources of heat radiation (sunlight, spot lights).

### **B3 Earthing and Power Supply**

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Earthing of units with mains supply (class I equipment) is performed via the protective earth (PE) conductor integrated in the mains cable. Units with battery operation (< 60 V, class III equipment) must be earthed separately.

Earthing the unit is one of the measures for protection against electrical shock hazard (dangerous body currents). Hazardous voltage may not only be caused by a defective power supply insulation, but may also be introduced by the connected audio or control cables.

If the unit is installed with one or several external connections, its earthing must be provided during operation as well as while the unit is inoperative. If the earthing could be interrupted via the power supply (e.g. by pulling the mains plug), an additional, permanent earthing must be installed using the provided earth terminal.

Avoid ground loops (hum loops) by keeping the loop surface as small as possible (by consequently guiding the earth conductors in a narrow, parallel way), and reduce the noise current flowing through the loop by inserting an additional impedance (common-mode choke).

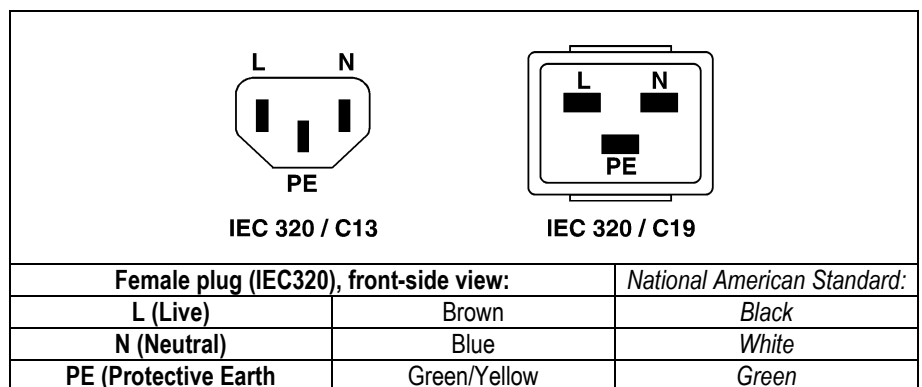
**Class I Equipment (Mains Operation)**

Should the equipment be delivered without a matching mains cable, the latter has to be prepared by a trained person using the attached female plug (IEC320/C13 or IEC320/C19) with respect to the applicable regulations in your country.

Before connecting the equipment to the AC power outlet, check that the local line voltage matches the equipment rating (voltage, frequency) within the admissible tolerance. The equipment fuses must be rated in accordance with the specifications on the equipment.

Equipment supplied with a 3-pole appliance inlet (protection conforming to class I equipment) *must* be connected to a 3-pole AC power outlet so that the equipment cabinet is connected to the protective earth.

For information on mains cable strain relief please refer to Appendix 2.



**Class III Equipment (Battery Operation up to 60 V<sub>DC</sub>)**

Equipment of this protection class must be earthed using the provided earth terminal, if one or more external signals are connected to the unit (see explanation at the beginning of this paragraph).

**B4 Electromagnetic Compatibility (EMC)**

The unit conforms to the protection requirements relevant to electromagnetic phenomena that are listed in the guidelines 89/336/EC and FCC, part 15.

- The electromagnetic interference generated by the unit is limited in such a way that other equipment and systems can be operated normally.
- The unit is adequately protected against electromagnetic interference so that it can operate properly.

The unit has been tested and conforms to the EMC standards of the specified electromagnetic environment, as listed in the following declaration. The limits of these standards ensure protection of the environment and corresponding noise immunity of the equipment with appropriate probability. However, a professional installation and integration within the system are imperative prerequisites for operation without EMC problems.

For this purpose, the following measures must be followed:

- Install the equipment in accordance with the operating instructions. Use the supplied accessories.
- In the system and in the vicinity where the equipment is installed, use only components (systems, equipment) that also fulfill the EMC standards for the given environment.
- Use a system grounding concept that satisfies the safety requirements (class I equipment must be connected with a protective ground conduc-

tor) and that also takes into consideration the EMC requirements. When deciding between radial, surface, or combined grounding, the advantages and disadvantages should be carefully evaluated in each case.

- Use shielded cables where shielding is specified. The connection of the shield to the corresponding connector terminal or housing should have a large surface and be corrosion-proof. Please note that a cable shield connected only single-ended can act as a transmitting or receiving antenna within the corresponding frequency range.
- Avoid ground loops or reduce their adverse effects by keeping the loop surface as small as possible, and reduce the noise current flowing through the loop by inserting an additional impedance (e.g. common-mode choke).
- Reduce electrostatic discharge (ESD) of persons by installing an appropriate floor covering (e.g. a carpet with permanent electrostatic filaments) and by keeping the relative humidity above 30%. Further measures (e.g. conducting floor) are usually unnecessary and only suitable if used together with corresponding personal equipment.
- When using equipment with touch-sensitive operator controls, please take care that the surrounding building structure allows for sufficient capacitive coupling of the operator. This coupling can be improved by an additional, conducting surface in the operator's area, connected to the equipment housing (e.g. metal foil underneath the floor covering, carpet with conductive backing).

## C Maintenance

All air vents and openings for operating elements (faders, rotary knobs) must be checked on a regular basis, and cleaned in case of dust accumulation. For cleaning, a soft paint-brush or a vacuum cleaner is recommended. Cleaning the surfaces of the unit is performed with a soft, dry cloth or a soft brush.

Persistent contamination can be treated with a cloth that is slightly humidified with a mild cleaning solution (soap-suds).

For cleaning display windows, commercially available computer/TV screen cleaners are suited. Use only a slightly damp (never wet) cloth.

*Never use any solvents for cleaning the exterior of the unit! Liquids must never be sprayed or poured on directly!*

For equipment-specific maintenance information please refer to the corresponding chapter in the Operating and Service Instructions manuals.

## D Electrostatic Discharge during Maintenance and Repair

### Caution:



Observe the precautions for handling devices sensitive to electrostatic discharge!

Many semiconductor components are sensitive to electrostatic discharge (ESD). The life-span of assemblies containing such components can be drastically reduced by improper handling during maintenance and repair work. Please observe the following rules when handling ESD sensitive components:

- ESD sensitive components should only be stored and transported in the packing material specifically provided for this purpose.
- *When performing a repair by replacing complete assemblies, the removed assembly must be sent back to the supplier in the same packing*

*material in which the replacement assembly was shipped. If this should not be the case, any claim for a possible refund will be null and void.*

- Unpacked ESD sensitive components should only be handled in ESD protected areas (EPA, e.g. area for field service, repair or service bench) and only be touched by persons who wear a wristlet that is connected to the ground potential of the repair or service bench by a series resistor. The equipment to be repaired or serviced as well as all tools and electrically semi-conducting work, storage, and floor mats should also be connected to this ground potential.
- The terminals of ESD sensitive components must not come in uncontrolled contact with electrostatically chargeable (voltage puncture) or metallic surfaces (discharge shock hazard).
- To prevent undefined transient stress of the components and possible damage due to inadmissible voltages or compensation currents, electrical connections should only be established or separated when the equipment is switched off and after any capacitor charges have decayed.

## **E Repair**

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Removal of housing parts, shields, etc. exposes energized parts. For this reason the following precautions must be observed:

- Maintenance may only be performed by trained personnel in accordance with the applicable regulations.
- The equipment must be switched off and disconnected from the AC power outlet before any housing parts are removed.
- Even if the equipment is disconnected from the power outlet, parts with hazardous charges (e.g. capacitors, picture tubes) must not be touched until they have been properly discharged. Do not touch hot components (power semiconductors, heat sinks, etc.) before they have cooled off.
- If maintenance is performed on a unit that is opened and switched on, no un-insulated circuit components and metallic semiconductor housings must be touched, neither with your bare hands nor with un-insulated tools.

Certain components pose additional hazards:

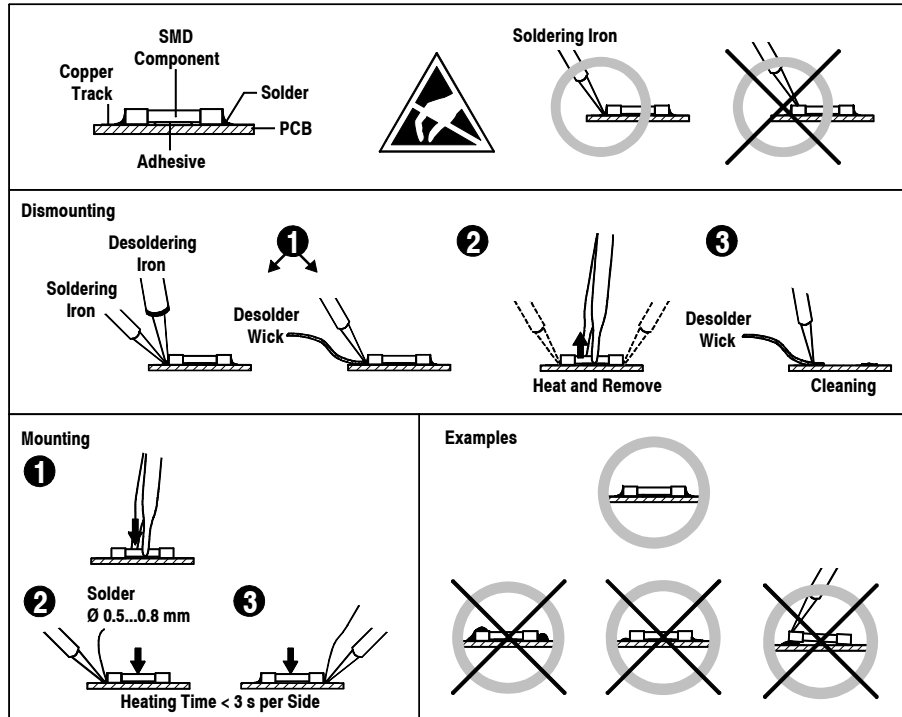
- *Explosion hazard* from lithium batteries, electrolytic capacitors and power semiconductors (watch the component's polarity. Do not short battery terminals. Replace batteries only by the same type).
- *Implosion hazard* from evacuated display units.
- *Radiation hazard* from laser units (non-ionizing), picture tubes (ionizing).
- *Caustic effect* of display units (LCD) and components containing liquid electrolyte.

*Such components should only be handled by trained personnel who are properly protected (e.g. safety goggles, gloves).*

**E1 SMD Components**

Studer does not keep any commercially available SMD components in stock. For repair the corresponding devices should be purchased locally. The specifications of special components can be found in the service manual.

