



### **Dx 38**

24 BIT DIGITAL SOUND SYSTEM PROCESSOR

## **WARRANTY (Limited)**

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid.

**Exclusions and Limitations:** The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) Malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d): malfunction resulting from misuse or abuse of the product; or (e): malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice or any of its authorized service representatives.

**Obtaining Warranty Service:** To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice at 600 Cecil Street, Buchanan, MI 49107 (616-695-6831) and/or Electro-Voice West at 9130 Glenoaks Boulevard, Sun Valley, CA 91532 (213-875-1900).

**Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

**Electro-Voice Electronics** are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty Statement.

Specifications subject to change without notice.

# **Electro-Voice®**

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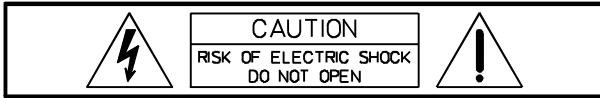
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## IMPORTANT SAFETY INSTRUCTIONS



WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,  
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.  
AVIS: RISQUÉ DE CHOC ELECTRIQUE. NE PAS OUVRIR.



The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a damp cloth.
7. Do not block any of the ventilation openings.  
Install in accordance with the manufactures instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9. Only use attachments/accessories specified by the manufacturer.
10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

### For US and CANADA only:

Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

## IMPORTANT SERVICE INSTRUCTIONS

**CAUTION:** These servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

1. Security regulations as stated in the EN 60065 (VDE 0860 / IEC 65) and the CSA E65 - 94 have to be obeyed when servicing the appliance.
2. Use of a mains separator transformer is mandatory during maintenance while the appliance is opened, needs to be operated and is connected to the mains
3. Switch off the power before retrofitting any extensions, changing the mains voltage or the output voltage.
4. The minimum distance between parts carrying mains voltage and any accessible metal piece (metal enclosure), respectively between the mains poles has to be **3 mm** and needs to be minded at all times.  
The minimum distance between parts carrying mains voltage and any switches or breakers that are not connected to the mains (secondary parts) has to be **6 mm** and needs to be minded at all times.
5. Replacing special components that are marked in the circuit diagram using the security symbol (Note) is only permissible when using original parts.
6. Altering the circuitry without prior consent or advice is not legitimate.
7. Any work security regulations that are applicable at the location where the appliance is being serviced have to be strictly obeyed. This applies also to any regulations about the work place itself.
8. All instructions concerning the handling of **MOS** - circuits have to be observed.

**Note:**  **SAFETY COMPONENT (HAS TO BE REPLACED WITH ORIGINAL PART ONLY)**



Technische Informationen  
*Architects and engineers  
specifications*

## **Dx 38** **24 BIT DIGITAL SOUND SYSTEM PROCESSOR**

### **BESCHREIBUNG**

Mit 48 Bit Filteralgorithmen, 24 Bit AD/DA Wandlern und einem Dynamikbereich von 115 dB setzt der Dx 38 neue Maßstäbe für digitale Lautsprecher Controller und Prozessoren. Der Dx 38 ist ein universell einsetzbarer Digitaler Sound System Processor mit 2 Eingängen und 4 Ausgängen, sowie zusätzlich einer internen Summe der Eingänge 1 und 2. Die Ausgänge können in einer Matrix auf einen beliebigen Eingang oder die Eingangssumme geroutet werden. Es können Stereo bzw. Dual 2-Weg-Systeme oder 3-Weg+Direct und 4-Weg Systeme, jeweils auch mit Mono Sub-Kanal, aber auch Fullrange Systeme konfiguriert werden.

In allen Betriebsarten stehen Hoch- und Tiefpaß-Filter für die Frequenzweichen-Funktionen zur Verfügung. Die Auswahl umfaßt Linkwitz-Riley, Butterworth und Bessel Filter mit wählbaren Flankensteilheiten von 6, 12, 18 oder 24 dB/Okt. Eine große Anzahl weiterer Filter ermöglicht eine äußerst flexible Frequenzgangskorrektur. In den Eingängen finden Sie jeweils einen 5-Band Equalizer, dessen einzelne Filtersektionen beliebig mit High- und Low-Pass, High- und Low-Shelving oder parametrischen Peak-Dip-Filtern belegt werden können. In den Ausgängen sind neben den Frequenzweichen-Filtern jeweils 4 weitere Filter enthalten, die ebenfalls als High- und Low-Pass Filter, High- oder Low-Shelving-Filter, parametrische Peak-Dip-Filter, oder Allpass-Filter programmiert werden können. Weitere Filtermöglichkeiten sind z. B. Hochpässe 2. Ordnung zur Realisierung von B-6 Alignments, oder spezielle LPN-Filter (Lowpass Notch / Tiefpaß-Sperrfilter) zur Korrektur des Frequenz- und Phasengangs von Baßreflexboxen. Zusätzlich ist jeder Kanal mit einem Delay, einem Polaritätswahlschalter, einem programmierbaren Pegelsteller und einem digitalen Kompressor / Limiter ausgestattet. In den Eingängen befinden sich außerdem noch die Master-Delays.

Der Anwender hat die Wahl zwischen zwei Bedien-Modi: Im einfachsten Fall (No Edit Mode) brauchen nur die verwendeten Lautsprecherkombinationen aus der Liste der Factory Preset Programme ausgewählt werden. Das Gerät ist danach optimal auf die Audioanlage eingestellt und sofort betriebsbereit. Im Full Edit Mode hingegen besteht Zugriff auf sämtliche Parameter, so daß beliebige Einstellungen programmiert und gespeichert werden können. Es stehen insgesamt 80 Programmplätze - 50 für die Factory Presets, und weitere 30 für frei programmierbare User-Programme - zur Verfügung.

Die AD/DA-Wandlung im Dx 38 erfolgt mit linearen 24 Bit Wandlern, wobei es sich in der AD-Sektion um gainranging Sigma-Delta-Wandler mit 128-fachem Oversampling handelt. Im DA-Bereich wird mit Sigma-Delta Wandlern mit 128-fachem Oversampling gearbeitet. Die Signalverarbeitung erfolgt auf zwei 24 Bit Motorola Signalprozessoren.

Weitere Merkmale sind:

- FLASH Speicher für Software und Preset Updates über serielle Schnittstellen
- PC Bedien- und Konfigurationssoftware unter Windows 95 / Windows 98
- MIDI-Schnittstelle standardmäßig
- RS-232, RS-485 Schnittstellen oder Umschaltkontakte optional
- Grafik-Display mit 122 x 32 Dots, hintergrundbeleuchtet
- Ein- und Ausgänge elektronisch symmetrisch in XLR
- Trafosymmetrierung für die Eingänge optional
- Input / Output Pegelsteller, Output Mute Schalter, Kanal-Funktionsanzeigen SUB, LO, MID, HI
- Input / Output Aussteueranzeigen, Kompressor- und Clip-LED's

### **DESCRIPTION**

Providing 48-bit filter algorithms, 24-bit AD/DA conversion and a dynamic range of 115 dB, the Dx 38 sets new standards for digital loudspeaker controllers and processors. The Dx 38 is an universal Digital Sound System Processor that provides 2 inputs and 4 outputs; plus internal summing of the inputs 1 and 2. Via matrix it is possible to assign the outputs to any input or to the sum of the inputs. It is further possible to establish the following configurations: Stereo or Dual 2-Way systems, 3-Way + Direct and 4-Way systems, each with Mono Sub-channel, but also full range systems.

High and low-pass filters are provided for the frequency crossover functions in all operation modes. The selection includes Linkwitz-Riley, Butterworth and Bessel type filters with switchable slopes between 6, 12, 18 and 24 dB/oct. A huge number of additional filters offers extremely flexible correction of the frequency response. Each input incorporates a 5-band equalizer, allowing to assign high and low-pass, high and low-shelving or parametric peak-dip filters to its individual filter sections. Next to the frequency crossover filters, four additional filters are employed in each output channel, which also can be set to work as high or low-pass, high or low-shelving filters, parametric peak-dip filters, or all-pass filters. Additional filtering is provided through 2. order high-passes for the realization of B-6 alignment, or special LPN-filters (Low-Pass Notch filters) for correcting the frequency and phase responses of optimally vented woofer cabinets. Each channel additionally provides a delay, a polarity switch, a programmable level control and a digital compressor / limiter while the master delays are located in the input channels.

The user can choose between two operation modes: the "No Edit Mode" allows to simply select the required combination of loudspeaker systems from the factory preset program list. Afterwards, the appliance is optimally matched to the sound system and can be operated instantly. The "Full Edit Mode" on the other hand offers access to all parameters, allowing to freely program and store basically any setting. A total number of 80 memory addresses - 50 preset and 30 freely assignable user-programs - are available.

Within the Dx 38, AD/DA conversion is taken care of by linear 24-bit converters; where the AD-section employs 128 times oversampling, gain-ranging Sigma-Delta converters. The DA-section offers 128 times oversampling Sigma-Delta converters. The overall signal processing is performed by two 24-bit Motorola signal processors.

Additional features are:

- FLASH memory for software and preset updates via serial interfaces
- PC-based operation and configuration software running under Windows '95 / Windows '98
- Standard MIDI-interface
- RS-232, RS-485 interfaces or switching contacts optionally available
- Back-lit graphic-display with 122 x 32 dots
- Inputs and outputs are electronically balanced, XLR-type connectors
- Input transformer-balancing is optionally available
- Input / Output level controls, Output-Mute switch, channel function indicators SUB, LO, MID, HI
- Input / Output meter instruments, compressor and clipping LEDs

## DESCRIPTION

Avec ses algorithmes de filtrage travaillant en 48 bits, ses convertisseurs A/N et N/A 24 bits et sa gamme dynamique de 115 dB, le Dx 38 définit de nouveaux standards dans le domaine des contrôleurs et processeurs numériques de haut-parleurs. Le Dx 38 est un processeur numérique de diffusion universel; il est pourvu de 2 entrées et 4 sorties, un circuit interne permettant de sommer les entrées 1 et 2. Une matrice permet d'assigner les sous-bandes du signal d'entrée stéréo (ou sommé en mono) à n'importe quelle(s) sortie(s). D'origine, les configurations suivantes sont disponibles : systèmes stéréo 2 voies, mono 2 voies, 3 voies + sortie directe, ou système mono 4 voies, tous offrant éventuellement une sortie mono pour canal Subwoofer et une sortie "large bande".

Dans tous les modes de fonctionnement, ce sont des filtres passe-haut et passe-bas qui se chargent de répartir le spectre audio en plusieurs bandes de fréquences (crossover). Ces filtres peuvent être de type Linkwitz-Riley, Butterworth ou Bessel, avec des pentes commutables entre 6, 12, 18 et 24 dB/octave. De nombreux autres correcteurs permettent de modeler la courbe de réponse à votre guise : chaque entrée possède par ailleurs cinq correcteurs, pouvant être un filtre passe-haut ou passe-bas, un correcteur d'aigus ou de graves de type Shelve (en plateau), ou un filtre paramétrique. Une fois le signal d'origine réparti en plusieurs bandes, quatre autres correcteurs peuvent prendre place sur chaque canal de sortie : eux aussi peuvent travailler en modes passe-haut ou passe-bas, correcteur d'aigus ou de graves de type Shelve (en plateau), filtre paramétrique, voire filtre passe-tout. Des fonctions de filtrage supplémentaires sont encore prévues, sous la forme de filtres passe-haut du second ordre permettant la réalisation d'alignements de type B-6, ou des filtres spéciaux de type LPN (pour Low-Pass Notch, filtres passe-bas de type Notch) permettant de corriger la réponse en fréquence et en phase d'enceintes de graves travaillant en bass-reflex.

Chaque canal offre en plus un délai, un inverseur de phase, un réglage de niveau programmable et un compresseur/limiteur numérique, les délais principaux se trouvant au niveau des canaux d'entrée.