SMD components should only be replaced by skilled specialists using appropriate tools. No warranty claims will be accepted for circuit boards that have been damaged. Proper and improper SMD soldering joints are illustrated below.



**F Disposal**

**Disposal of Packing Materials**

The packing materials have been selected with environmental and disposal issues in mind. All packing material can be recycled. Recycling packing saves raw materials and reduces the volume of waste. If you need to dispose of the transport packing materials, please try to use recyclable means.

**Disposal of Used Equipment**

Used equipment contains valuable raw materials as well as materials that must be disposed of professionally. Please return your used equipment via an authorized specialist dealer or via the public waste disposal system, ensuring any material that can be recycled is. Please take care that your used equipment cannot be abused. To avoid abuse, delete sensitive data from any data storage media. After having disconnected your used equipment from the mains supply, make sure that the mains connector and the mains cable are made useless.



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**G      Declarations of Conformity**

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**G1      Class A Equipment - FCC Notice**

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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. These limits are designed to provide a 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.

*Caution: Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. Also refer to relevant information in this manual.*

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**G2      CE Declaration of Conformity**

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We,  
**Studer Professional Audio GmbH,  
CH-8105 Regensdorf,**  
declare under our sole responsibility that the product  
**Studer OnAir 2000M2 Modulo, Digital Mixing System  
(starting with serial no. 1001)**  
to which this declaration relates, according to following regulations of EU directives and amendments

- Low Voltage (LVD):  
73/23/EEC + 93/68/EEC
- Electromagnetic Compatibility (EMC):  
89/336/EEC + 92/31/EEC + 93/68/EEC

is in conformity with the following standards or other normative documents:

- Safety:  
EN 60950:2000 (Class I equipment)
- Safety of laser products:  
EN 60825-1:1994 + A11 + A2, EN60825-2:2000
- EMC:  
EN 55103-1/-2:1996, electromagnetic environments E2 and E4.

Regensdorf, November 5, 2002



B. Hochstrasser, President



P. Fiala, Manager QA

## Appendix 1: Air Temperature and Humidity

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### General

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Normal operation of the unit or system is warranted under the following ambient conditions defined by *EN 60721-3-3, set IE32, value 3K3*.

This standard consists of an extensive catalogue of parameters, the most important of which are: ambient temperature +5...+40 °C, relative humidity 5...85% (i.e., no formation of condensation or ice); absolute humidity 1...25 g/m<sup>3</sup>; rate of temperature change < 0.5 °C/min. These parameters are dealt with in the following paragraphs.

Under these conditions the unit or system starts and works without any problem. Beyond these specifications, possible problems are described in the following paragraphs.

### Ambient Temperature

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Units and systems by Studer are generally designed for an ambient temperature range (i.e. temperature of the incoming air) of +5...+40 °C. When rack mounting the units, the intended air flow and herewith adequate cooling must be provided. The following facts must be considered:

- The admissible ambient temperature range for operation of the semiconductor components is 0 °C to +70 °C (commercial temperature range for operation).
- The air flow through the installation must provide that the outgoing air is always cooler than 70 °C.
- Average heat increase of the cooling air shall be 20 K, allowing for an additional maximum 10 K increase at the hot components.
- In order to dissipate 1 kW with this admissible average heat increase, an air flow of 2.65 m<sup>3</sup>/min is required.

**Example:** A rack dissipating  $P = 800\text{ W}$  requires an air flow of  $0.8 * 2.65\text{ m}^3/\text{min}$  which corresponds to  $2.12\text{ m}^3/\text{min}$ .

- If the cooling function of the installation must be monitored (e.g. for fan failure or illumination with spot lamps), the outgoing air temperature must be measured directly above the modules at several places within the rack. The trigger temperature of the sensors should be 65 to 70 °C.

### Frost and Dew

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The unsealed system parts (connector areas and semiconductor pins) allow for a minute formation of ice or frost. However, formation of dew visible with the naked eye will already lead to malfunctions. In practice, reliable operation can be expected in a temperature range above -15 °C, if the following general rule is considered for putting the cold system into operation:

If the air within the system is cooled down, the relative humidity rises. If it reaches 100%, condensation will arise, usually in the boundary layer between the air and a cooler surface, together with formation of ice or dew at sensitive areas of the system (contacts, IC pins, etc.). Once internal condensation occurs, trouble-free operation cannot be guaranteed, independent of temperature.

Before putting into operation, the system must be checked for internal formation of condensation or ice. Only with a minute formation of ice, direct evaporation (sublimation) may be expected; otherwise the system must be heated and dried while switched off.

A system without visible internal formation of ice or condensation should be heated up with its own heat dissipation, as homogeneously (and subsequently as slow) as possible; the ambient temperature should then always be lower than the one of the outgoing air.

If it is absolutely necessary to operate the cold system immediately within warm ambient air, this air must be dehydrated. In such a case, the absolute humidity must be so low that the relative humidity, related to the coldest system surface, always remains below 100%.

Ensure that the enclosed air is as dry as possible when powering off (i.e. before switching off in winter, aerate the room with cold, dry air, and remove humid objects as clothes from the room).

These relationships are visible from the following climatogram. For a controlled procedure, thermometer and hygrometer as well as a thermometer within the system will be required.

**Example 1:** An OB-van having an internal temperature of 20 °C and relative humidity of 40% is switched off in the evening. If temperature falls below +5 °C, dew or ice will be forming.

**Example 2:** An OB-van is heated up in the morning with air of 20 °C and a relative humidity of 40%. On all parts being cooler than +5 °C, dew or ice will be forming.

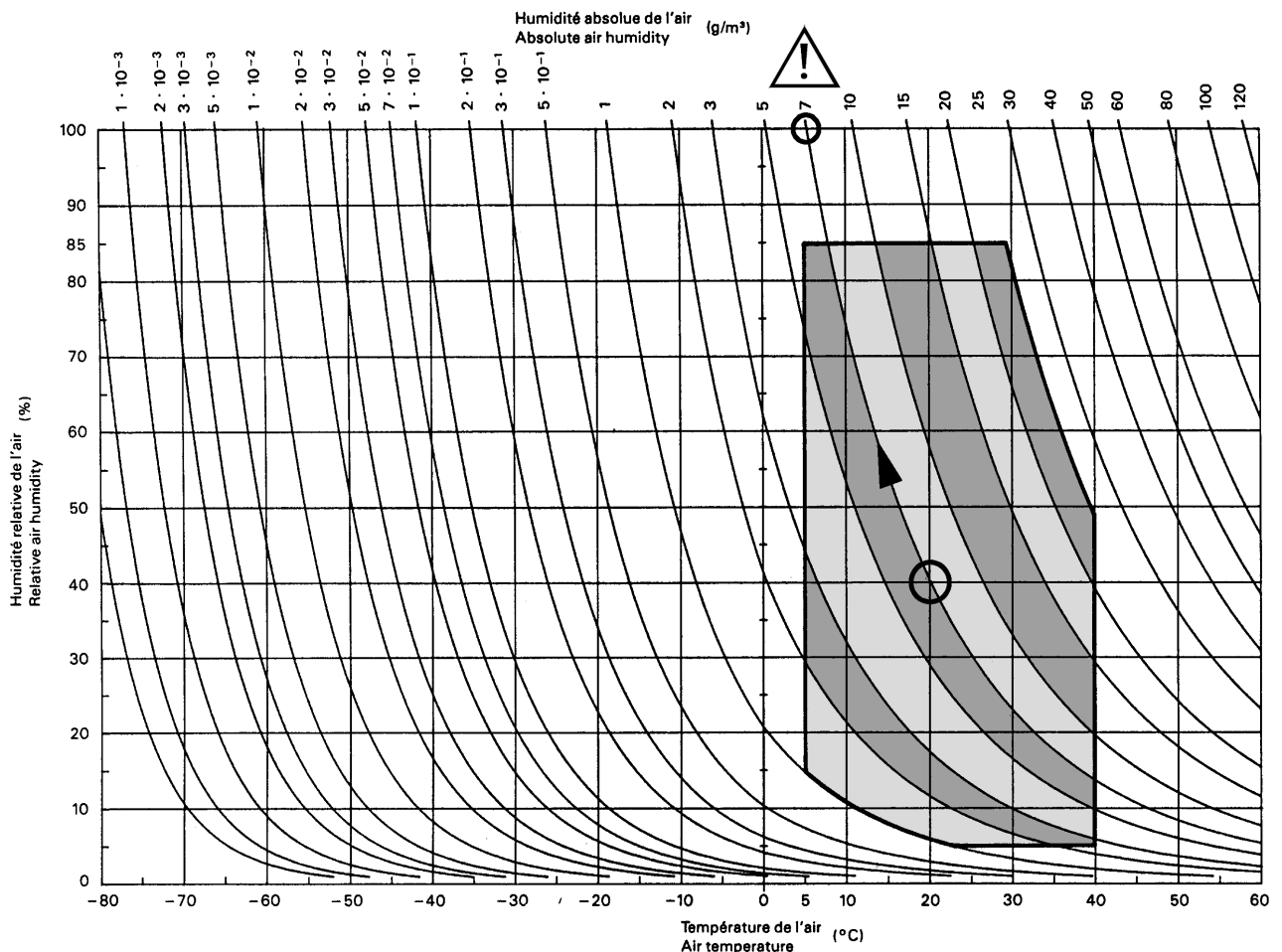
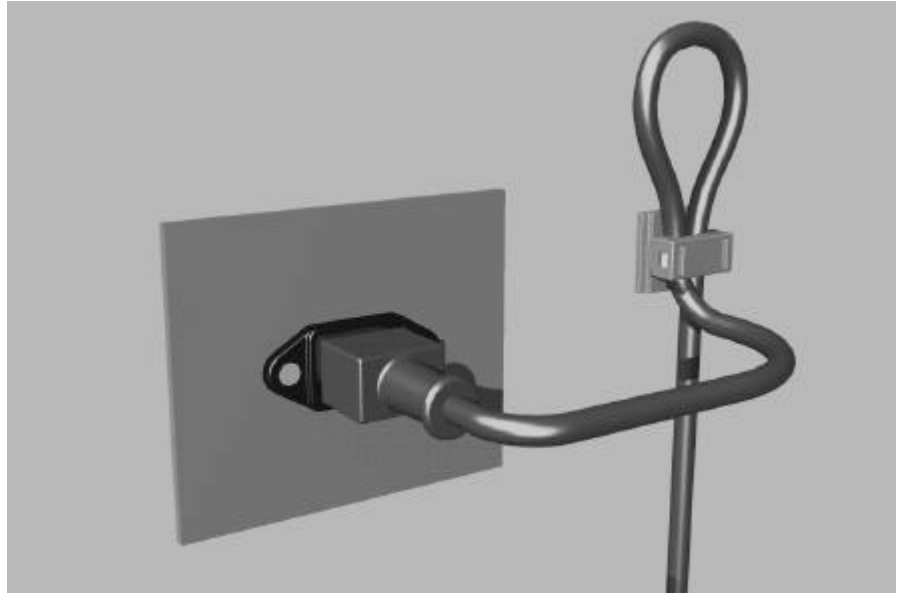