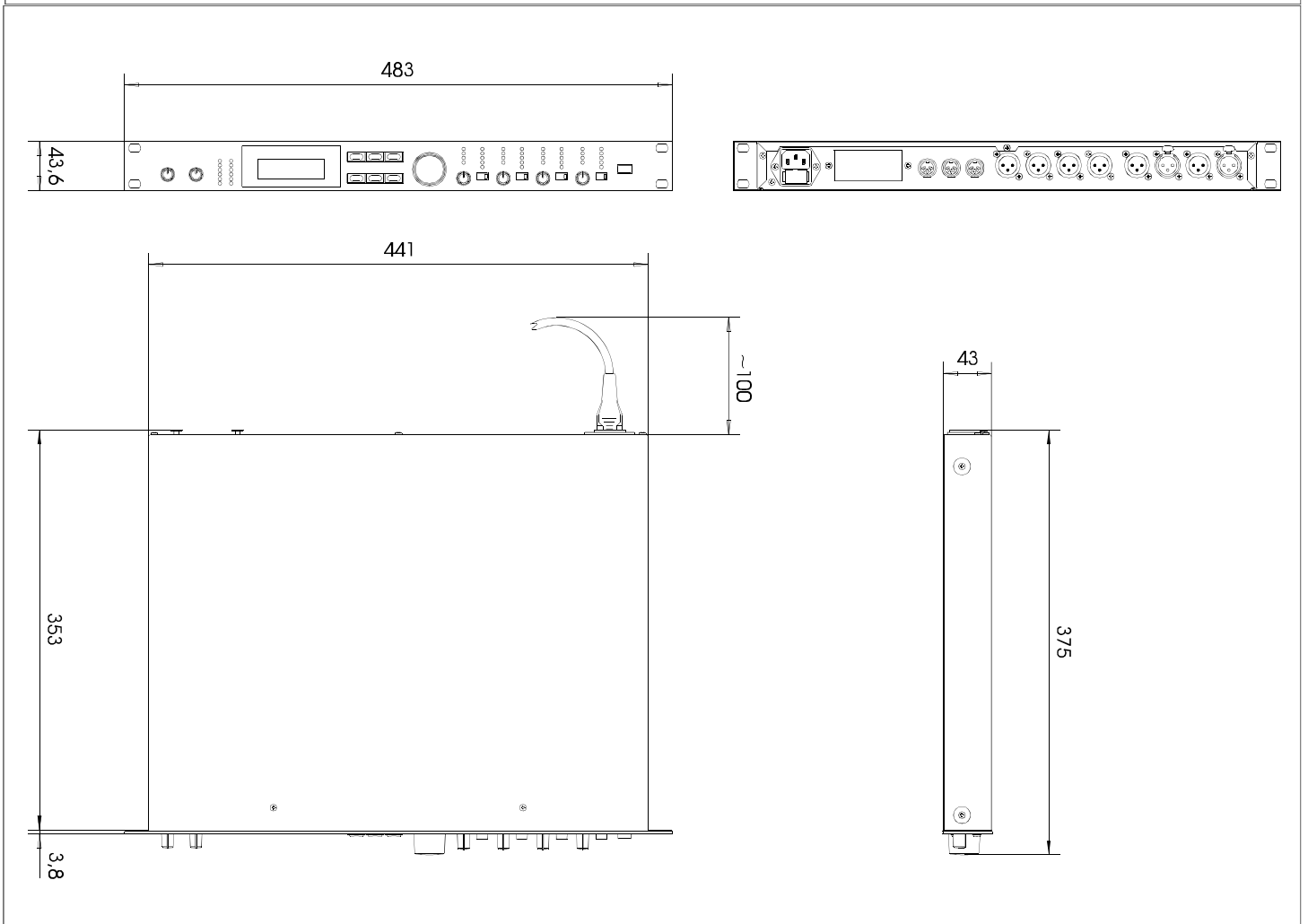
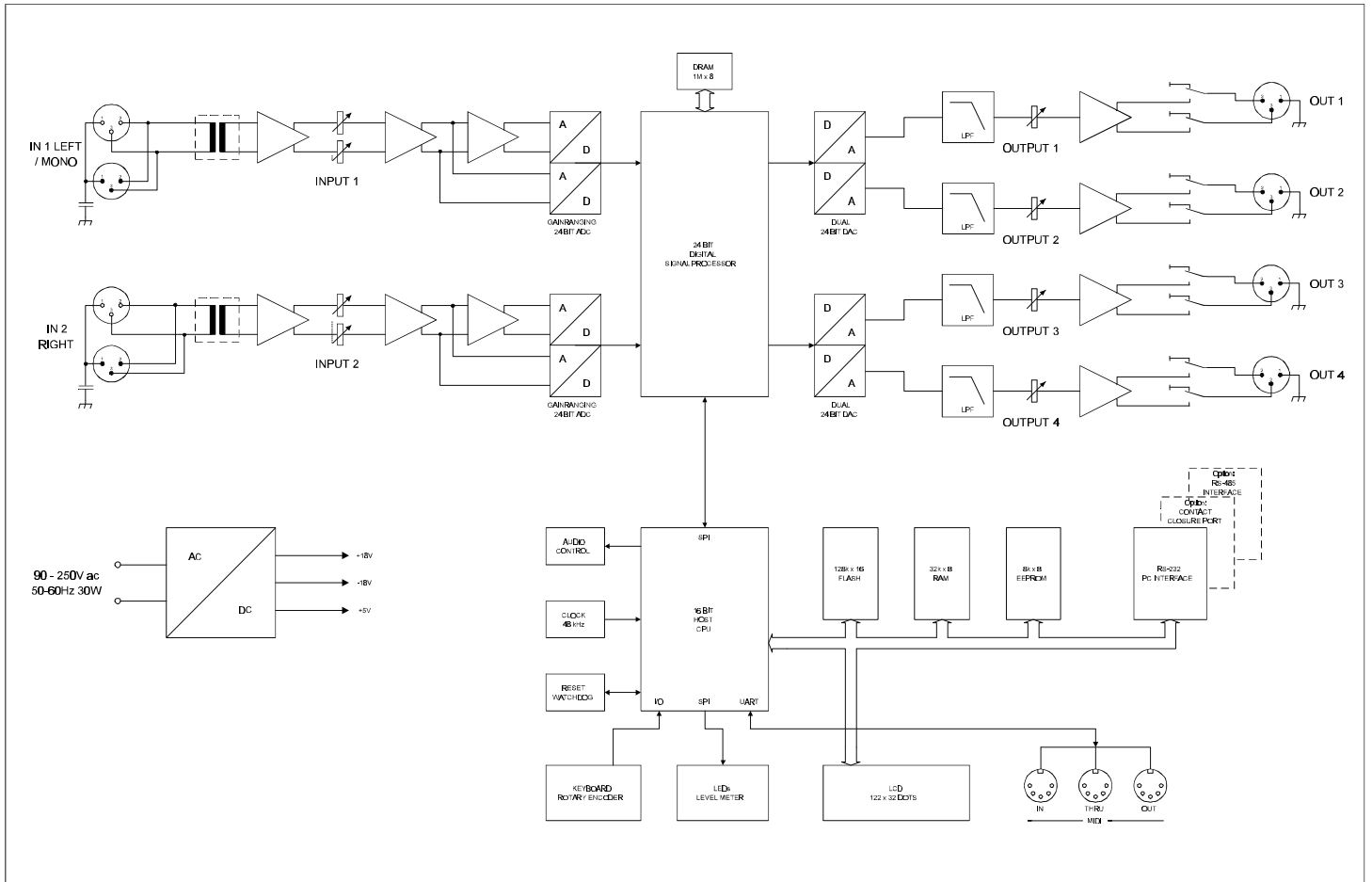
Deux modes de fonctionnement sont à la disposition de l'utilisateur : le mode "No Edit", qui ne permet que de sélectionner la combinaison d'enceintes désirée dans la liste donnée par le Programme Preset d'usine. Dans ce cas, l'appareil est configuré de façon optimale en fonction de l'installation, et peut être exploité instantanément. Enfin, le mode "Full Edit", lui, permet d'accéder à tous les paramètres, ce qui permet de programmer en toute liberté et de mémoriser ses Programmes. L'appareil compte 80 emplacements mémoire - 50 pour les Programmes Presets d'usine et 30 pour les Programmes utilisateur. À l'intérieur du Dx 38, les conversions A/N et N/A s'effectuent en 24 bits linéaires (Delta-Sigma, suréchantillonnage 128 fois), et les traitements du signal sont calculés par deux DSP Motorola 24 bits.

Parmi les autres caractéristiques :

- Mémoire FLASH pour le logiciel d'exploitation et les Presets, ce qui permet la mise à jour via interface série.
- Logiciel de configuration et de commande pour PC, tournant sous Windows 95/98.
- Interface MIDI Standard.
- En option, commande via interfaces RS-232, RS-485 ou commutation par contacts.
- Affichage graphique rétro-éclairé, 122 x 32 points.
- Entrées et sorties sur XLR, symétrie électronique.
- En option, symétrisation par transformateur d'entrée.
- Potentiomètres de réglage des niveaux d'entrée et de sortie, commutateur de coupure des sorties (Mute) indicateurs SUB, LO, MID, HI par canal.
- Visualisation par VU-mètres des entrées/sorties, du compresseur, LED d'écrêtage.

## TECHNICAL SPECIFICATIONS

Mains voltage	90 - 250 V AC / 50 - 60 Hz
Power consumption	20 watts
Safety class	I
Inputs	2 x XLR IN, electronically balanced, transformer optional available 2 x XLR OUT (Direct Out)
Input voltage (nominal)	1.55 V / + 6 dBu
Max. input voltage	24.5 V / + 30 dBu
Input impedance	20 kohms
Common mode rejection	> 40 dB
AD-conversion	24-bit, Sigma-Delta, 128 times oversampling, linear phase
Outputs	4 x XLR OUT, electronically balanced
Output voltage (nominal)	1.55 V / + 6 dBu
Max. output voltage	8.7 V / + 21 dBu
Output impedance	< 100 ohms
Min. load impedance	600 ohms
DA-conversion	24-bit, Sigma-Delta, 128 times oversampling
Frequency response	20 Hz - 20 kHz (- 0.5 dB)
S/N ratio	115 dB (typical)
Distortion without transformer	< 0.01 %
Distortion with transformer	< 0.05 %
Frequency crossovers	6, 12, 18, 24 dB/oct. slope; Butterworth, Bessel, Linkwitz-Riley
Filters	26 parametric equalizers Low-Shelving equalizer, LPN (Lowpass-Notch) switchable Hi-Shelving equalizer, 6 / 12 dB slope switchable, Lo-Cut filter (B-6 alignment switchable), Hi-Cut filter, All-Pass filter
Compressor / limiter	4 digital compressors / limiters
Delay	3 master delays (2 ms - 900 ms) 4 channel delays (0 ms - 900 ms) delay-increment 21 µsec.
Data format	24-bit linear AD / DA conversion, 48-bit processing
Sampling rate	48 kHz
MIDI IN / OUT / THRU	Data Dump, Master / Slave operation, Remote Control
Display	122 x 32 Dots, graphic LC-Display with LED-background lighting
Dimensions	483 x 43.6 x 374 (WxHxD in mm), 19", 1 HU
Weight	5 kg / 11 lbs
Locking function	Protection against inadvertent operation via function-lock
Accessories	PA 1 plexiglas cover 1 HU
Options	NRS 90244 Input transformer NRS 90247 RS-485 interface NRS 90246 Contact Closure interface



## Measuring data Dx 38 – complete device

### 1. Power Supply

1.1	Operation Voltage	$U_{\text{Mains}}$	90 - 250 V AC, 50 - 60 Hz
1.2	Operation Current	at $U_{\text{Mains}} = 110 \text{ V AC}$ at $U_{\text{Mains}} = 230 \text{ V AC}$	200 mA 130 mA
1.3	Power Consumption		14 W
1.4	Internal Operation Voltage		+5 V $\pm$ 0,1 V +18 V $\pm$ 1 V -18 V $\pm$ 1 V
1.5	Internal Operation Currents	+5 V +18 V -18 V	max. 460 mA max. 400 mA max. 250 mA
1.6	Power Supply Switching Frequency		192 kHz

### 2. Inputs

2 x XLR IN, electronically balanced, 2 x XLR Direct Out,  
Input transformers (NRS 90244) are optionally available

2.1	Input Impedance	electronically balanced	20 k $\Omega$
2.2	Input Voltage [1] Max. Input Voltage		4,5 V = +15 dBu 24,5 V = +30 dBu
2.3	Common Mode Rejection	CMRR	$\geq$ 40 dB

### 3. Outputs

4 x XLR OUT, electronically balanced

3.1	Output Impedance		$<$ 100 $\Omega$
3.2	Min. Load Impedance		600 $\Omega$
3.3	Max. Output Voltage [1]		8,7 V = +21 dBu
3.4	Output Symmetry [1] [2]		$\geq$ -40 dB

### 4. Frequency Response

4.1	Frequency Response [3] fig. 1		30 Hz ... 20 kHz - 0.5 dB
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### 5. Crosstalk

5.1	Crosstalk Attenuation [3]		$>$ 80 dB
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## 6. Distortion

6.1 THD+N [4] fig. 2 , fig. 3 20 Hz ... 20 kHz < 0.01 % @ +10 dBu

## 7. Interference Voltages

7.1 Wide Band Noise Voltage [5]  $\leq 50 \mu\text{V} = -84 \text{ dBu}$

7.2 Noise Voltage (CCIR 468-3) [6]  $\leq 140 \mu\text{V} = -75 \text{ dBu}$

7.3 Noise Voltage (A-weighted) [7]  $\leq 18 \mu\text{V} = -93 \text{ dBu}$

## 8. Retrofitting Input Transformers

Retrofitting input transformers NRS 90244 results in the change of the following values:

8.1 THD+N [4] figure 4 70 Hz ... 20 kHz < 0.01 % @ +10 dBu

THD+N [4] figure 4 20 Hz ... 20 kHz < 0.05 % @ +10 dBu

## 9. Other Specifications

9.1 Operation Temperature Range +5 ... +40 °C

9.2 Temperature Range During Storage And Shipment -40 ... +70 °C

## 10. Dimensions And Weight

10.1 Dimensions W x H x D 19" (483 mm) x 1 HU (43,6 mm) x 374 mm

10.2 Installation Depth Without Connectors 356 mm

10.3 Installation Depth Incl. Connectors approx. 430 mm

10.4 Weight 5 kg

10.5 Weight with 2x NRS 90244 5.2 kg

## 11. Standards

11.1 Safety Class according to EN 60065 safety class I, grounded

11.2 Electrical Safety In Accordance To EN 60065 (VDE 0860) or IEC 65  
UL, CSA

11.3 EMC In Accordance To EN 50081-1, EN 50082-1, EN 55022-B

## 12. Retrofitting-Kits

12.1 NRS 90244 input transformer for 1 input Order No. 112 757

12.2 NRS 90246 contact closure interface Order No. 112 766

12.3 NRS 90247 RS-485 interface Order No. 112 767

## 13. General

13.1 The following equipment had been used for measuring:

Digital Multi-Meter PM 2517 X	Philips
System One	Audio Precision
Oscilloscope 2465 A	Tektronix
Regulation de-coupling transformer RT 5A	Grundig
Watt-Meter (electronical)	Dynacord

### 13.2 Comments about measurements

- Unless differently stated, all measurement has been performed at  $20^{\circ}\text{C} \pm 2^{\circ}\text{C}$
- All stated levels  $\pm 1$  dB

- [1] all controls set to their clockwise margin
- [2] Service program 'SINE WAVE OUT' , set a level of 0 dB,  
Output voltage = approx. 8,9 V = +21 dBu = 0 dBr,  
+ and - outputs summed via  $10\text{ k}\Omega / 0,1\%$  resistors, with VR301 ... VR601  
adjusted for minimum levels  $U \leq 87\text{ mV} = -19\text{ dBu} = -40\text{ dBr}$
- [3] measured with service program 'ORIGINAL THRU' , level 0 dB, all controls set to their  
clockwise margin, input level +10 dBu
- [4] measured with service program 'ORIGINAL THRU' , level 0 dB,  
input controls at center position, output controls set to their clockwise margin
- [5] measured with service program 'ORIGINAL THRU' , level 0 dB, all controls  
set to their clockwise margin,  
measurement via bandpass filter 22 Hz ... 22 kHz, weighting filter set to 20 kHz Lo-Pass,  
Q-Peak, input terminated with  $600\ \Omega$
- [6] measured with service program 'ORIGINAL THRU' , level 0 dB, all controls  
set to their clockwise margin,  
measurement via bandpass filter 22 Hz ... 22 kHz, weighting filter set to CCIR 468-3,  
Q-Peak, input terminated with  $600\ \Omega$
- [7] measured with service program 'ORIGINAL THRU' , level 0 dB, all controls  
set to their clockwise margin,  
measurement via bandpass filter 22 Hz ... 22 kHz, weighting filter set to 'A-weighting',  
RMS, input terminated with  $600\ \Omega$

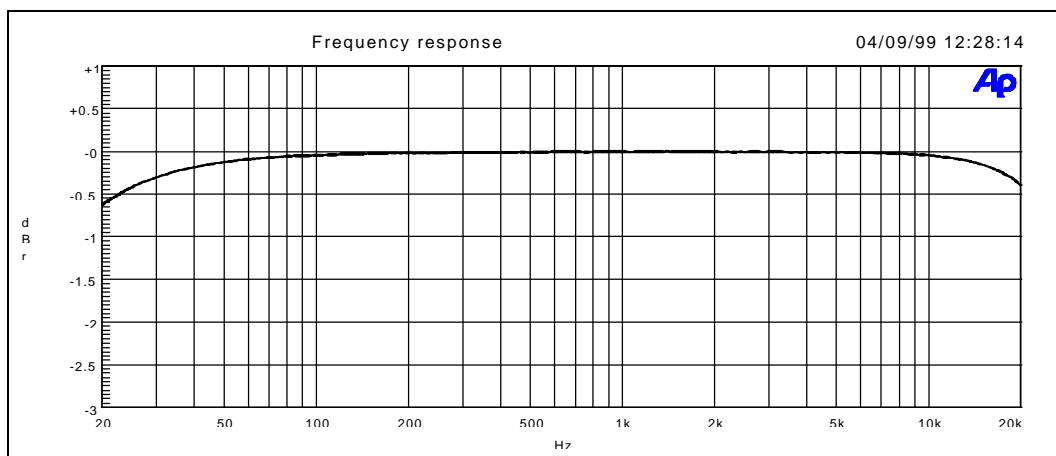


Figure 1 Frequency Response [dBr] [3]

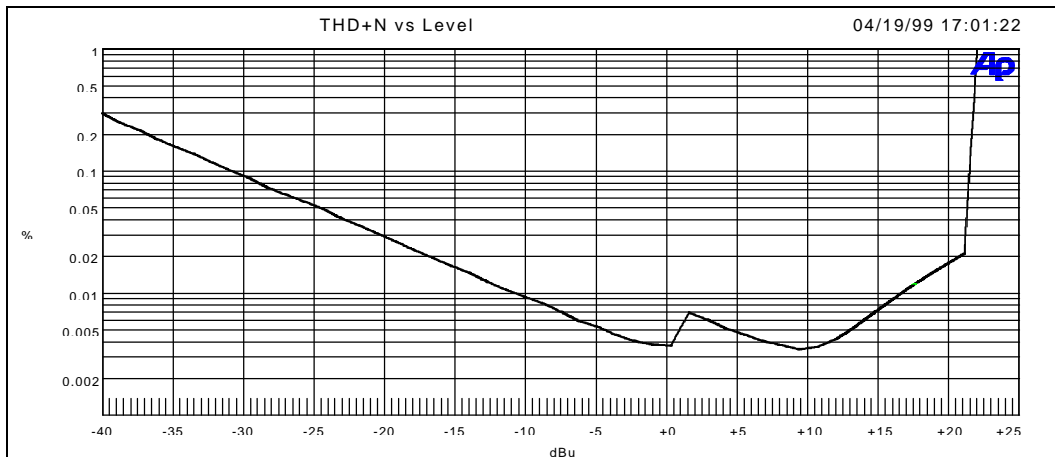


Figure 2 THD+N [%] as a function of the input level [dBu] [4] , f = 1 kHz

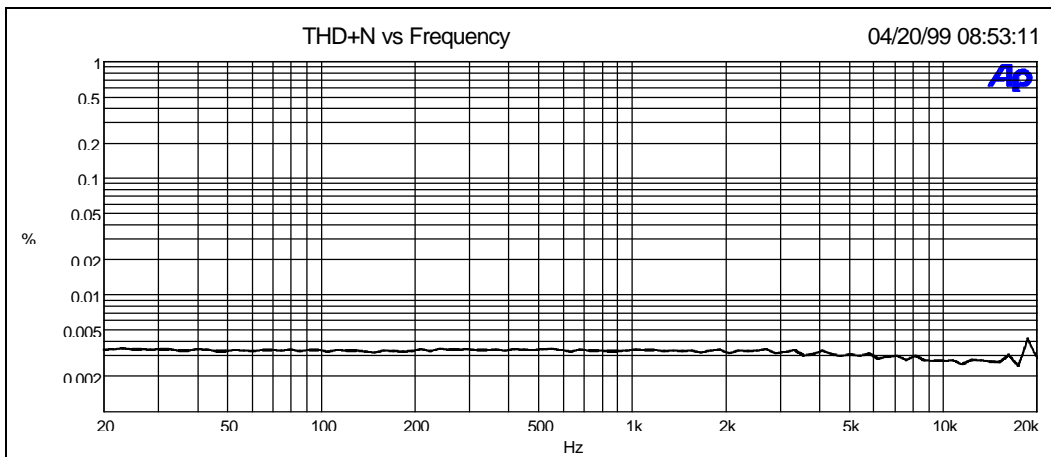


Figure 3 THD+N [%] as a function of the frequency [Hz] [4] , input level = +10 dBu

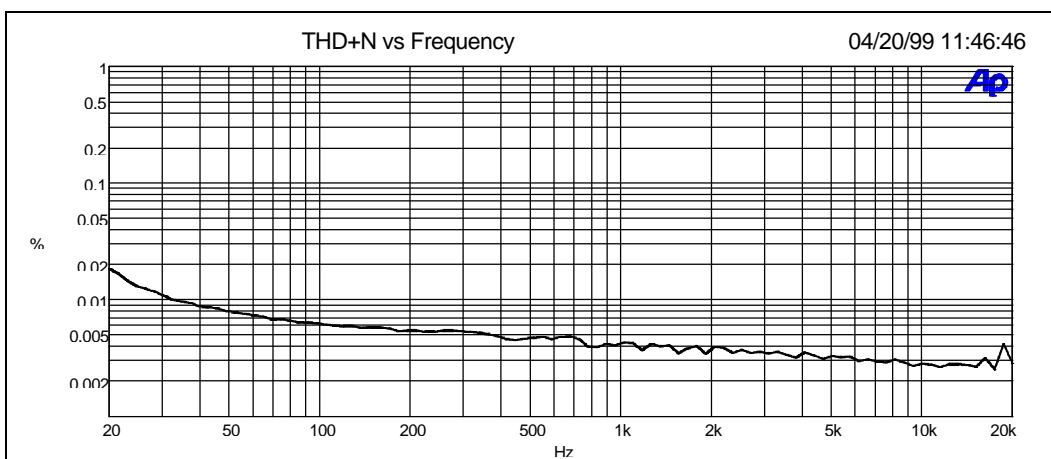


Figure 4 THD+N [%] as a function of the frequency [Hz] [4] , input level = +10 dBu with input transformer (NRS 90244) installed

## 14. Specifications

Mains voltage	90 - 250 V AC / 50 - 60 Hz
Power consumption	20 watts
Safety class	I
Inputs available	2 x XLR IN, electronically balanced, transformer optional 2 x XLR OUT (Direct Out)
Input voltage (nominal)	1.55 V / + 6 dBu
Max. input voltage	24.5 V / + 30 dBu
Input impedance	20 kohms
Common mode rejection	> 40 dB
AD-conversion	24-bit, Sigma-Delta, 128 times oversampling, linear phase
Outputs	4 x XLR OUT, electronically balanced
Output voltage (nominal)	1.55 V / + 6 dBu
Max. output voltage	8.7 V / + 21 dBu
Output impedance	< 100 ohms
Min. load impedance	600 ohms
DA-conversion	24-bit, Sigma-Delta, 128 times oversampling
Frequency response	20 Hz - 20 kHz (- 0.5 dB)
S/N ratio	115 dB (typical)
Distortion without transformer	< 0.01 %
Distortion with transformer	< 0.05 %
Frequency crossovers	6, 12, 18, 24 dB/oct. slope;
Butterworth, Bessel, Filters	Linkwitz-Riley 26 parametric equalizers Low-Shelving equalizer, LPN (Lowpass-Notch) switchable  Hi-Shelving equalizer, 6 / 12 dB slope switchable, Lo-Cut filter (B-6 alignment switchable), Hi-Cut filter, All-Pass filter
Compressor / limiter	4 digital compressors / limiters
Delay	3 master delays (2 ms - 900 ms) 4 channel delays (0 ms - 900 ms) delay-increment 21 µsec.
Data format	24-bit linear AD / DA conversion, 48-bit processing
Sampling rate	48 kHz
MIDI IN / OUT / THRU	Data Dump, Master / Slave operation/ Remote Control
Display	122 x 32 Dots, graphic LC-Display with LED-background lighting
Dimensions	483 x 43.6 x 374 (W x H x D in mm), 19", 1 HU
Weight	5 kg / 11 lbs
Locking function	protection against inadvertent operation via function-lock
Accessories / Options	PA 1 plexiglas cover 1 HU NRS 90244 Input transformer NRS 90247 RS-485 interface NRS 90246 Contact Closure interface

## 15. Service Programs

The Dx 38 provides several onboard service programs that allow testing internal function blocks. The service mode is entered by simultaneously pressing the ' EDIT ' and ' > ' keys while the unit is powered on.

The display shows briefly: SERVICE MODE

Selecting the service programs in sequence is possible by using the SELECT keys or via the rotary encoder. Pressing the ' RECALL ' key launches the previously selected program or, while a service program is running, to cancel the test.

Switching the device off or by use of the < QUIT > command, the service mode is ceased.

Available Service Programs:

- $\mu$ P-ROM TEST
- $\mu$ P-RAM TEST
- EEPROM TEST
- KEY TEST
- ENCODER TEST
- LED TEST
- DISPLAY TEST
- RS232 TEST
- RS485 TEST
- CONTACT P TEST
- MIDI TEST
- DSP-RAM TEST
- HW-CONN TEST
- ORIGINAL THRU
- SINE WAVE OUT
- PINK NOISE
- WHITE NOISE
- A/D GAIN CALIB
- A/D GAIN RNG 1
- A/D GAIN RNG 2
- INITIALIZE MEM
- FLASH PROGRAM
- STATISTICS
- QUIT

### $\mu$ P-ROM TEST

The Flash-ROM (IC102 on the 80449 Digital Board) gets tested by calculating the checksum of the memory contents. If no error has been detected, the display shows ' OK '. If a faulty condition has been detected, the calculated checksum appears on the display.

### $\mu$ P-RAM TEST

The  $\mu$ P-RAM (IC103 on the 80449 Digital Board) is tested. If no error has been detected, the display shows ' OK '. If a faulty condition has been detected, the corresponding address or respectively the erroneously read data appear on the display.

## EEPROM TEST

The EEPROM (IC105 on the 80449 Digital Board) is tested. If no error has been detected, the display shows ' OK '. If a faulty condition has been detected, the corresponding address or respectively the erroneously read data appear on the display.

## KEY TEST

The function of all keys gets tested. The function of the key that gets pressed appears on the display. Testing is canceled by pressing the rotary encoder.

## ENCODER TEST

The function of the rotary encoder gets tested. When turning the wheel, the direction (+/-) and the amount of impulses is displayed.

## LED TEST

All LEDs on the front of the appliance are checked. All LEDs are accessed in sequential order. Upon ending the test, all LEDs light.

## DISPLAY TEST

This program is meant for testing the LC-display and setting its contrast. Using the rotary encoder lets you adjust the LCD-contrast in a range between -10 to +10. After pressing any key, a graphic pattern appears on the display, which allows checking whether all pixels are active.

## RS232 TEST

The RS-232 interface gets tested by sending and reading back data. During this test, pins 2 and 3 of the RS-232 connector have to be bridged by using a special bridging-plug. If no error has been detected, the display shows ' OK '. If a faulty condition has been detected, the display shows whether the data was corrupted during the internal reading (in the UART, IC1) or at the external bridging plug.

## RS-485 TEST

The optional RS-485 interface gets tested by sending and reading back data. If no error has been detected, the display shows ' OK '. If a faulty condition has been detected, the display shows whether the data was corrupted during the internal reading (in the UART, IC1) or at the external RS-485 driver (IC2).

## CONTACT P TEST

The optional contact closure port is tested. Therefore the bit-pattern which is present at pins 1-8 is read and shown on the display. By connecting external contacts to ground potential, the pins can be pulled to "0". The test is completed with OK when each contact had been closed at least once.

## MIDI TEST

The MIDI interface gets tested. Therefore you have to connect the MIDI IN and MIDI OUT connectors with a MIDI-cable. If no error has been detected, the display shows ' OK '. Otherwise, the display shows: FAIL (no receive).