Figure B.3 – Climatogramme pour catégorie 3K3  
Climatogram for class 3K3

721-3-3 © CEI:1994

## Appendix 2: Mains Connector Strain Relief

For anchoring connectors without a mechanical lock (e.g. IEC mains connectors), we recommend the following arrangement:



**Procedure:** The cable clamp shipped with your unit is auto-adhesive. For mounting please follow the rules below:

- The surface to be adhered to must be clean, dry, and free from grease, oil, or other contaminants. Recommended application temperature range is 20...40 °C.
- Remove the plastic protective backing from the rear side of the clamp and apply it firmly to the surface at the desired position. Allow as much time as possible for curing. The bond continues to develop for as long as 24 hours.
- For improved stability, the clamp should be fixed with a screw. For this purpose, a self-tapping screw and an M4 bolt and nut are included.
- Place the cable into the clamp as shown in the illustration above and firmly press down the internal top cover until the cable is fixed.

## Appendix 3: Software License

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## **Warranty, Disclaimer, and Liability**

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For all issues not covered herewithin, please refer to the "General Terms and Conditions of Sale and Delivery" that are part of the sales contract.

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## 1 INTRODUCTION



The OnAir 2000M2 Modulo is virtually identical with Studer's well-known OnAir 2000M2 digital mixing console, except that it adds a new degree in flexibility due to its modular surface design. This allows the studio designer to arrange the desk components to the user's convenience, and to distance the I/Os and processor from the desk if desired.

The technical specifications, configurations and options as well as operation are the same as with the standard Studer OnAir 2000M2 digital mixing console. *For operation and/or service, please consult the respective manuals.* An OnAir 2000M2 operating manual is shipped together with each OnAir 2000M2 Modulo console.

This manual describes only the differences to the standard Studer OnAir 2000M2 console.

The picture above shows a typical OnAir 2000M2 Modulo installation with optional components (RTW vectorscope, Studer DigiMedia, Studer A1 active speakers, custom table).



## 2 GENERAL

### 2.1 Utilization for the Purpose Intended



The OnAir 2000M2 Modulo mixing console is intended for professional use.

It is presumed that the unit is operated only by trained personnel. Servicing is reserved to skilled technicians.

The electrical connections may be connected only to the voltages and signals designated in this manual or in the respective OnAir 2000M2 manuals.

### 2.2 First Steps

#### 2.2.1 Unpacking and Inspection

Your new mixing console is shipped in a special packing which protects the units against mechanical shock during transit. Care should be exercised when unpacking so that the surfaces do not get marred.

Check the condition of the equipment for signs of shipping damage. If there should be any complaints you should immediately notify the forwarding agent and your nearest Studer distributor.

Please retain the original packing material because it offers the best protection in case your equipment ever needs to be transported.

#### 2.2.2 Installation

**Primary Voltage:** The power supply unit is auto-ranging; it can be used for mains voltages in a range of 100 to 240 V<sub>AC</sub>, 50 to 60 Hz.

**General Precautions:** Do not use the unit in conditions of excessive heat or cold, near any source of moisture, in excessively humid environments, or in positions where it is likely to be subjected to vibration or dust. The ambient temperature range for normal operation of the unit is +5...+40° C.



*When installing the processor frame, free air flow has to be assured. If the rack is closed at the top and/or the bottom, 1U air vent panels (1.950.693.01) have to be installed above and/or below the processor frame; refer to the drawing in [chapter 3.4](#) for details.*

**Cleaning:** Do not use any liquids to clean the exterior of the unit. A soft, dry cloth or brush will usually do.



For cleaning the touch-screen display windows, most of the commercially available window or computer/TV screen cleaners are suited. *Use only a slightly damp (never wet) cloth. Never use any solvent!*

**Power Connection:** The attached female IEC 320/C13 mains cable socket has to be connected to an appropriate mains cable by a trained technician, respecting your local regulations. Refer to the “Installation, Operation, and Waste Disposal” section at the beginning of this manual.



**Earthing:** *This equipment must be earthed, due to the mains input filter network being connected to the mains earth.*



Some consideration should be given to the earthing arrangement of the system; the processor frame *must* be in its center, i.e. in the system's star point.

The processor frame is earthed to the mains earth via the power supply. Ground loops may occur where signal processing equipment, patched to the processor frame, has its signal earth commoned to the equipment chassis.



*Please note that for safety and EMC reasons, the frames may be operated only one on top of the other, with a tight ground connection between them – installation of the different racks e.g. installed separately or side-by-side is strictly prohibited.*

**Meter Module Cables:** Please note that the connecting cables between the electronics rack and the meter module (4 × 25 pin D-type) *must not* be interchanged. The connectors and the respective receptacles are coded; however, care is required nevertheless when establishing these connections.



*If a custom meter bridge is installed, attention has to be paid to proper connection, otherwise damage to the units may occur.*

### 2.2.3 Adjustments, Repair

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**Danger:**



All internal adjustments as well as repair work on this product must be performed by trained technicians!

**Replacing the Supply Unit:**



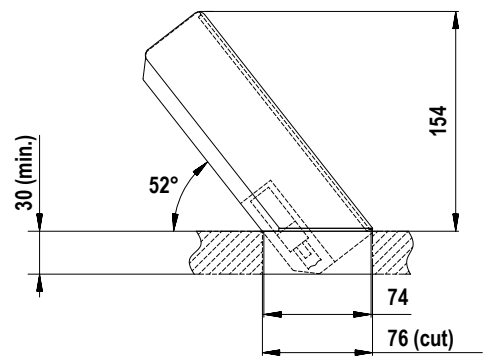
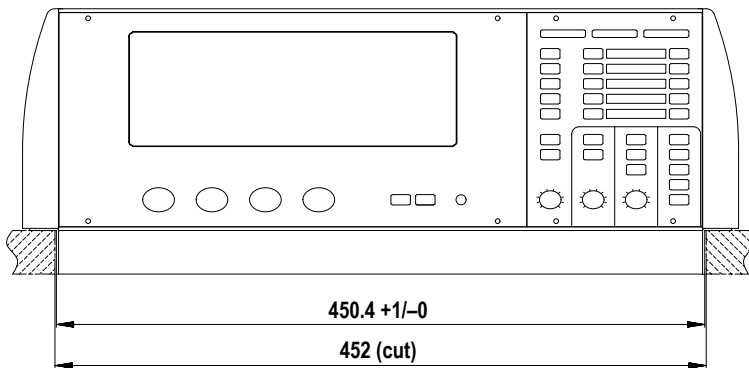
*The primary fuse is located inside the power supply module and cannot be changed. In case of failure, the complete power supply unit must be replaced. Please ask your nearest Studer representative.*

### 3 MODULE INFORMATION

#### 3.1 Central Module

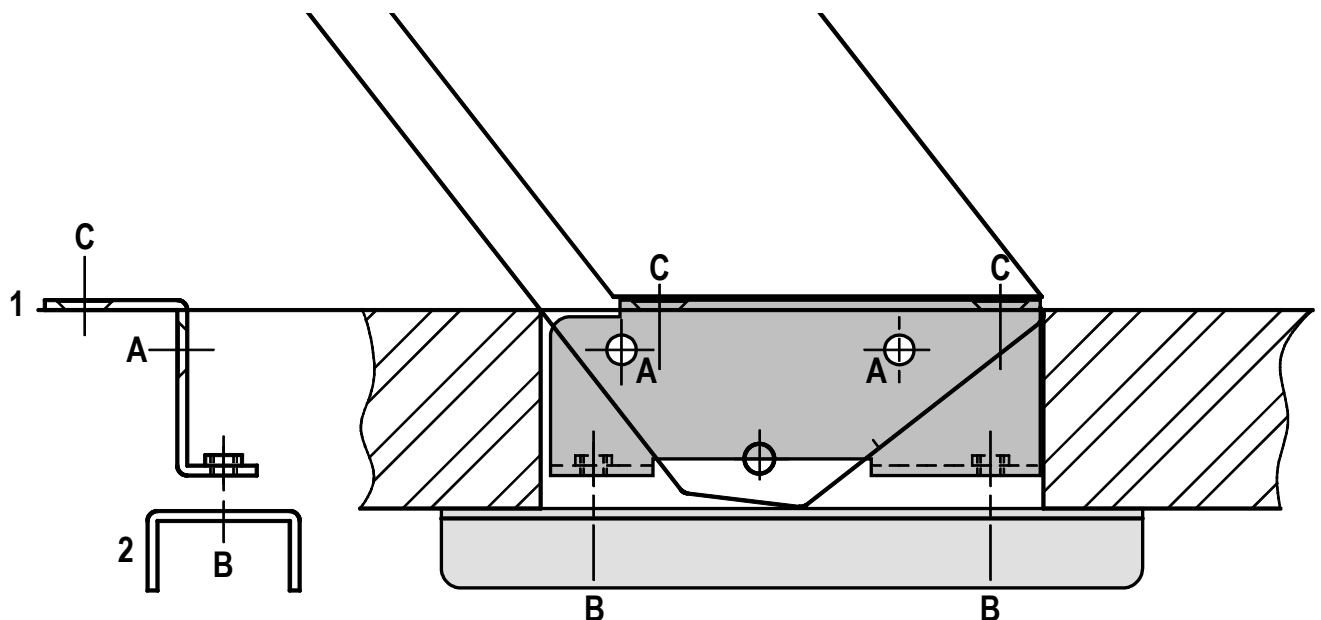


The Central Module consists of the central touch-screen with four rotary encoders beneath, and the monitoring/talkback/signaling section. It can be placed on the desk as a standalone unit, or installed in a 19" rack, e.g. in an OB van (190 mm height). If desired, the meters can optionally be included with the Central Module to provide all common functions in a compact housing.



For mounting, a simple rectangular cutout in the table is sufficient; there are two methods (see detail below). First attach 2 brackets [1] to the Central Module with two screws [A] each.

- Recommended method (table thickness min. 30 mm): Insert the unit into the cutout, and fix it with a clamp [2] on either side (2 screws [B] each)
- Alternate method: Remove the side panels; for this purpose, the front panels must be removed. Insert the unit into the cutout, and fix it on either side to the table with two screws [C]. Reinstall the side panels and the front panel.

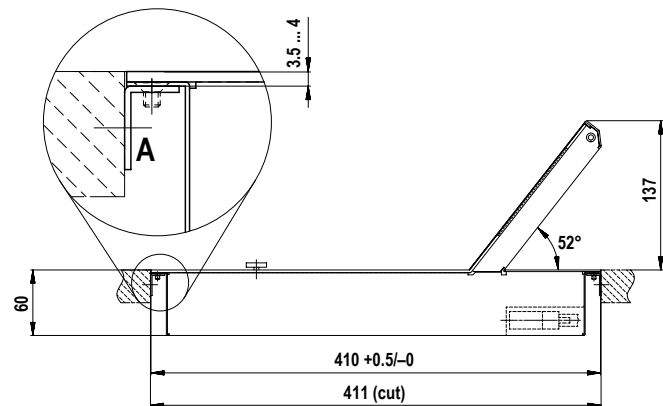
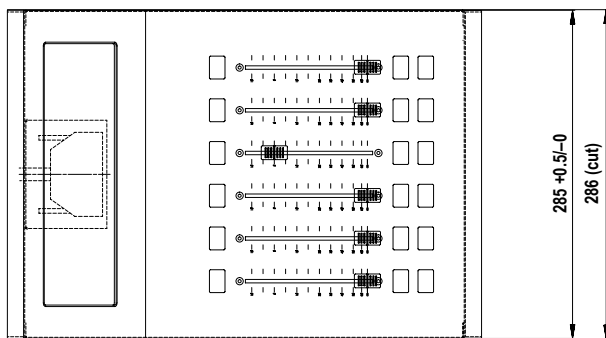


### 3.2 Fader Module



The Fader Module includes six channel faders with ON, OFF and PFL keys, an overload indicator per channel, and the channel touch-screen for instant overview on all relevant channel parameter settings. The modules can be placed separately according to good ergonomic practice, or joined together in line according to the customer's needs and the available space. The console can be equipped with one up to four Fader Modules (6 to 24 channel faders).

For mounting, a simple rectangular cutout is sufficient. Two mounting brackets [A] are shipped with every unit. Attach them to the inside of the cutout. Then remove the front panel and rear cover from the module and insert the module into the table. Attach the module with two screws to each bracket and reinstall the front panel.



### 3.3 Meter Module



The Meter Module can be equipped to customer specifications with various meters from RTW, NTP, DKAudio, or Studer, including an audio vectorscope. The Meter Module for 190 mm units is available in four sizes providing 4, 8, 12, or 16 slots and can be freely placed in the working environment. External stand-alone audio vectorscopes can also be used. The meters can be included with the Central Module to provide all common functions in a compact housing.

**Please note:** The connecting cables between the electronics rack and the meter module (4 × 25 pin D-type) *must not* be interchanged. The connectors and the respective receptacles are coded, however care is required nevertheless when establishing these connections.

### 3.4 19" Processor Frame



The complete electronics are housed in a 19" frame with 380 mm depth. The 19" main frame (8 U, 354.8 mm) contains the DSP and the control CPU, the output modules, the power supply and the monitoring module. Up to two 19" I/O frames (4U, 177 mm each) can be equipped each with either 6 or 12 input modules, giving a maximum of 24 input modules with a maximum of 64 input signals.

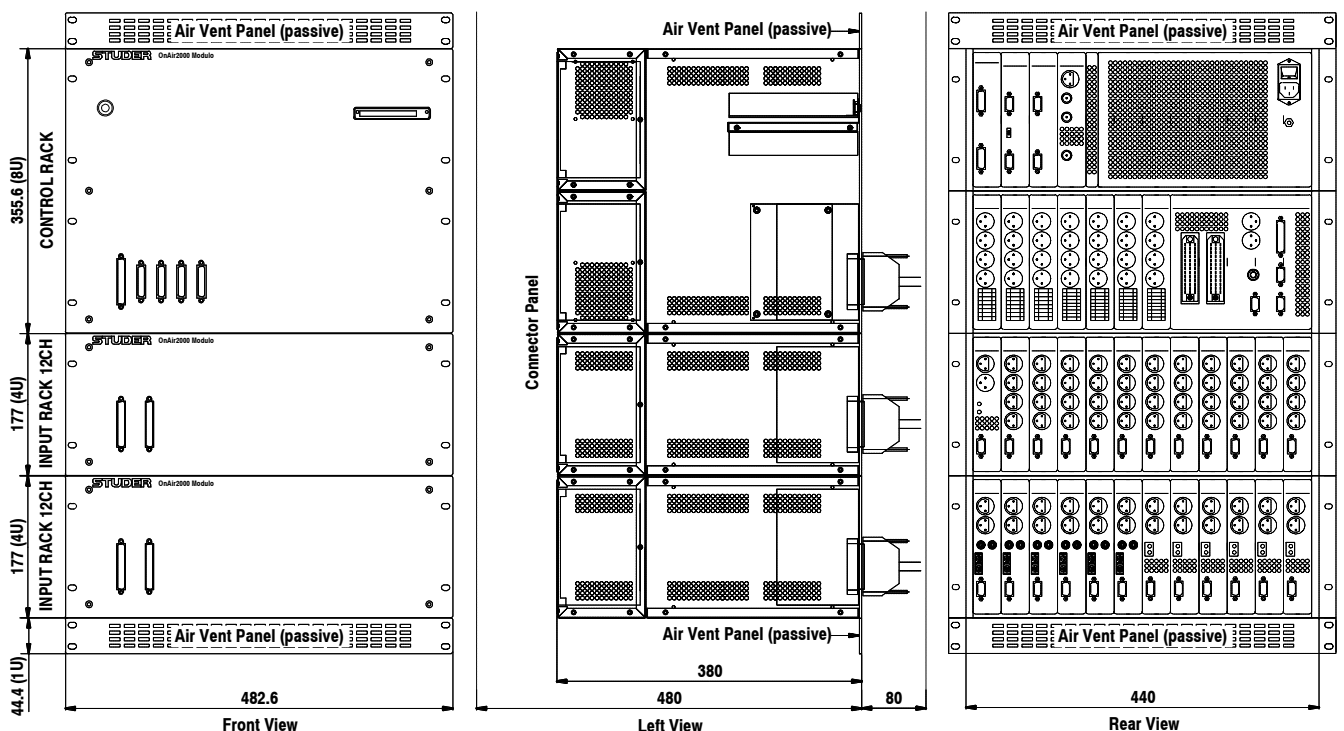


*When installing the processor frame, free air flow from bottom to top must be assured. If the rack is closed at the bottom and/or the top, 1U air vent panels (1.950.693.01) must be installed below and/or above the frame.*



*Please note that for safety and EMC reasons, the frames may be operated only one on top of the other, with a tight ground connection between them – installation of the different racks e.g. installed separately or side-by-side is strictly prohibited.*

The drawing below shows a fully-equipped rack with two 19" I/O frames for a 24-channel console, together with the required air vent panels on bottom and top.



### 3.5 Optional Input Module Extension

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Similar to the standard OnAir 2000M2, the Modulo can be equipped with the Input Module Extension Box. The Extension Box allows for a higher number of inputs than the number of faders, e.g. a six-fader console may be equipped with 6, 12, 18 or max. 24 input modules, with a maximum of 64 input signals. The Extension Box becomes useful namely if space is restricted, but more input modules than faders need to be installed. In this case, the additionally required input modules can be placed aside the rack in the Input Module Extension Box instead of in an I/O frame, thus reducing the total rack height.