## DSP-RAM TEST

Here, the delay memory gets tested. The data and address busses from the DSP to the RAMs (IC203 and IC204 on the 80449 Digital Board) are tested in sequential order. If no error has been detected, the display shows ' OK '. If a faulty condition has been detected, the number of the faulty data or address bus appears on the display.

## HW-CONN TEST

This test checks internal status and control lines. Special hardware is necessary to perform this test. ***It is not recommended to perform this test with the appliance being a standalone unit. Instead, always use a testing-adapter.***

## ORIGINAL THRU

Within this program, the incoming data is directly send to the outputs, without employing additional signal processing. Output is carried out in a 2 in 2 configuration, i. e. input 1 is assigned to the outputs 1 and 2, Input 2 is assigned to 3 and 4.

The rotary encoder lets you control the level in the range between 0 to -99 dB.

## SINE WAVE OUT

This program tests the entire output signal path (DSP, D/A converters, output channels). After starting the program, a 1 kHz sine signal is generated in the DSP, which is output to all 4 channels.

The default level setting is -24 dB. The rotary encoder lets you control the level in the range between 0 to -99 dB.

## PINK NOISE

"Pink noise" is generated in the DSP, which then is output to all 4 channels. The default level setting is -24 dB. The rotary encoder allows controlling the level in the range between 0 and -99 dB.

## WHITE NOISE

"White noise" is generated in the DSP, which then is output to all 4 channels. The default level setting is -24 dB. The rotary encoder allows controlling the level in the range between 0 and -99 dB.

## A/D GAIN CALIB

This program serves for calibrating the gain-ranging AD-converters. The difference in the levels between high and low inputs at the ADC is automatically measured and stored.

For automatic calibration, a sine signal with approx. 0dBu / 1kHz has to be fed to both inputs.

Level differences are measured and displayed. Too high or too low signal levels are also indicated on the display. **CAUTION: The use of this program should be left to the experienced and well-educated service technician. Inaccurate calibration can result in the degradation of the dynamic range or even in erroneous functioning of the appliance.**

## A/D GAIN RNG 1

This program serves for precisely displaying and adjusting the level difference between the gain-ranging A/D converter's two channels of input 1. The value is indicated in dB and in hex-code. In the degradation of the dynamic range or even in erroneous functioning of the appliance.

**CAUTION: The use of this program should be left to the experienced and well-educated service technician. Inaccurate calibration can result in the degradation of the dynamic range or even in erroneous functioning of the appliance.**

## A/D GAIN RNG 2

This program serves for precisely displaying and adjusting the level difference between the gain-ranging A/D converter's two channels of input 2. The value is indicated in dB and in hex-code.

**CAUTION: The use of this program should be left to the experienced and well-educated service technician. Inaccurate calibration can result in the degradation of the dynamic range or even in erroneous functioning of the appliance.**

## INITIALIZE MEM

This program erases all entries of the user preset memory U01 - U30 and re-sets the unit's programming to the initial state (as shipped). The initialize function is ended with a software reset. Upon re-start the appliance is set to the factory program F01.

**CAUTION: To prevent the total loss of user-defined data, previously backing-up the contents of the user preset memory, using the Dx 38 editor software, onto a PC or notebook computer is strongly recommended.**

## ENCODER TYPE

This program allows setting the appliance to the employed type of encoder. Changing the encoder type is only necessary when older models with serial numbers up to 11228 (Dx 38) are updated to a new operating system (V1.10 or newer). When shipped, the appliance is always correctly factory-set, matching the employed encoder type.

## STATISTICS

This program provides indication of how often the appliance has been switched on (Power on count) and its hours of operation (Opr. Time).

## QUIT

This command ceases the test mode. The appliance re-starts with the program that was active before entering test mode.

## Testing The $\mu$ P-System During Power-On

During switching on the unit or performing a hardware reset, the indication of the status-LEDs D101 and D102 (located on the Digital PCB 80449) lets you localize a fault in the processor system.

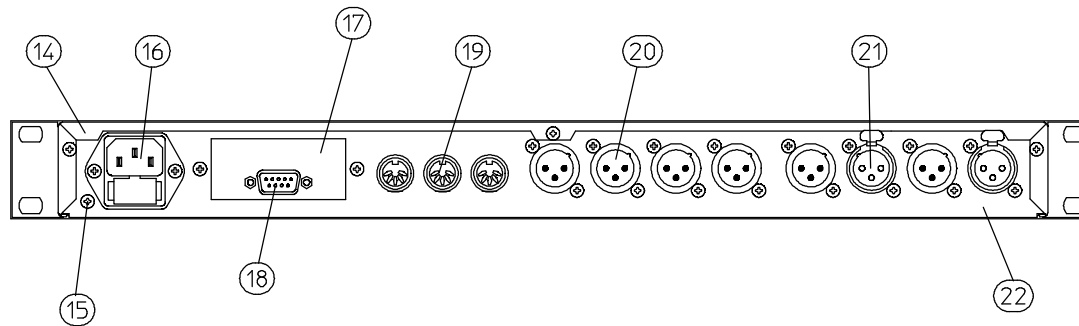
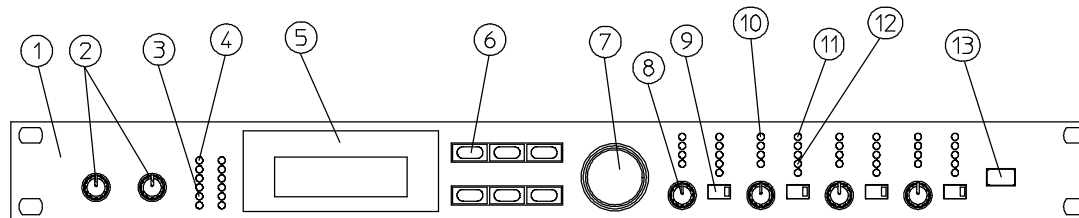
The following happens in sequential order during a hardware reset of the Dx 38 CPU-system:

- |   |   |  |             |
|---|---|--|-------------|
| 1. Hardware Reset                         | → | D101 lights  | D102 lights |
| 2. CPU Start and Initialization<br>o. k.  | → | D101 dimmed  | D102 lights |
| 3. Checksum Test Bootload-ROM<br>fault    | → | System 'hangs'   |             |
| o. k.                                     | → | D101 lights  | D102 dimmed |
| 4. External RAM Test<br>fault             | → | System 'hangs'   |             |
| o. k.                                     | → | D101 dimmed  | D102 dimmed |
| 5. Checksum Test Application-ROM<br>fault | → | bootloader controls LEDs and RS232<br>D101 blinks with non-irq-task<br>D102 blinks with irq-task             |             |
| o. k.                                     | → | application starts and controls LEDs and RS232<br>D101 blinks with non-irq-task<br>D102 blinks with irq-task |             |



POS.	DESCRIPTION	PART.NO.
1	FRONT PANEL	356 216
2	KNOB $\varnothing 11$	356 454
	POTI 2x10K LOG	354 890
3	LED GREEN $\varnothing 3\text{MM}$	354 004
4	LED RED $\varnothing 3\text{MM}$	354 003
5	PERSPEX PANEL	356 062
6	PUSH SWITCH MOMENTARY	348 874
7	KNOB $\varnothing 28\text{MM}$	356 272
	CAP BLACK	356 275
	ENCODER	354 891
	ENCODER NEW *1	357 100
8	KNOB $\varnothing 11$	356 454
	POTI 10K LIN	354 889
9	KNOB	347 430
	PUSH SWITCH MOMENTARY	346 243
	LED RED $\varnothing 3\text{MM}$	336 399
10	LED YELLOW $\varnothing 3\text{MM}$	356 503
11	LED RED $\varnothing 3\text{MM}$	356 501
12	LED GREEN $\varnothing 3\text{MM}$	356 502
13	KNOB BLACK	337 059
	MAINS SWITCH	349 114
14	COVER	356 218
	SCREW M3x6 (7x)	334 989
	SCREW M3x6 (2x)	352 822
15	SCREW M3x6	355 266
16	MAINS CONNECTOR	356 507
	MAINS CABLE 230V	300 425
	FUSE T800MA 250V	302 581
17	PANEL	356 466
	SCREW M3x6	334 989
18	SUB-D CONNECTOR	352 115
19	CONNECTOR	303 093
20	XLR CONNECTOR (MALE)	351 816
	SCREW 3x8	344 229
21	XLR CONNECTOR (FEMALE)	354 555
	SCREW 3x8	344 229
22	MAIN CHASSIS	356 217

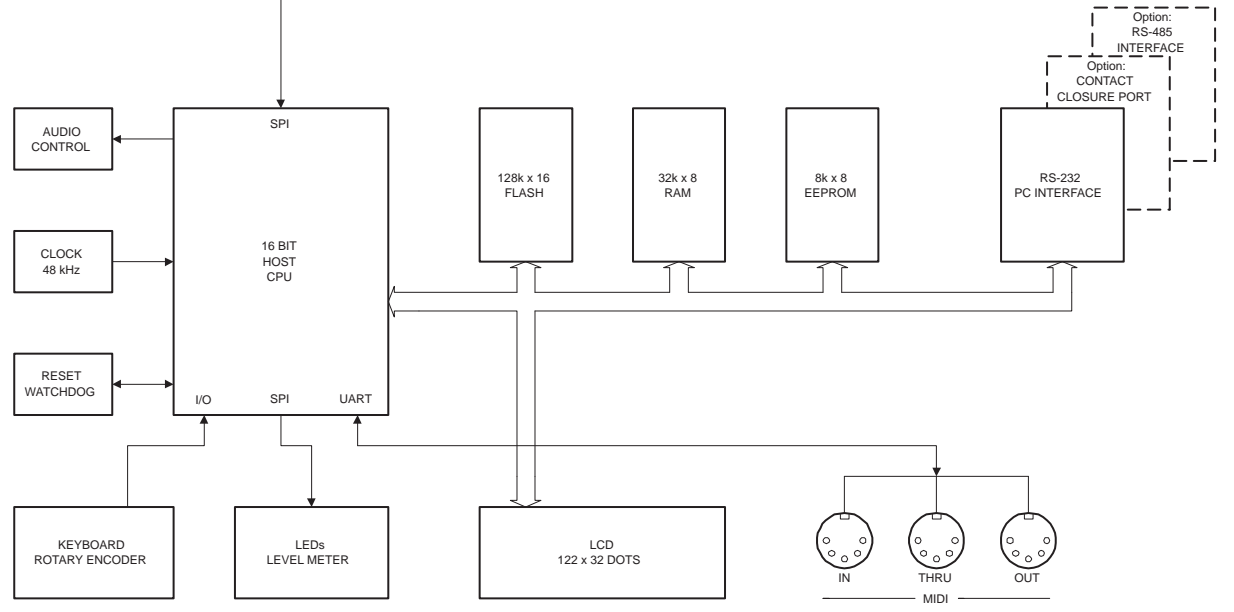
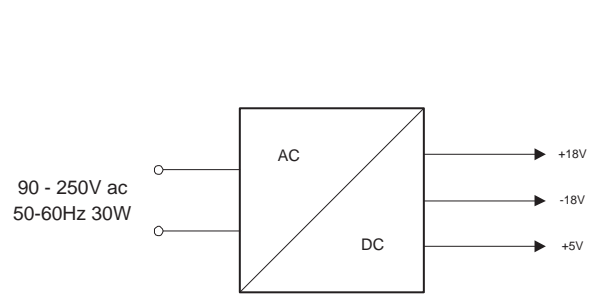
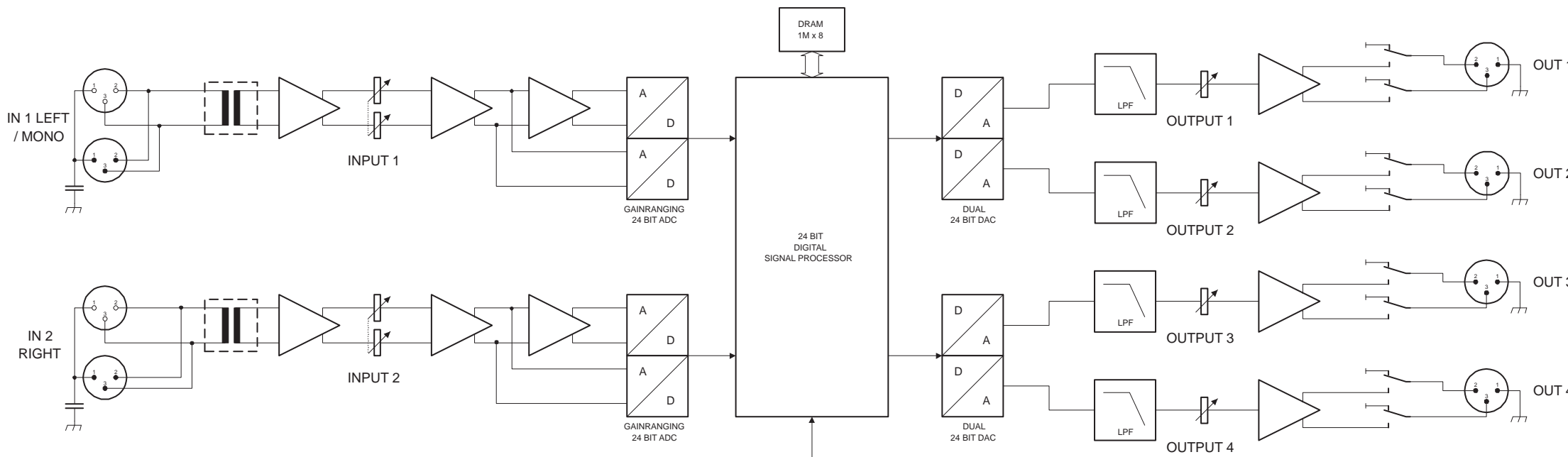
\*1 SEE SERVICE INFORMATION