### 3.6 Optional Redundant Power Supply

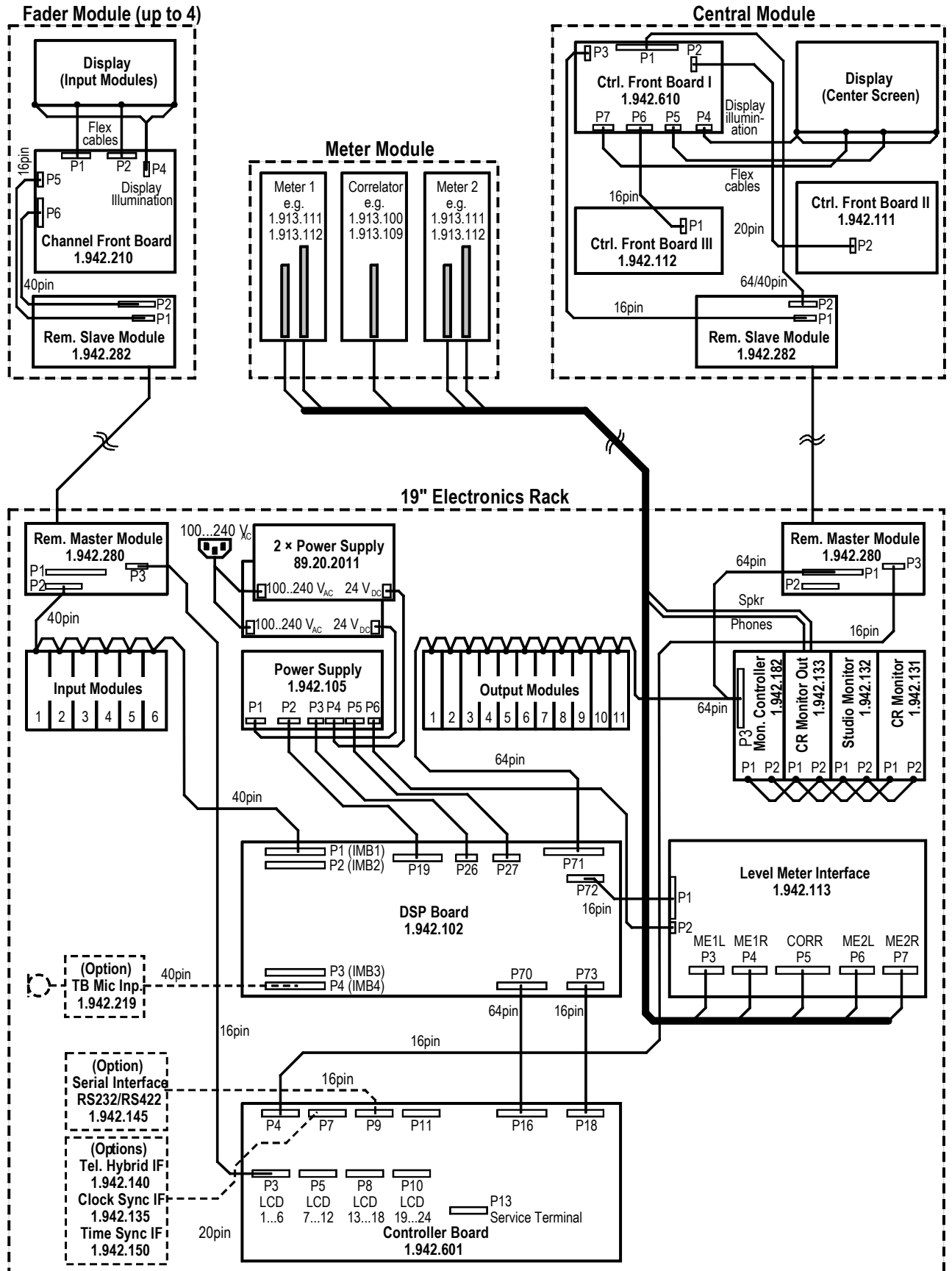
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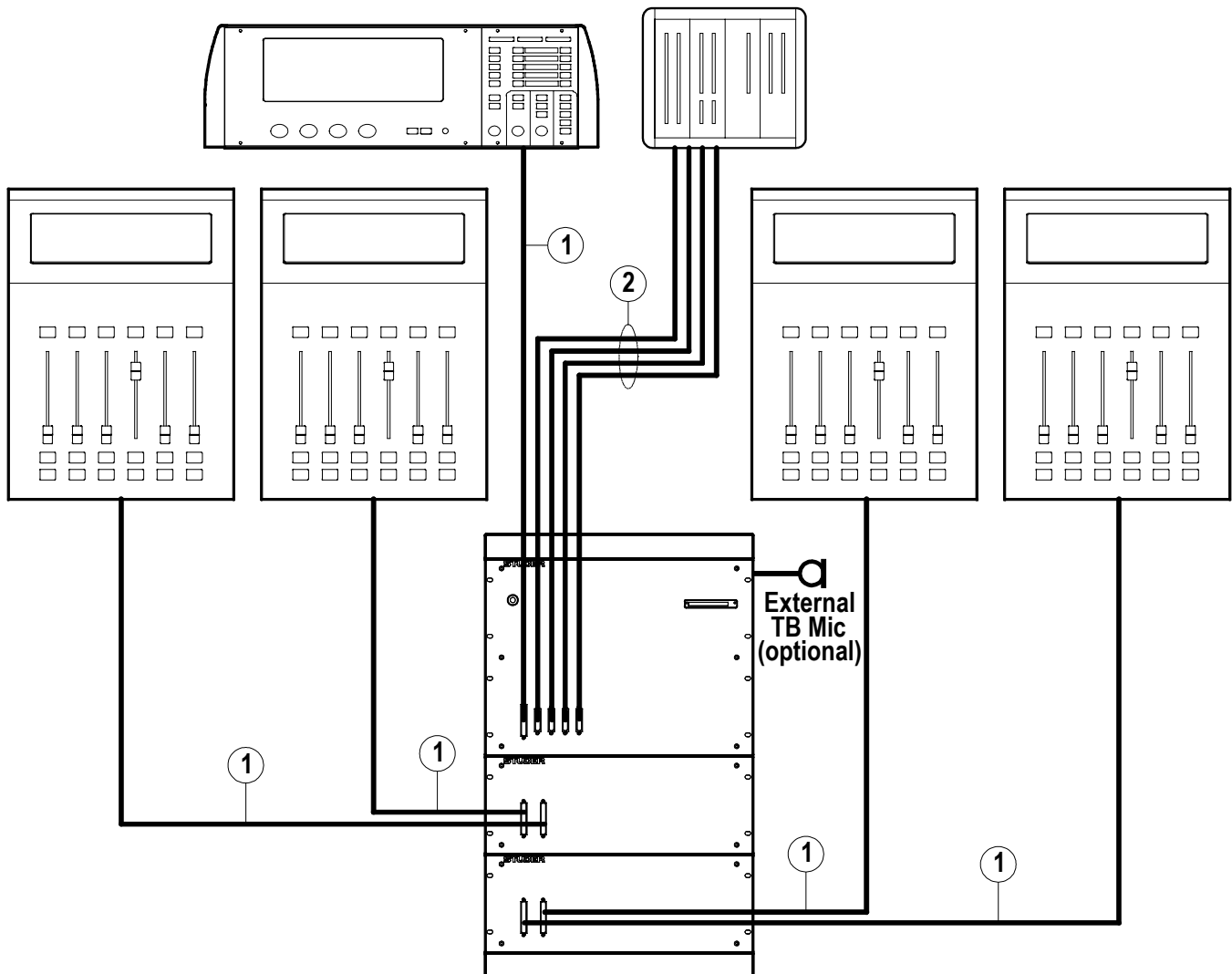
The power supply of the Studer OnAir 2000M2 Modulo normally is located within the 19" processor frame. Optionally, fully redundant power supplies are available; they are externally housed in two 19"/2 U frames. Primary and secondary converters, mains inlets, power distribution, and secondary voltage connections to the rack are fully redundant.

## 4 WIRING INFORMATION

### 4.1 Internal Wiring



## 4.2 External Wiring



- [1] Connecting cables from the Processor Frame to the Fader Module(s) and to the Central Module. These cables are available in different standard lengths. For this reason, they have to be ordered separately, depending on the current application. Their length is determined during discussion with Studer's quotation engineers.

Cable Length	Order No. (for one cable)
2.5 m	1.942.400.25
10 m	1.942.400.26
20 m	1.942.400.27

- [2] Connecting cable set from the Processor Frame to the Meter Module; not available in standard configurations, as the metering is completely depending on the customer's specification. They are individually defined during the quotation stage.



Please note that the connecting cables between the electronics rack and the meter module (up to  $4 \times 25$  pin D-type) *must not* be interchanged. The connectors and the respective receptacles are coded; however, care is required nevertheless while setting up these connections.



### 4.3 Connector Pin Assignments

- **FADER MODULE** and **CENTER PANEL** connectors, female, on the Processor Frame (D37f)
- **Connectors**, male, at the rear of the Fader Module and the Center Panel (D37m)

Pin	Signal	Pin	Signal
1	+15 V	20	AGND
2	-15 V	21	_PD_I
3	GND	22	GND
4	_INT_X	23	VCC
5	VCC	24	P_RES_X
6	+24 V	25	+24 V
7	RXD_X +	26	RXD_X -
8	TXD_X +	27	TXD_X -
9	SCLK_X +	28	SCLK_X -
10	GND	29	GND
11	FLM_X +	30	FLM_X -
12	LP_X +	31	LP_X -
13	CP_X +	32	CP_X -
14	M_X +	33	M_X -
15	LCD0_X +	34	LCD0_X -
16	LCD1_X +	35	LCD1_X -
17	LCD2_X +	36	LCD2_X -
18	LCD3_X +	37	LCD3_X -
19	-24 V		



*For the following four connectors, only the pin assignment on the Processor Frame can be given; the pin assignment on the other end of the connecting cables completely depends on the individual customer's layout.*

#### DIGITAL METER / PFL (D25f)

Pin	Signal	Pin	Signal
1	GND	14	AES_OUT1+
2	AES_OUT1-	15	
3	GND	16	AES_OUT2+
4	AES_OUT2-	17	
5		18	DGND
6	+24V	19	DGND
7	+24V	20	
8		21	
9	HP_GND	22	HP_LEFT
10	HP_RIGHT	23	
11		24	LS-
12	LS+	25	KEY
13			

**ANALOG METER 1 (D25f)**

Pin	Signal	Pin	Signal
1	KEY	14	+15V
2		15	DGND
3	CH1+	16	-15V
4	CH1-	17	+5V
5	-24V (ext.)	18	DGND
6		19	
7		20	
8		21	
9	+15V	22	
10	DGND	23	CH2+
11	-15V	24	CH2-
12	+5V	25	-24V (ext.)
13	DGND		

**ANALOG METER 2 (D25f)**

Pin	Signal	Pin	Signal
1	KEY	14	+15V
2		15	DGND
3	CH3+	16	-15V
4	CH3-	17	+5V
5	-24V (ext.)	18	DGND
6		19	
7		20	
8		21	
9	+15V	22	
10	DGND	23	CH4+
11	-15V	24	CH4-
12	+5V	25	-24V (ext.)
13	DGND		

**CORRELATOR (D25f)**

Pin	Signal	Pin	Signal
1	CH2-	14	CH2+
2	CH3+	15	CH1-
3	CH3-	16	CH1+
4	CH4+	17	+15V
5	CH4-	18	DGND
6		19	-15V
7		20	+5V
8	-24V (ext.)	21	DGND
9		22	
10		23	
11		24	
12		25	
13	KEY		

## 5 DIAGRAMS

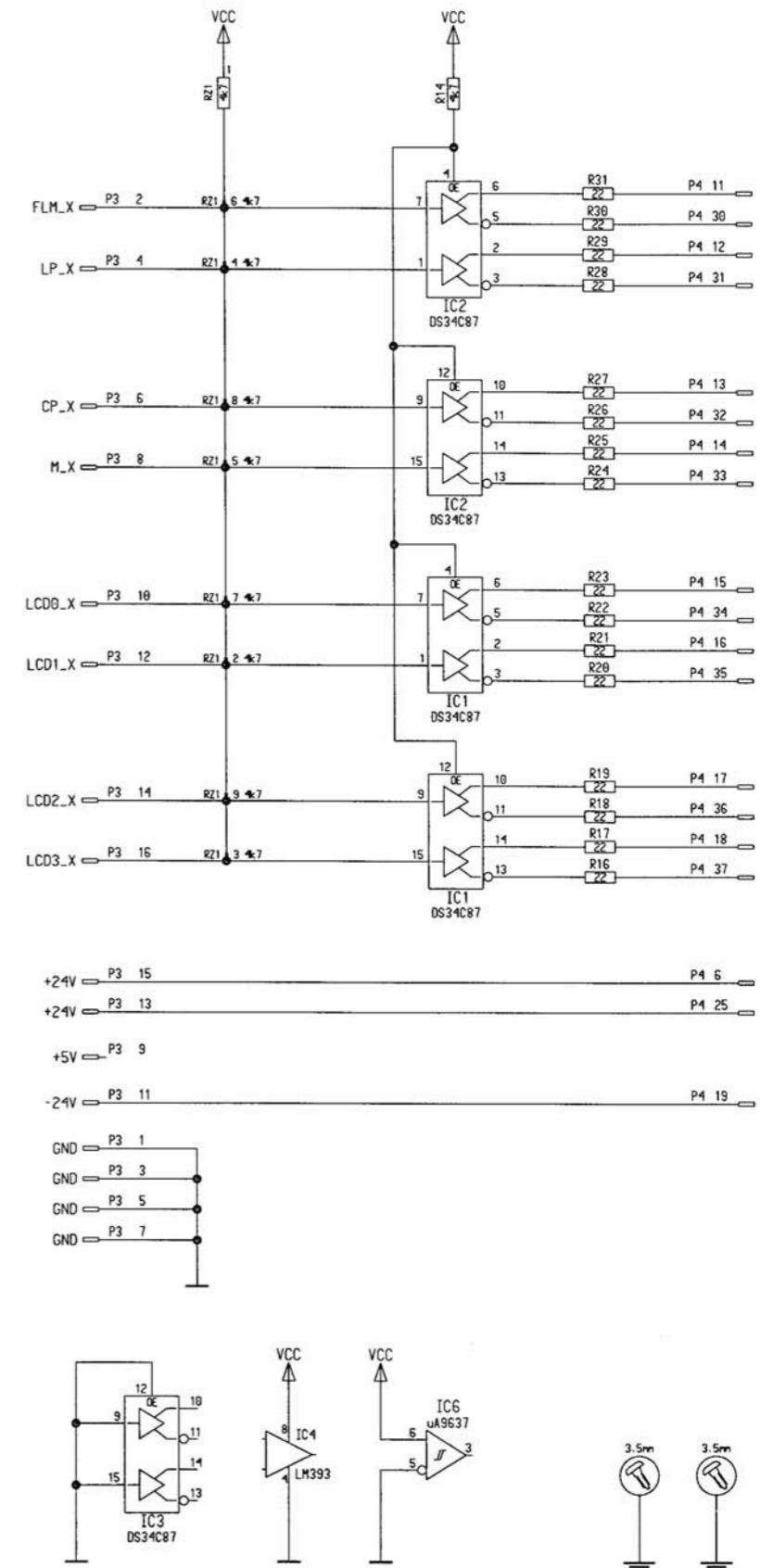
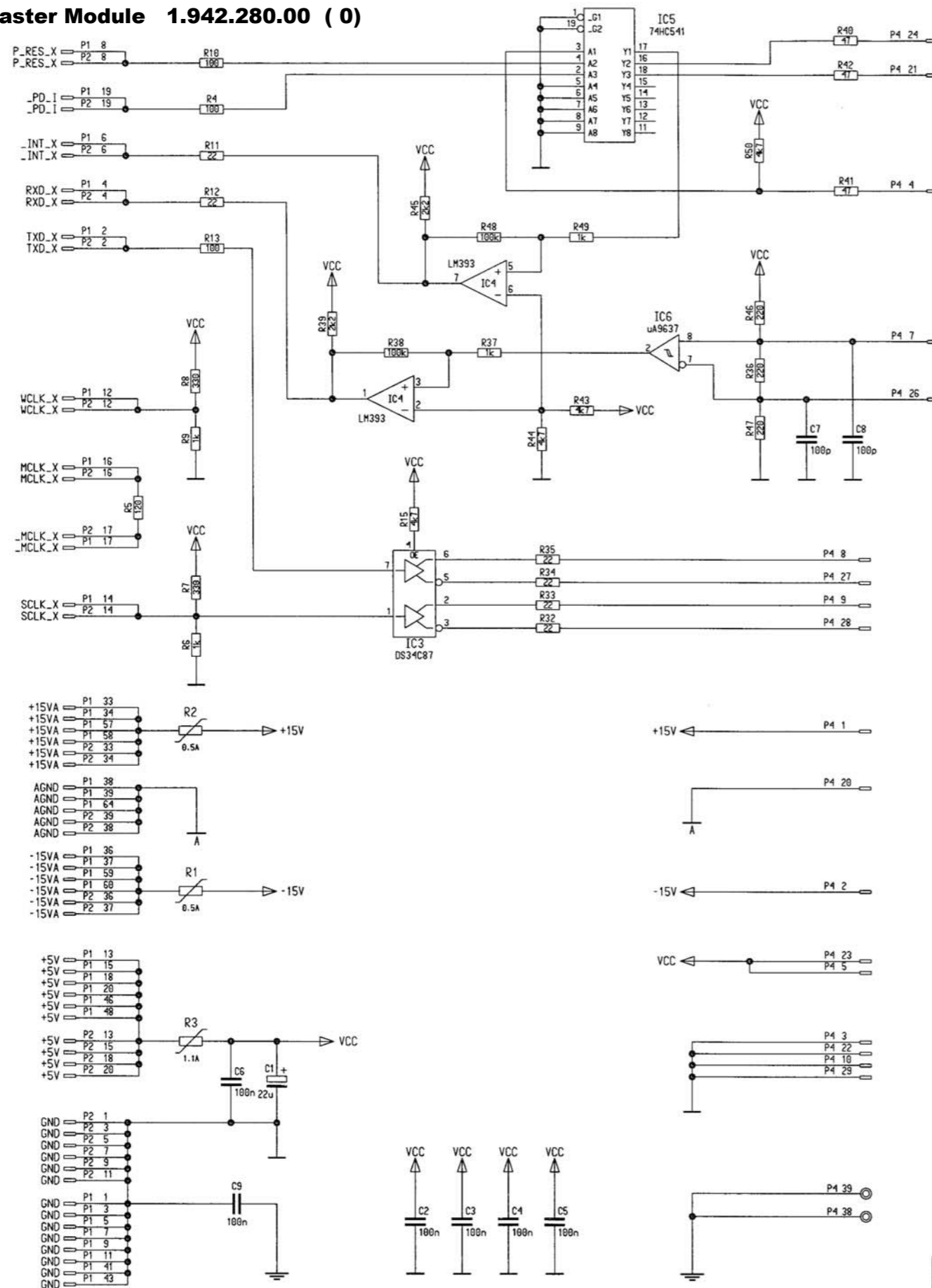
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**Note:** As all OnAir 2000M2 Modulo electronics assemblies are identical with the ones of the standard OnAir 2000M2 (with two exceptions), please refer for servicing to the OnAir 2000M2 Service Instructions Manual (Order No. 10.27.4521).

Information on the two assemblies that are used only for the OnAir 2000M2 Modulo is given on the following pages.

Remote Master Module	1.942.280.00
Remote Slave Module	1.942.282.00

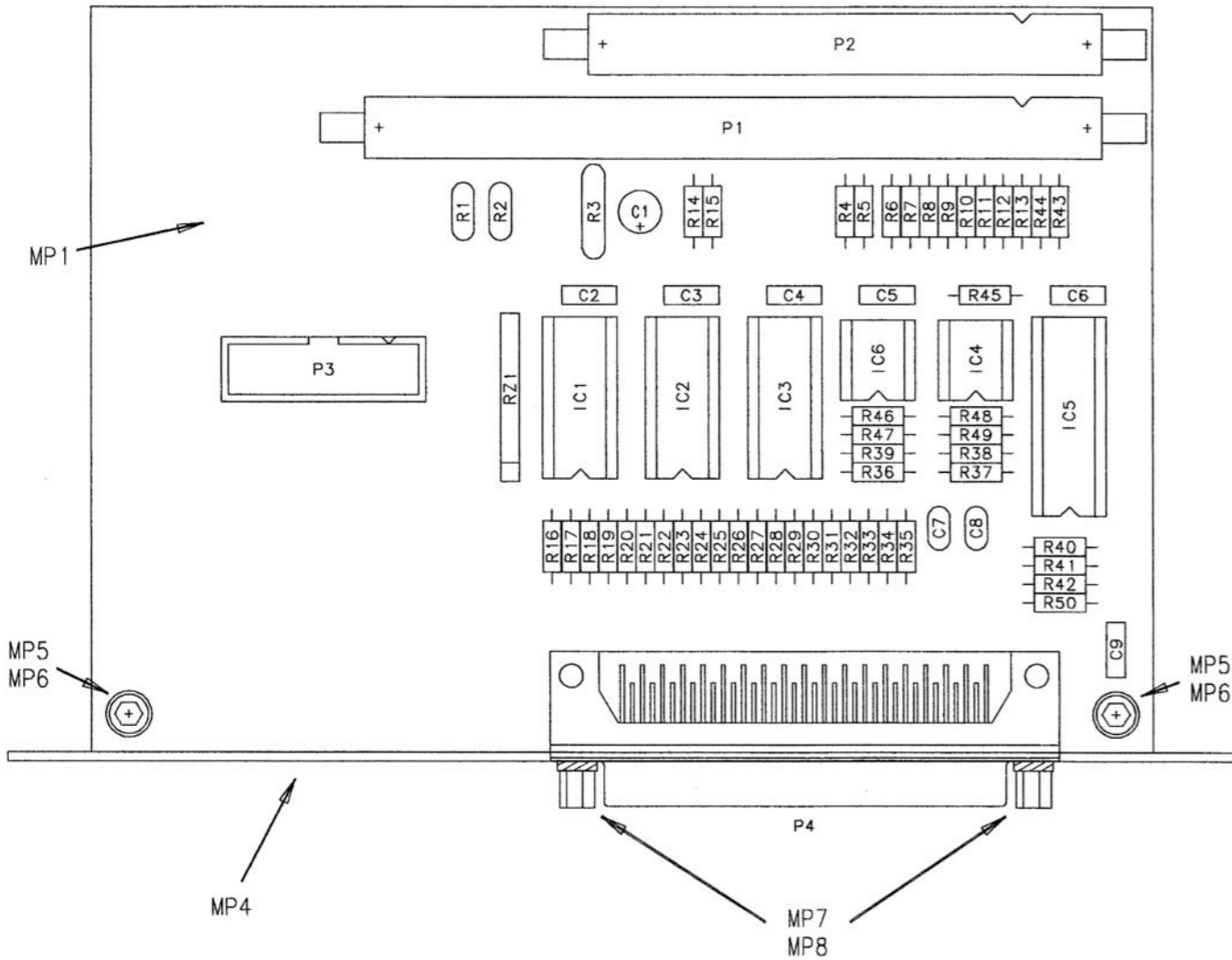
Remote Master Module 1.942.280.00 ( 0)