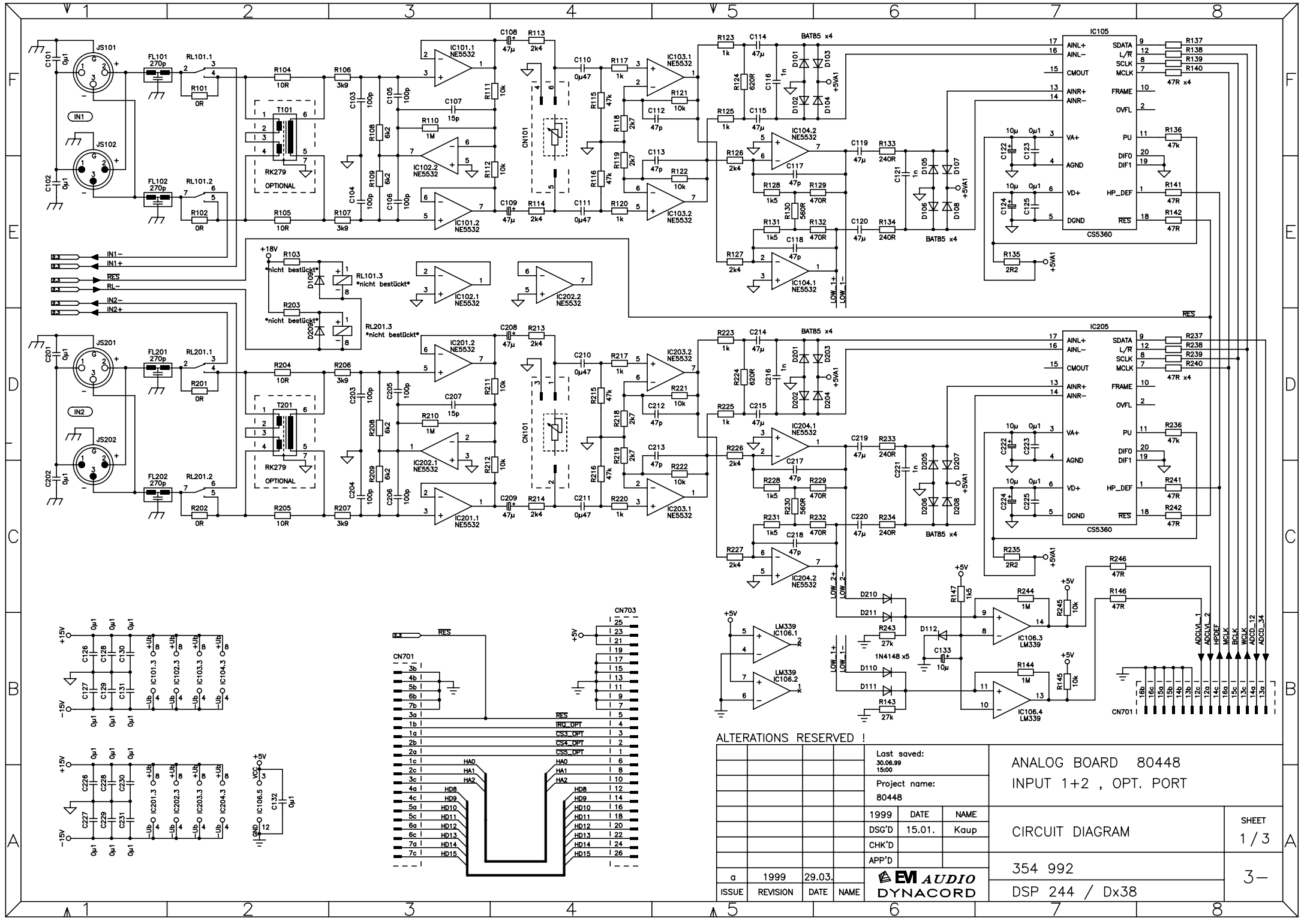


Ohne unsere Genehmigung darf diese Zeichnung weder vervielfältigt, noch dritten Personen oder anderen Firmen zugänglich gemacht werden (siehe einschlägige Gesetze)

1999		Tag	Name	SERVICE-INFORMATION	Maßstab 1:2
Bearb.	08.12.	E. Flexeder			
Gepr.	17.3.00	J. Stadler			
Stand	17.3.00	E. Flexeder			
b	Kor. Pos.21	17.3.	flex	DX 38	
a	137/99	3.2.	flex		
Ausgabe	Anderung	Tag	Name		

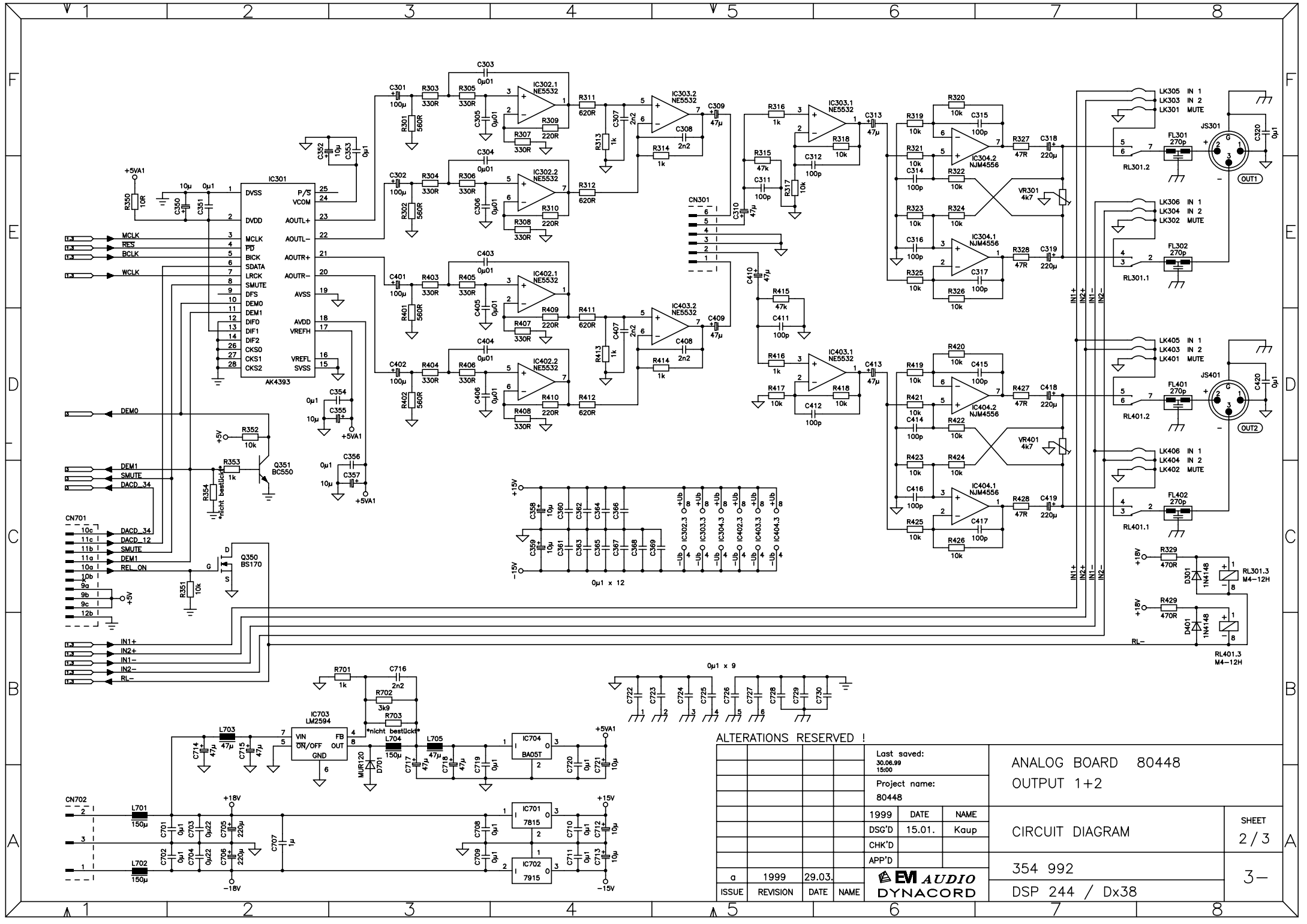
**EVI AUDIO**  
**DYNACORD**





ALTERATIONS RESERVED !

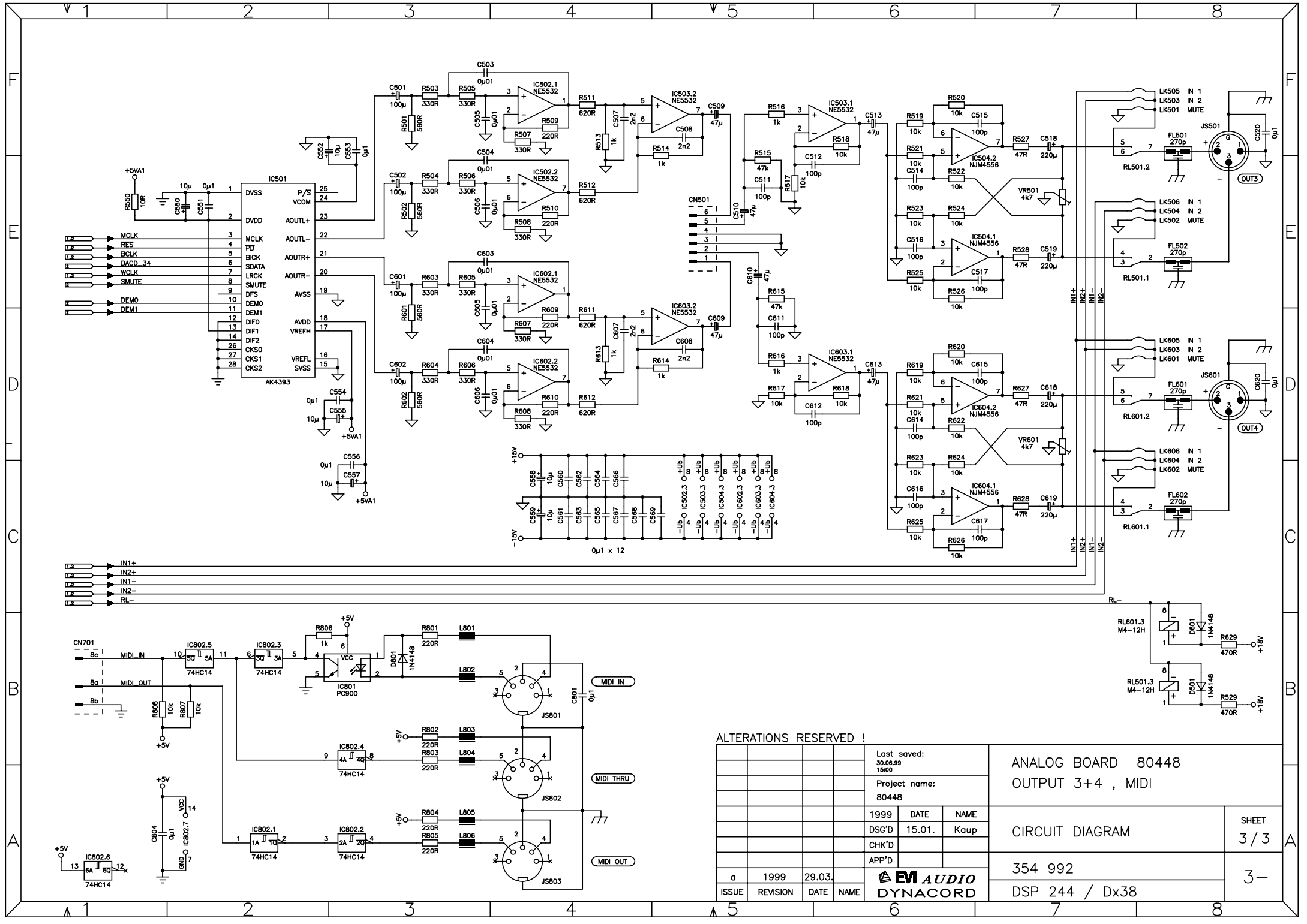
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Project name:		80448		INPUT 1+2 , OPT. PORT	
1999	DATE	NAME		CIRCUIT DIAGRAM	SHEET
DSC'D	15.01.	Kaup			1 / 3
CHK'D					
APP'D					
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ISSUE	REVISION	DATE	NAME	DSP 244 / Dx38	3-



ALTERATIONS RESERVED !