029.10.97 / SG				PAGE 1 / 1
STUDER		REMOTE MASTER MODULE		1.942.280-00

Remote Master Module 1.942.280.00 ( 0 )

Remote Master Module 1.942.280.00 ( 1 )



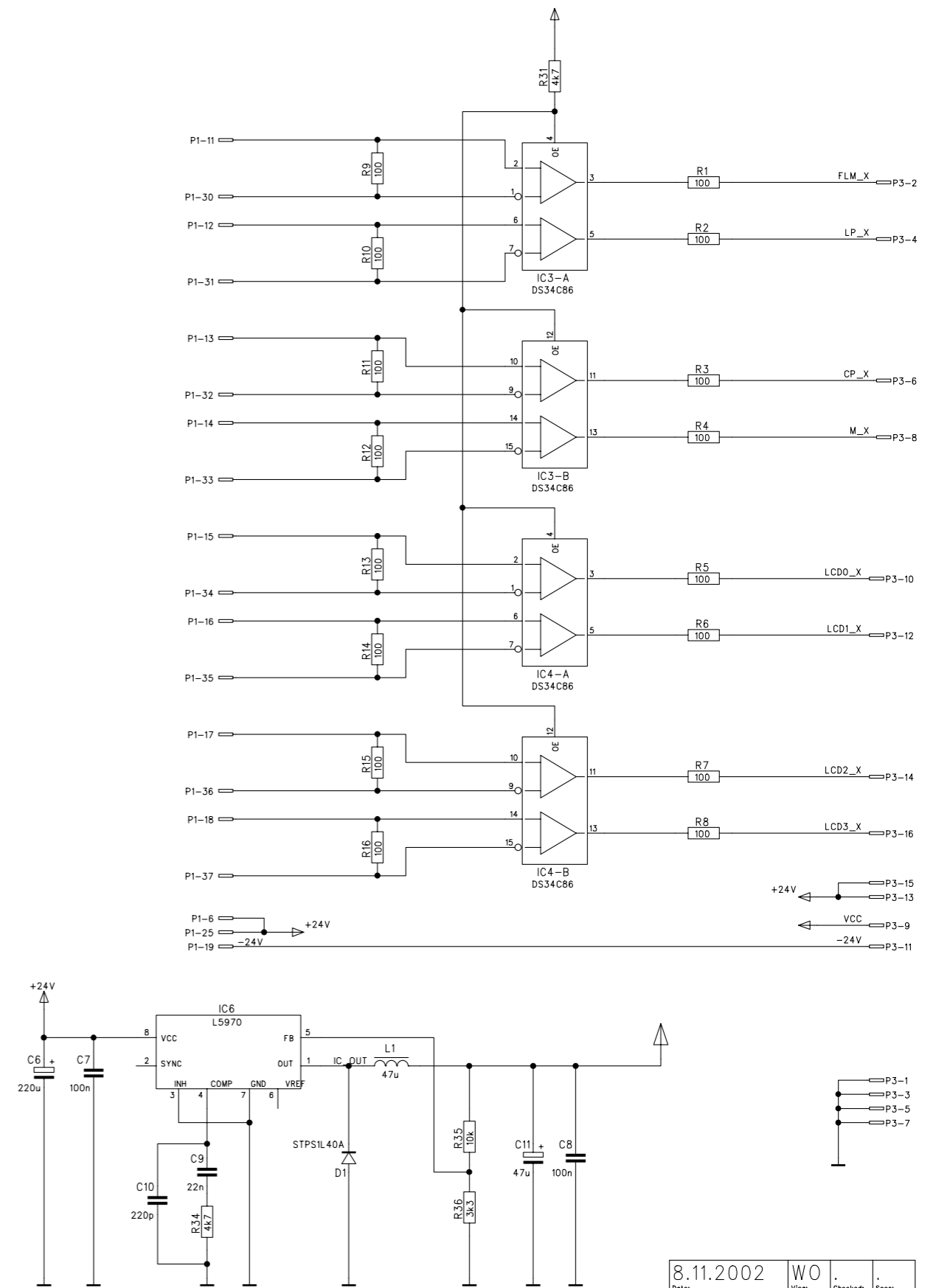
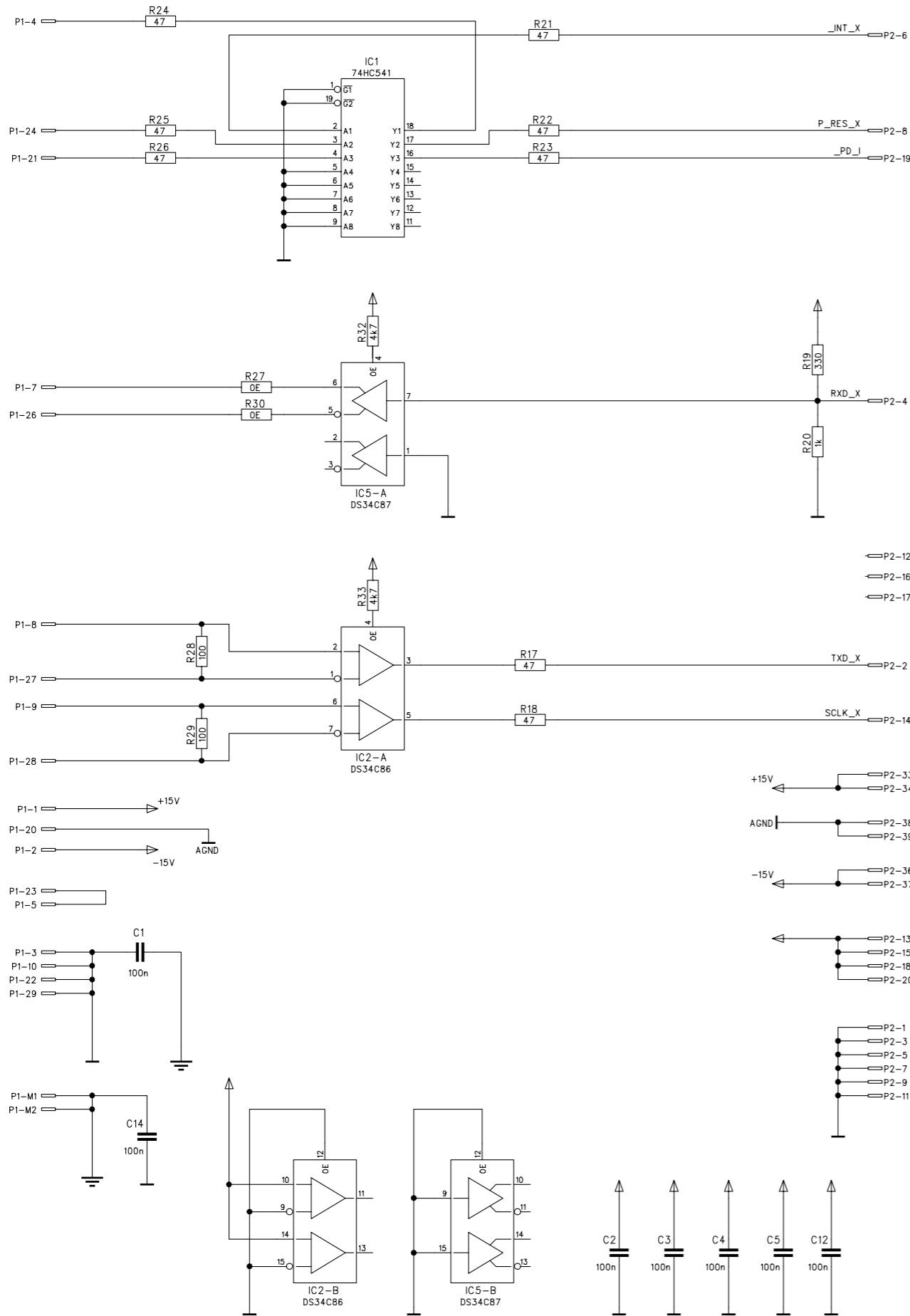
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0	C 3	59.06.0104		100n	PETP, 63V, 10%, RM5
0	C 4	59.06.0104		100n	PETP, 63V, 10%, RM5
0	C 5	59.06.0104		100n	PETP, 63V, 10%, RM5
0	C 6	59.06.0104		100n	PETP, 63V, 10%, RM5
0	C 7	59.32.1101		100p	CER 10%, 400V
0	C 8	59.32.1101		100p	CER 10%, 400V
0	C 9	59.06.0104		100n	PETP, 63V, 10%, RM5
0	IC 1	50.15.0127		34C87	IC DS 34 C 87 TN, MC34C87P ,A
0	IC 2	50.15.0127		34C87	IC DS 34 C 87 TN, MC34C87P ,A
0	IC 3	50.15.0127		34C87	IC DS 34 C 87 TN, MC34C87P ,A
0	IC 4	50.05.0283		LM393	Dual Comparator
0	IC 5	50.17.1541		74HC541	Octal bus buffer
0	IC 6	50.15.0114		9637	Dual diff Line Receiver
0	MP 1	1.942.280.11	1 pce		REMOTE MASTER PCB
0	MP 2	43.01.0108	1 pce	Label	ESE-WARNschild
0	MP 3	1.942.280.10	1 pce		NR.ETIKETTE
0	MP 4	1.942.281.01	1 pce		BLLENDE REMOTE MODULE
0	MP 5	24.16.2030	2 pcs	3.2/6.0	Facherscheibe Form A
0	MP 6	21.53.0353	2 pcs	M3*5	Z-Schraube Inbus Zn gb chr
0	MP 7	24.16.2030	2 pcs	3.2/6.0	Facherscheibe Form A
0	MP 8	54.13.0081	2 pcs	4.85mm	Bolzen UNC 4-40
0	P 1	54.14.2056		64p	Stecker gerade Au
0	P 2	54.14.2054		40p	Stecker gerade Au
0	P 3	54.14.2002		16p	1/20" Au, gerade, ohne Verrieg
0	P 4	54.13.0074		37p	D-Sub, PCB, Winkel
0	R 1	57.92.7013		0.5A	PTC 60V
0	R 2	57.92.7013		0.5A	PTC 60V
0	R 3	57.92.7015		1.1A	PTC 50V
0	R 4	57.11.3101		100R	MF, 1%, 0207
0	R 5	57.11.3121		120R	MF, 1%, 0207
0	R 6	57.11.3102		1k0	MF, 1%, 0207
0	R 7	57.11.3331		330R	MF, 1%, 0207
1	R 8	not used		330R	MF, 1%, 0207
0	R 9	57.11.3102		1k0	MF, 1%, 0207
0	R 10	57.11.3101		100R	MF, 1%, 0207
0	R 11	57.11.3220		22R	MF, 1%, 0207
0	R 12	57.11.3220		22R	MF, 1%, 0207
0	R 13	57.11.3101		100R	MF, 1%, 0207
0	R 14	57.11.3472		4k7	MF, 1%, 0207
0	R 15	57.11.3472		4k7	MF, 1%, 0207
0	R 16	57.11.3220		22R	MF, 1%, 0207
0	R 17	57.11.3220		22R	MF, 1%, 0207
0	R 18	57.11.3220		22R	MF, 1%, 0207
0	R 19	57.11.3220		22R	MF, 1%, 0207
0	R 20	57.11.3220		22R	MF, 1%, 0207
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0	R 32	57.11.3220		22R	MF, 1%, 0207
0	R 33	57.11.3220		22R	MF, 1%, 0207
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0	R 36	57.11.3221		220R	MF, 1%, 0207
0	R 37	57.11.3102		1k0	MF, 1%, 0207
0	R 38	57.11.3104		100k	MF, 1%, 0207
0	R 39	57.11.3222		2k2	MF, 1%, 0207
0	R 40	57.11.3470		47R	MF, 1%, 0207
0	R 41	57.11.3470		47R	MF, 1%, 0207
0	R 42	57.11.3470		47R	MF, 1%, 0207
0	R 43	57.11.3472		4k7	MF, 1%, 0207
0	R 44	57.11.3472		4k7	MF, 1%, 0207
0	R 45	57.11.3222		2k2	MF, 1%, 0207
0	R 46	57.11.3221		220R	MF, 1%, 0207
0	R 47	57.11.3221		220R	MF, 1%, 0207
0	R 48	57.11.3104		100k	MF, 1%, 0207
0	R 49	57.11.3102		1k0	MF, 1%, 0207
0	R 50	57.11.3472		4k7	MF, 1%, 0207
0	RZ 1	57.88.4472		4k7	8*R Resistor-Netw 2% SIP9
0	XIC 1	53.03.0168		16p	DIL 0.3", lot, gerade
0	XIC 2	53.03.0168		16p	DIL 0.3", lot, gerade
0	XIC 3	53.03.0168		16p	DIL 0.3", lot, gerade
0	XIC 4	53.03.0166		8p	DIL 0.3", lot, gerade
0	XIC 5	53.03.0165		20p	DIL 0.3", lot, gerade
0	XIC 6	53.03.0166		8p	DIL 0.3", lot, gerade