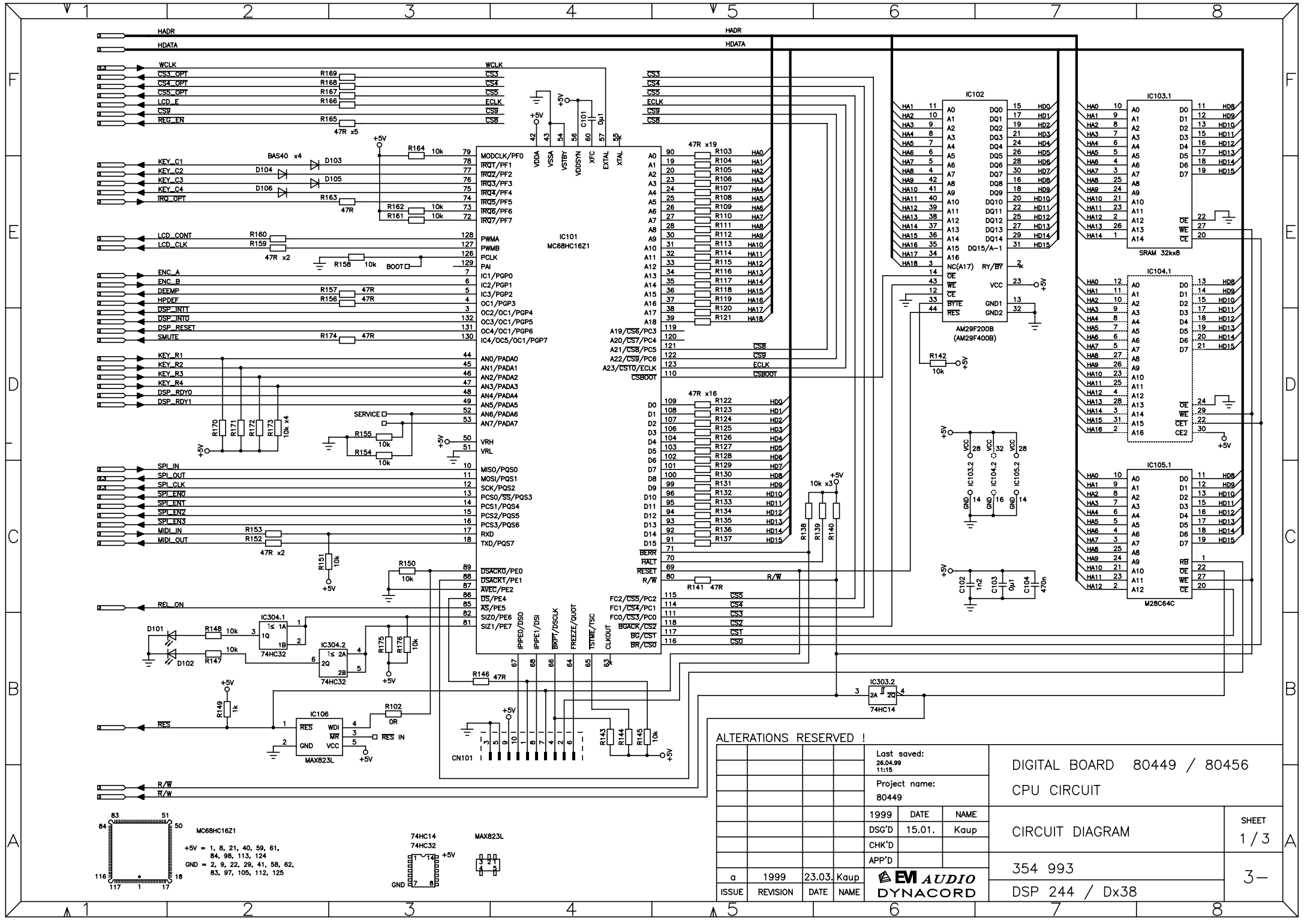
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80448		1999	DATE	NAME	
	DSC'D	15.01.		Kaup	CIRCUIT DIAGRAM
	CHK'D				SHEET 2 / 3
	APP'D				
a	1999	29.03.			354 992
ISSUE	REVISION	DATE	NAME		DSP 244 / Dx38

**EM AUDIO DYNACORD**



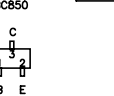
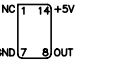
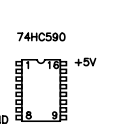
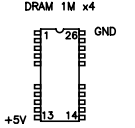
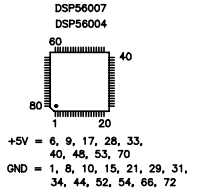
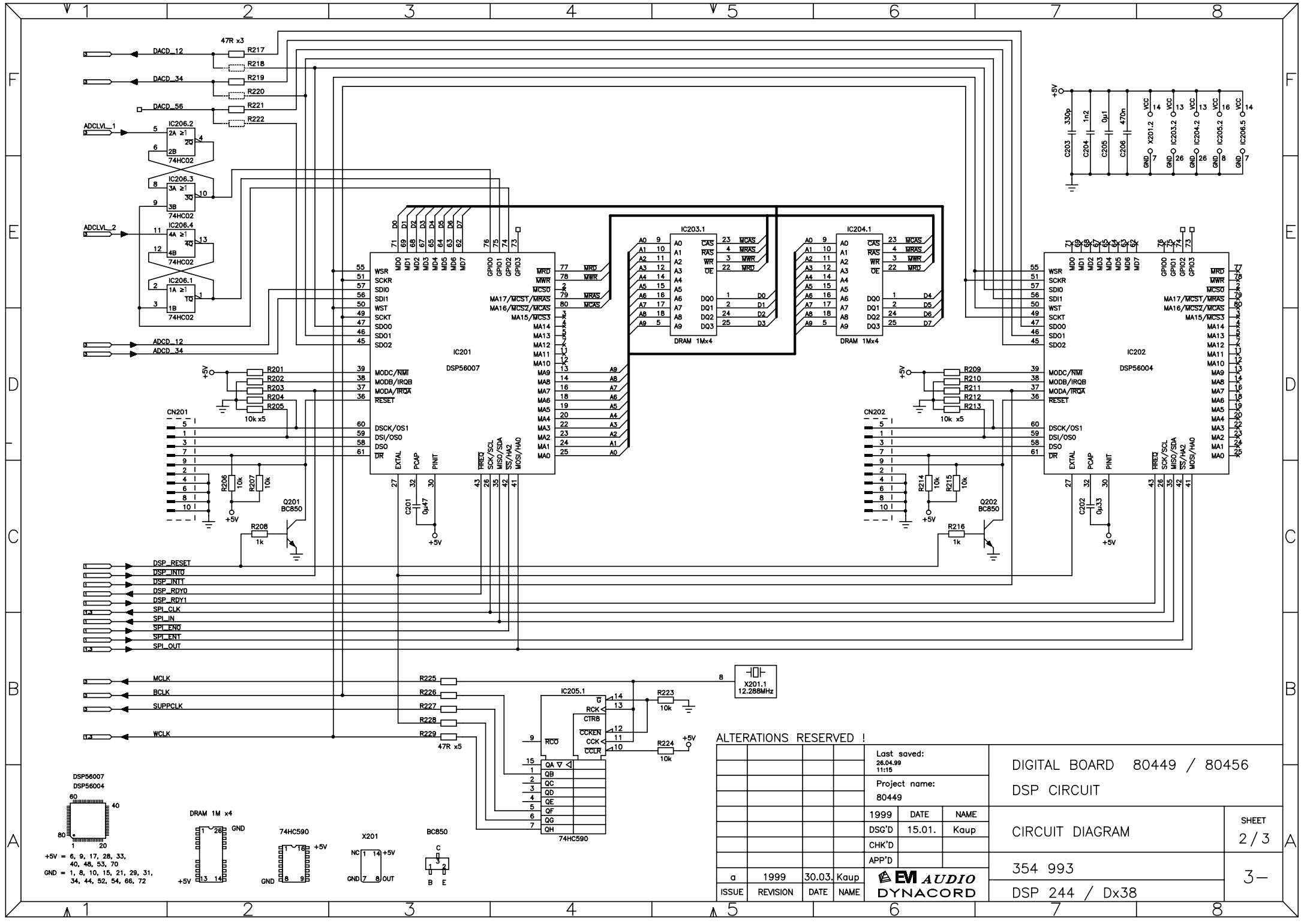
ALTERATIONS RESERVED !

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Project name:		80448		OUTPUT 3+4 , MIDI	
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CHK'D				354 992	3-
APP'D					
a	1999	29.03.			
ISSUE	REVISION	DATE	NAME	DSP 244 / Dx38	



ALTERATIONS RESERVED !

Last saved:		DIGITAL BOARD 80449 / 80456	
28.04.99		CPU CIRCUIT	
11:15			
Project name:		CIRCUIT DIAGRAM	
80449		SHEET 1 / 3	
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CHK'D			
APP'D			
a	1999	23.03.	Kaup
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		DSP 244 / Dx38	

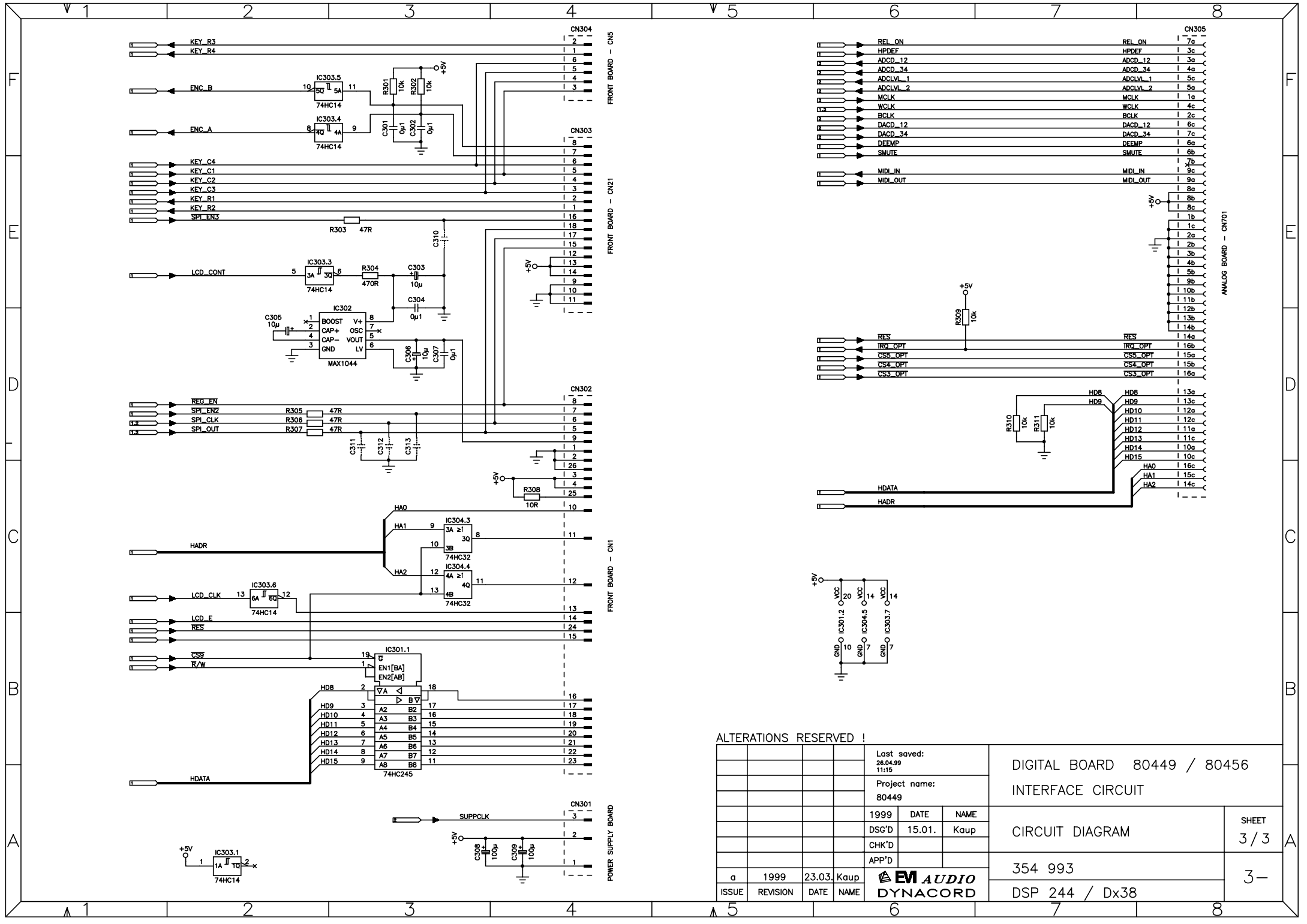


ALTERATIONS RESERVED !

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CHK'D			
APP'D			
354 993		CIRCUIT DIAGRAM	
DSP 244 / Dx38		3-	

a	1999	30.03.	Kaup
ISSUE	REVISION	DATE	NAME





ALTERATIONS RESERVED !

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1999	DATE	NAME	SHEET
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CHK'D			
APP'D			
354 993		3-	
DSP 244 / Dx38			



1 2 3 4

F

F

E

E

D

D

C

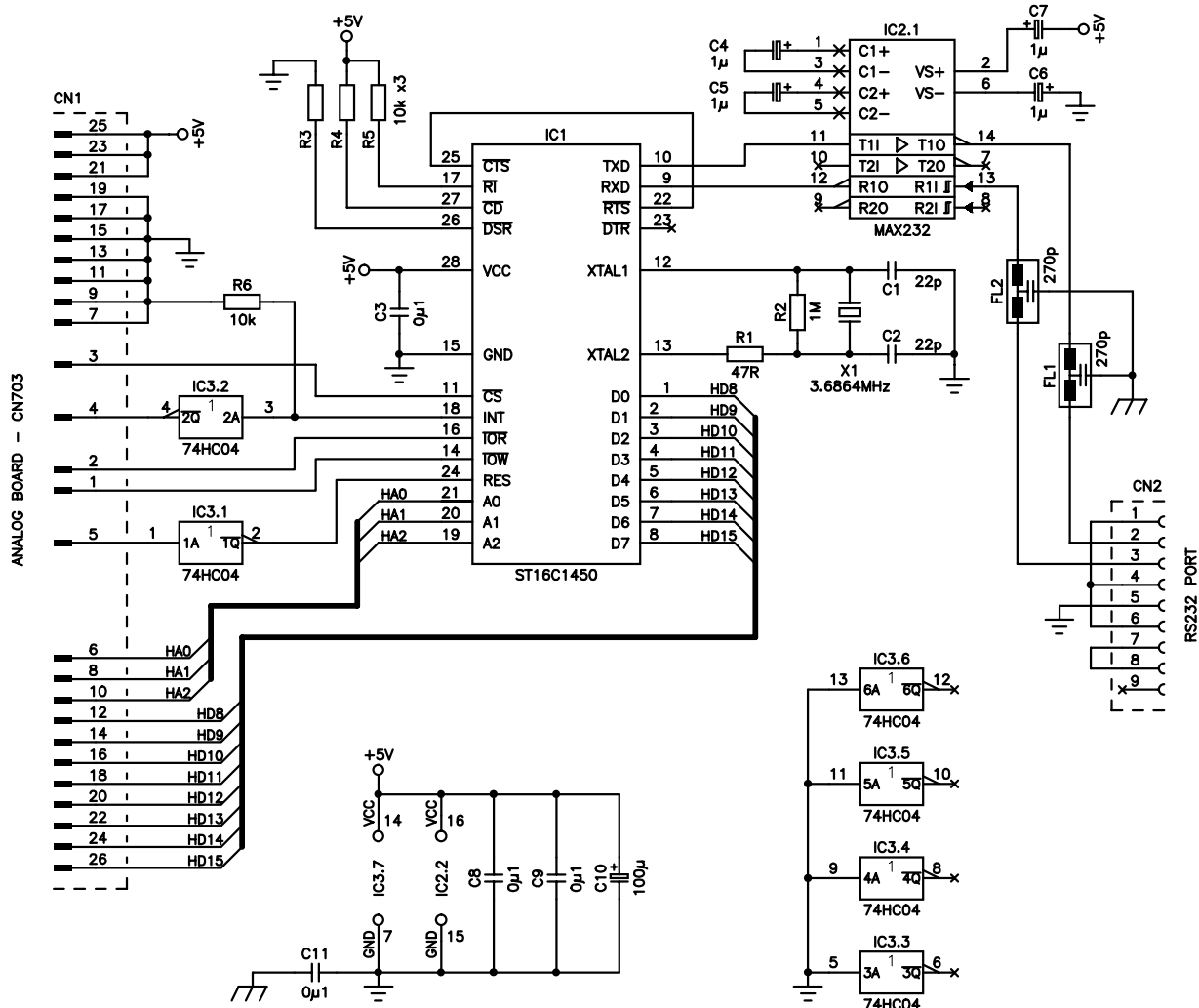
C

B

B

A

A



ALTERATIONS RESERVED !

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				1999	DATE	NAME
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				CHK'D		
				APP'D		
				<b>EVI AUDIO</b> <b>DYNACORD</b>		
ISSUE	REVISION	DATE	NAME			

RS-232 BOARD 83113

CIRCUIT DIAGRAM

356 690

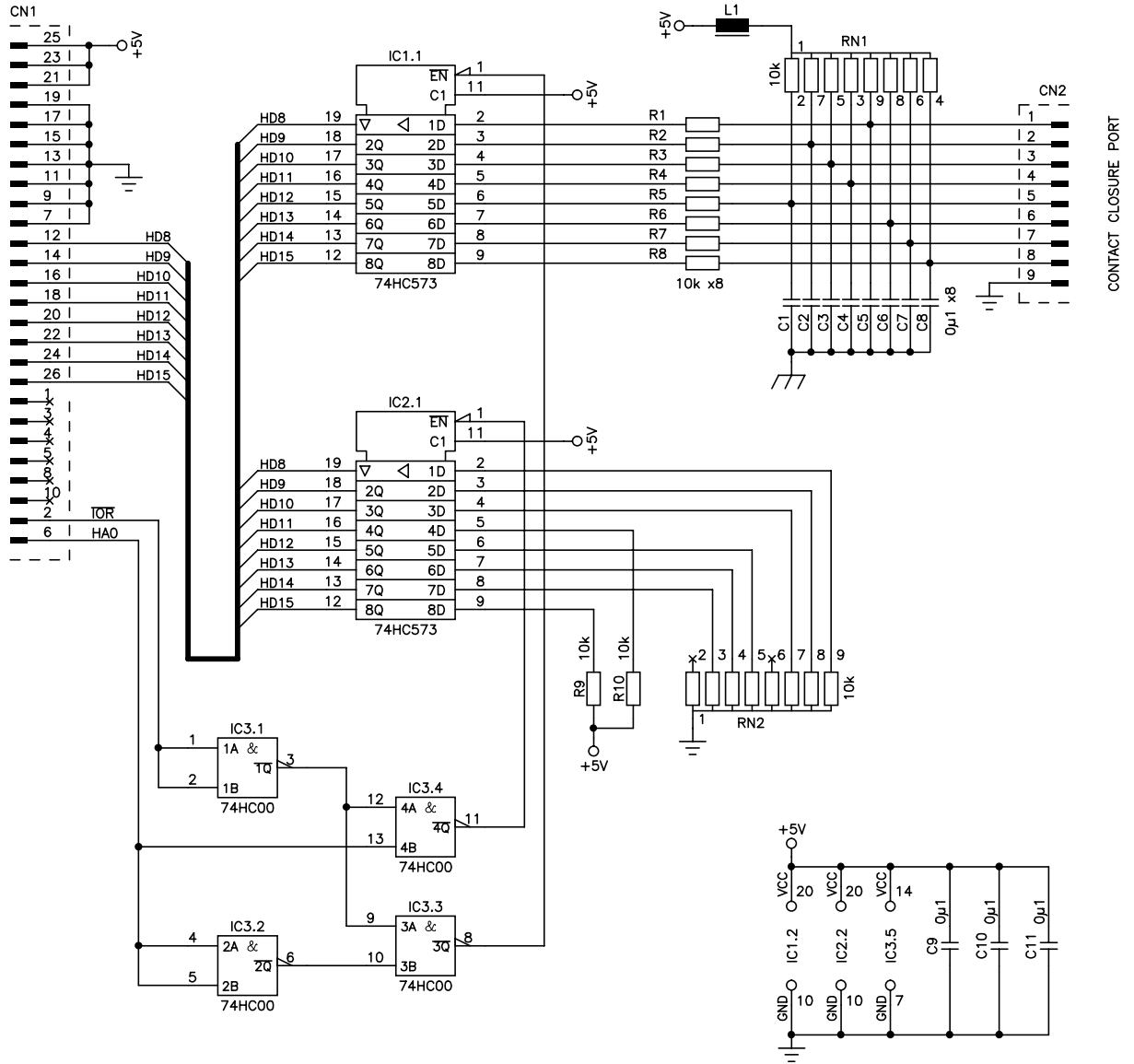
NRS 90243

SHEET  
1 / 1

4-

1 2 3 4

ANALOG BOARD - CN703



ALTERATIONS RESERVED !

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				1999	DATE	NAME
				DSG'D	31.03.	Kaup
				CHK'D	07.09.	Wendler
				APP'D		
				<b>EVI AUDIO</b>		
				<b>DYNACORD</b>		
ISSUE	REVISION	DATE	NAME			

CONTACT CLOSURE BOARD 83114

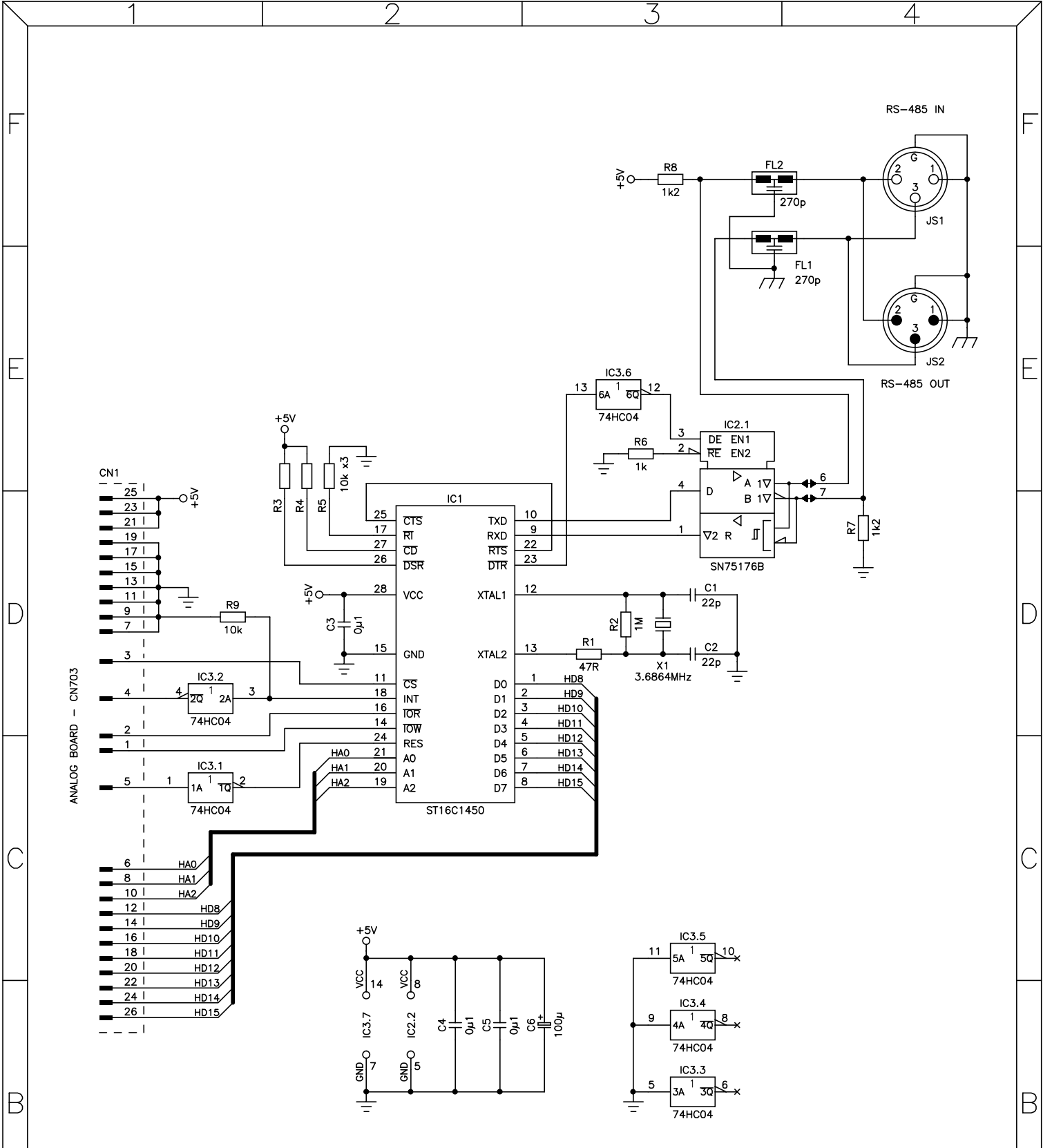
CIRCUIT DIAGRAM

SHEET  
1 / 1

356 691

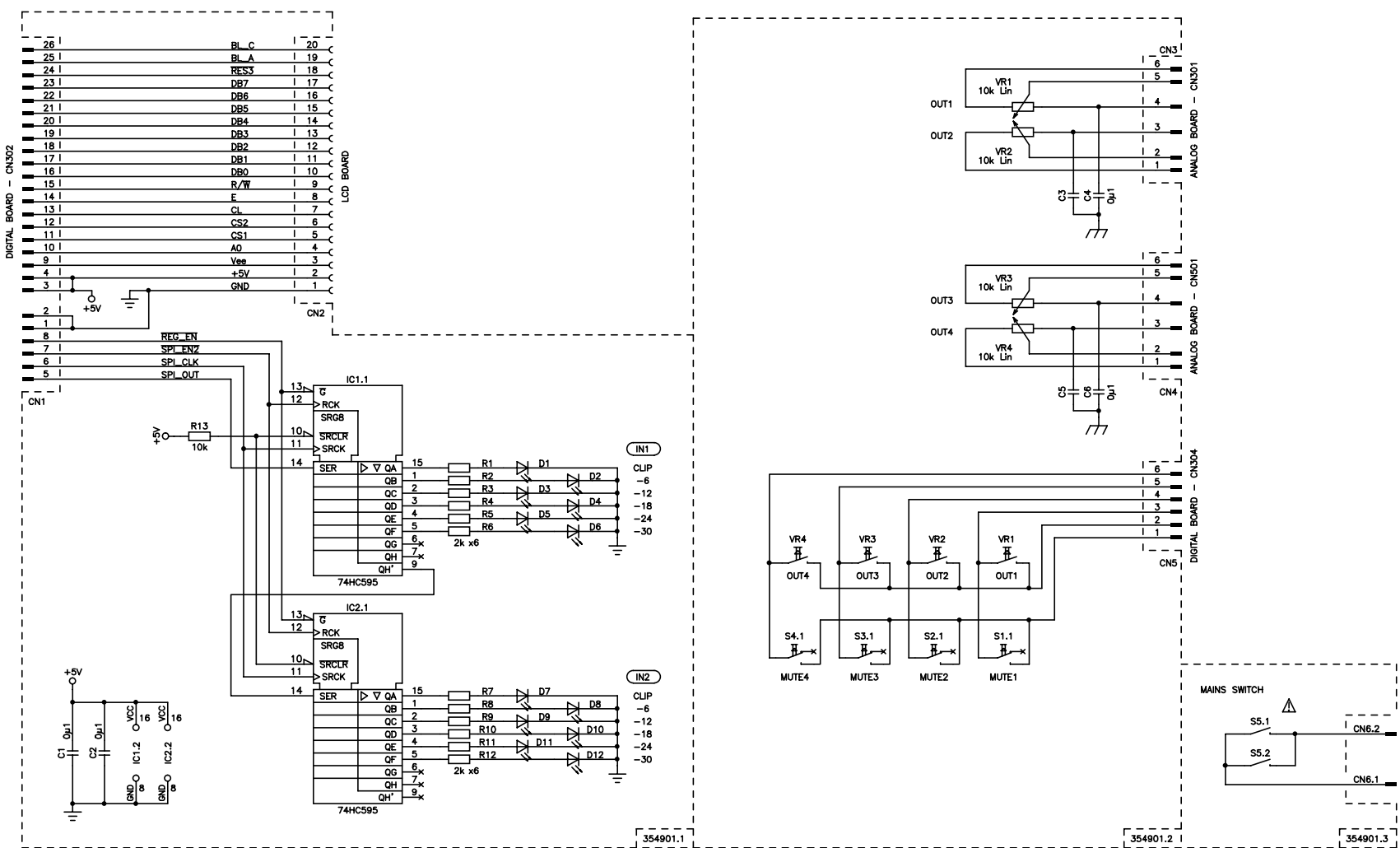
4-

NRS 90246



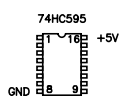
ALTERATIONS RESERVED !