(01) R8 not used

End of List

Accompanying documents: Zugehoerige Unterlagen: PL	General tolerance: Freimasstoleranz: ±	Scale: Masstab:	Edition Ausgabe 29.10.97	PZ	VA	Seen Ges.	Index
Substitute for: Ersatz fuer:	Replaced by: Ersetzt durch:	Copy to: Kopie fuer:	Date Datum	Visa Gez.	Checked Gepr.	Seen Ges.	Index
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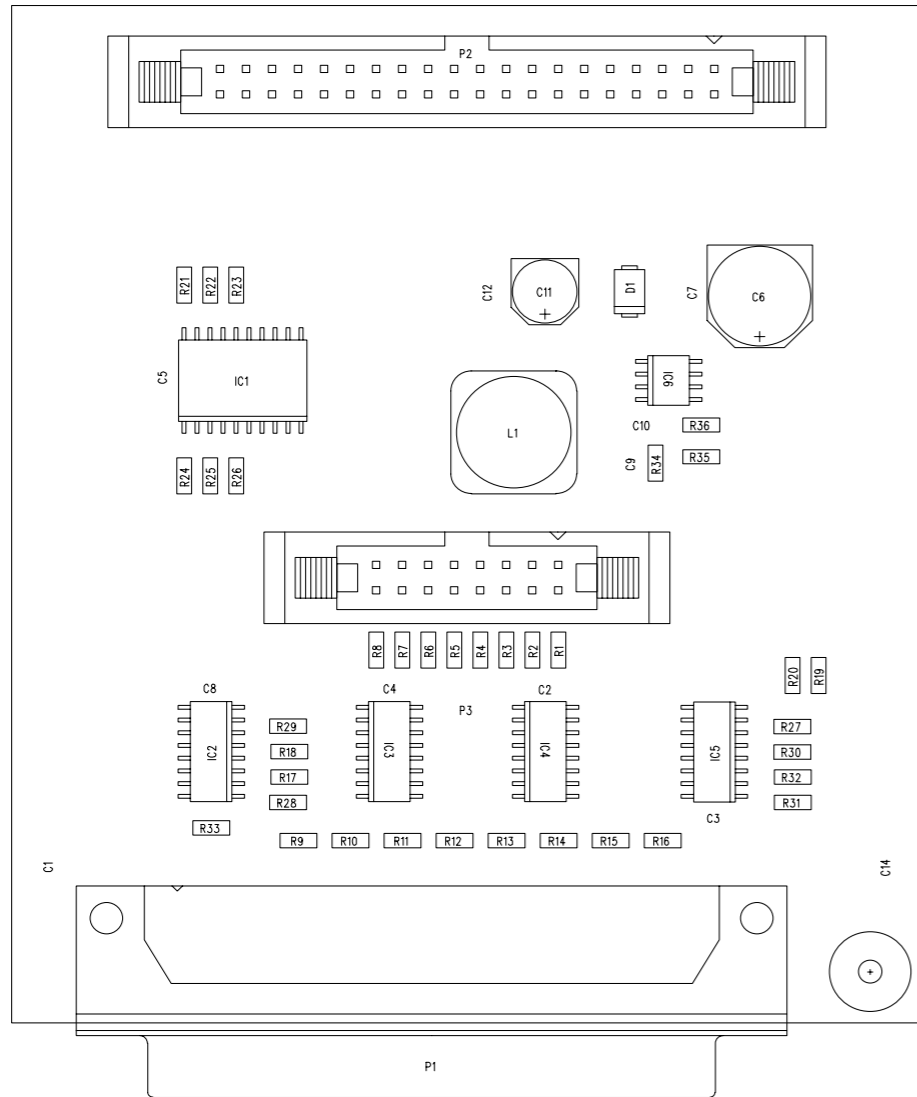
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8.11.2002		WO		
Date:	Datum:	Viso:	Checked:	Seen:
		Gez.:	Gepr.:	Gez.:
Index:	0	Page:	1 / 1	
Index:		Seite:		
Number:	1.942.282-00			

Remote Slave Module 1.942.282.00 ( 0 )

Remote Slave Module 1.942.282.00 ( 0 )



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0	C 3	59.60.3337	1 pce	100n CER 50V, 10%, X7R, 0805
0	C 4	59.60.3337	1 pce	100n CER 50V, 10%, X7R, 0805
0	C 5	59.60.3337	1 pce	100n CER 50V, 10%, X7R, 0805
0	C 6	59.68.0117	1 pce	220u EL 35V, 10 *10.7
0	C 7	59.60.3337	1 pce	100n CER 50V, 10%, X7R, 0805
0	C 8	59.60.3337	1 pce	100n CER 50V, 10%, X7R, 0805
0	C 9	59.60.3329	1 pce	22n CER 50V, 10%, X7R, 0805
0	C 10	59.60.2257	1 pce	220p CER 50V, 5%, C0G, 0603
0	C 11	59.68.0069	1 pce	47u EL 16V, 6.3*5.7
0	C 12	59.60.3337	1 pce	100n CER 50V, 10%, X7R, 0805
0	C 14	59.60.3337	1 pce	100n CER 50V, 10%, X7R, 0805
0	D 1	50.60.8103	1 pce	SS14 1A 40V Schottky
0	IC 1	50.62.1541	1 pce	74HC541 Octal buffer line driver/recei
0	IC 2	50.62.0463	1 pce	DS34C86 4*RS 422 Line Receiver
0	IC 3	50.62.0463	1 pce	DS34C86 4*RS 422 Line Receiver
0	IC 4	50.62.0463	1 pce	DS34C86 4*RS 422 Line Receiver
0	IC 5	50.62.0464	1 pce	DS34C87 4*RS 422 Line Driver
0	IC 6	50.61.2006	1 pce	L5970D Step down switching regulator
0	L 1	62.60.0518	1 pce	47uH SMD 2.5A
0	MP 1	1.942.282.11	1 pce	REMOTE SLAVE MODULO PCB
0	MP 2	1.942.282.10	1 pce	NR.ETIKETTE
0	MP 3	43.01.0108	1 pce	Label ESE-WARNSCHILD
0	P 1	54.13.0079	1 pce	37p D-Sub, PCB, Winkel
0	P 2	54.14.2054	1 pce	40p Stecker gerade Au
0	P 3	54.14.2052	1 pce	16p Stecker gerade Au
0	R 1	57.60.1101	1 pce	100R MF, 1%, 0204, E24
0	R 2	57.60.1101	1 pce	100R MF, 1%, 0204, E24
0	R 3	57.60.1101	1 pce	100R MF, 1%, 0204, E24
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0	R 5	57.60.1101	1 pce	100R MF, 1%, 0204, E24
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0	R 20	not used	1 pce	1k0 MF, 1%, 0204, E24
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0	R 30	57.60.1000	1 pce	0R0 MF, 0204
0	R 31	57.60.1472	1 pce	4k7 MF, 1%, 0204, E24
0	R 32	57.60.1472	1 pce	4k7 MF, 1%, 0204, E24
0	R 33	57.60.1472	1 pce	4k7 MF, 1%, 0204, E24
0	R 34	57.60.1472	1 pce	4k7 MF, 1%, 0204, E24
0	R 35	57.60.1103	1 pce	10k MF, 1%, 0204, E24
0	R 36	57.60.1332	1 pce	3k3 MF, 1%, 0204, E24

End of List

Accompanying documents: Zugehörige Unterlagen:	General tolerance: Freimasstoleranz:	Scale: Massstab:	Date: Datum: 8.11.2002	Visa: Gez.: WO	Checked: Gepr.: SW	Seem: Ges.: EB
STUDER			Index: 0	Page: 1 / 1		
Description: Bezeichnung: REMOTE SLAVE MODULE, ESE			Number: Nummer: 1.942.282.00			