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				APP'D			
							356 692
							4-
ISSUE	REVISION	DATE	NAME	EVI AUDIO DYNACORD			NRS 90247

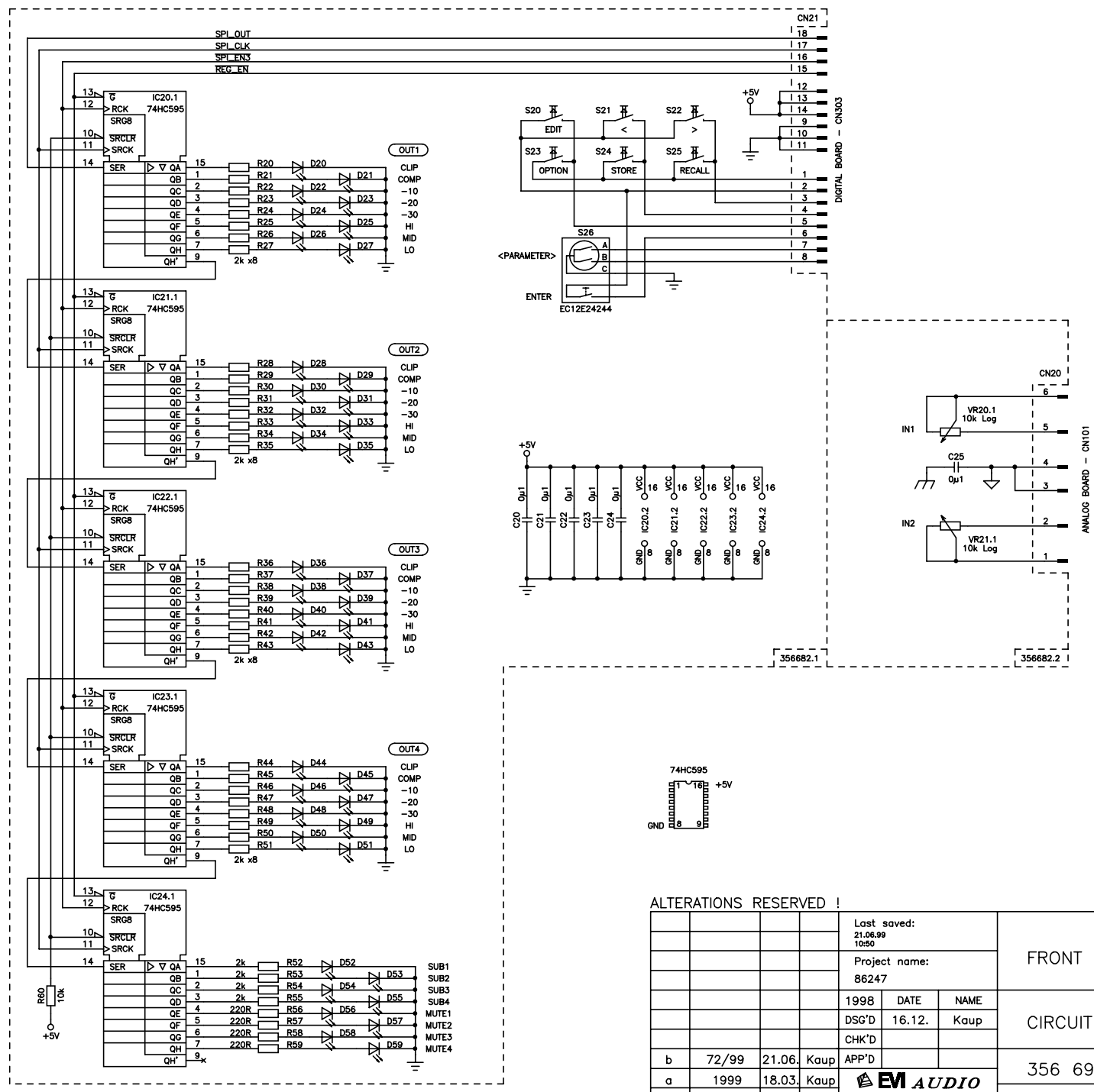


ALTERATIONS RESERVED !

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	APP'D			354 899	
a	1999	18.03.	EM AUDIO DYNACORD		3-
ISSUE	REVISION	DATE	NAME		DSP 244 / Dx38



SAFETY COMPONENT -  
MUST BE REPLACED BY ORIGINAL PART!



ALTERATIONS RESERVED !

				Last saved: 21.06.99 10:50		FRONT BOARD 2 - PCB 86247	
				Project name: 86247			
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				CHK'D			
b	72/99	21.06.	Kaup	APP'D			
a	1999	18.03.	Kaup			356 693	3-
ISSUE	REVISION	DATE	NAME	EM AUDIO DYNACORD		DSP 244 / Dx38	

## Stücklisten - Bill of materials

<b>170086</b>	<b>DX 38</b>
---------------	--------------

Pos. Nr.	Best. Nr.	Bezeichnung	Description
Ref. No.	Part No.		

		Zubehör	Accessories
Z 020	345095	FUSS-GUMMI 12.7X 3.5	rubber foot
Z0050	356311	BEDIENUNGSANL. DX 38	owner's manual
Z0052	357771	BEDIENUNGSANL. DX 38 FRA.	owner's manual french
Z0055	357755	PRESET LIST DX 38	list of presets
Z0060	300425	KABEL-NETZ 2.0 M 10A	power cable Europe
	354617	KABEL-NETZ UL/CSA 15A/125V	power cable US
Z0070	357653	* ZUBEHÖR: SOFTWARE DX 38	software dx38
Z0080	356958	KABEL-SCHNITTSTELLE	cable interface

		Mechanische Teile	Metal work
	337059	KNOPF-TASTE 12X7 SW 3.3	push button black 12x7
	347430	TK 10X6 SW 2,8	push button black 10x6
	356454	DK 11 SW/GR/SW A 6FL	rotary knob
	356272	DK 28 SW 6	rotary knob
	356275	KAPPE 28 SW	cap for rotary knob
	356062	EINLEGEFOLIE DSP 244	mylar for display
	356507	STECKER-KALTGERÄTE	mains connector male
	302581	SICHER T 800 MA 250V	fuse 800 mA slow blow
	356499	KRT. DSP 244 512X422X102	carton
	357500	STYROPOR-EINLAGE DSP 244	carton filler
	333375	SCHUTZHÜLLE 500X700X0,05	poly bag
	357961	DAT.BLATT/EDS DX 38	eds dx38
	356216	FB.DX 38 BED	front panel dx38
	356466	BLEND.DX38/DSP244 BED	panel sub
	356218	DEC.DX 38 BED	cover chassis

		Platinen	printed circuit boards
old	357036	NETZTEIL-SCHALT BEARB.AUS	power supply switching
new !! *1	357007	NETZTEIL-SCHALT	switching power supply

		PCBAR#DX 38	pcb assy 80448
CN101	345489	MESSERLST. 6POL	connector male 6-pin
CN301	345489	MESSERLST. 6POL	connector male 6-pin
CN501	345489	MESSERLST. 6POL	connector male 6-pin
CN701	352198	MESSERLST. 48POL	connector male 48-pin
CN702	348676	STIFTLAISTE 3POL MLSS	connector male 3-pin
CN703	356589	STIFTLAISTE 26POL	connector male 36-pin
C0101	356508	KO-KER 0.10MF 50V 20%	cap ceramic 100nF
C0102	356508	KO-KER 0.10MF 50V 20%	cap ceramic 100nF
C0103	301530	KO-KER 100.0PF 500V 10%	cap ceramic 100pF
C0104	301530	KO-KER 100.0PF 500V 10%	cap ceramic 100pF
C0105	301530	KO-KER 100.0PF 500V 10%	cap ceramic 100pF
C0106	301530	KO-KER 100.0PF 500V 10%	cap ceramic 100pF
C0107	335787	KO-KER 15.0PF 100V 2%	cap ceramic 15pF
C0108	343530	KO-EL 47.000MF 50V	cap electrolytic 47uF/50V
C0109	343530	KO-EL 47.000MF 50V	cap electrolytic 47uF/50V
C0110	340988	KO-FOL 0.470MF 63V 5%	cap mylar 470nF

Pos. Nr.	Best. Nr.			Description
Ref. No.	Part No.	Bezeichnung		
C0111	340988	KO-FOL	0.470MF 63V 5%	cap mylar 470nF
C0112	301524	KO-KER	47.0PF 500V 10%	cap ceramic 47pF
C0113	301524	KO-KER	47.0PF 500V 10%	cap ceramic 47pF
C0114	327365	KO-EL	47.000MF 25V BIP	cap electr. bip 47uF/25V
C0115	327365	KO-EL	47.000MF 25V BIP	cap electr. bip 47uF/25V
C0116	326922	KO-FOL	1000.000PF 100V 5%	cap mylar 1nF
C0117	301524	KO-KER	47.0PF 500V 10%	cap ceramic 47pF
C0118	301524	KO-KER	47.0PF 500V 10%	cap ceramic 47pF
C0119	327365	KO-EL	47.000MF 25V BIP	cap electr. bip 47uF/25V
C0120	327365	KO-EL	47.000MF 25V BIP	cap electr. bip 47uF/25V
C0121	326922	KO-FOL	1000.000PF 100V 5%	cap mylar 1nF
C0122	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0123	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0124	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0125	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0126	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0127	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0128	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0129	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0130	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0131	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0132	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0133	301472	KO-EL	10.000MF 63V	cap electrolytic 10uF/63V
C0201	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0202	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0203	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0204	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0205	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0206	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0207	335787	KO-KER	15.0PF 100V 2%	cap ceramic 15pF
C0208	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0209	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0210	340988	KO-FOL	0.470MF 63V 5%	cap mylar 470nF
C0211	340988	KO-FOL	0.470MF 63V 5%	cap mylar 470nF
C0212	301524	KO-KER	47.0PF 500V 10%	cap ceramic 47pF
C0213	301524	KO-KER	47.0PF 500V 10%	cap ceramic 47pF
C0214	327365	KO-EL	47.000MF 25V BIP	cap electr. bip 47uF/25V
C0215	327365	KO-EL	47.000MF 25V BIP	cap electr. bip 47uF/25V
C0216	326922	KO-FOL	1000.000PF 100V 5%	cap mylar 1nF
C0217	301524	KO-KER	47.0PF 500V 10%	cap ceramic 47pF
C0218	301524	KO-KER	47.0PF 500V 10%	cap ceramic 47pF
C0219	327365	KO-EL	47.000MF 25V BIP	cap electr. bip 47uF/25V
C0220	327365	KO-EL	47.000MF 25V BIP	cap electr. bip 47uF/25V
C0221	326922	KO-FOL	1000.000PF 100V 5%	cap mylar 1nF
C0222	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0223	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0224	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0225	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0226	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0227	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0228	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0229	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0230	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF

Pos. Nr.	Best. Nr.			Description
Ref. No.	Part No.	Bezeichnung		
C0231	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0301	343532	KO-EL	100.000MF 25V	cap electrolytic 100uF/25V
C0302	343532	KO-EL	100.000MF 25V	cap electrolytic 100uF/25V
C0303	327568	KO-FOL	0.010MF 63V 5%	cap mylar 10nF
C0304	327568	KO-FOL	0.010MF 63V 5%	cap mylar 10nF
C0305	327568	KO-FOL	0.010MF 63V 5%	cap mylar 10nF
C0306	327568	KO-FOL	0.010MF 63V 5%	cap mylar 10nF
C0307	326924	KO-FOL	2200.000PF 100V 5%	cap mylar 2200pF
C0308	326924	KO-FOL	2200.000PF 100V 5%	cap mylar 2200pF
C0309	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0310	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0311	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0312	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0313	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0314	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0315	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0316	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0317	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0318	343533	KO-EL	220.000MF 25V	cap electrolytic 220uF/25V
C0319	343533	KO-EL	220.000MF 25V	cap electrolytic 220uF/25V
C0320	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0350	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0351	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0352	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0353	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0354	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0355	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0356	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0357	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0358	301472	KO-EL	10.000MF 63V	cap electrolytic 10uF/63V
C0359	301472	KO-EL	10.000MF 63V	cap electrolytic 10uF/63V
C0360	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0361	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0362	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0363	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0364	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0365	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0366	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0367	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0368	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0369	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0401	343532	KO-EL	100.000MF 25V	cap electrolytic 100uF/25V
C0402	343532	KO-EL	100.000MF 25V	cap electrolytic 100uF/25V
C0403	327568	KO-FOL	0.010MF 63V 5%	cap mylar 10nF
C0404	327568	KO-FOL	0.010MF 63V 5%	cap mylar 10nF
C0405	327568	KO-FOL	0.010MF 63V 5%	cap mylar 10nF
C0406	327568	KO-FOL	0.010MF 63V 5%	cap mylar 10nF
C0407	326924	KO-FOL	2200.000PF 100V 5%	cap mylar 2200pF
C0408	326924	KO-FOL	2200.000PF 100V 5%	cap mylar 2200pF
C0409	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0410	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0411	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0412	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF



Pos. Nr.	Best. Nr.	Bezeichnung			Description
Ref. No.	Part No.				
C0413	343530	KO-EL	47.000MF	50V	cap electrolytic 47uF/50V
C0414	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0415	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0416	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0417	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0418	343533	KO-EL	220.000MF	25V	cap electrolytic 220uF/25V
C0419	343533	KO-EL	220.000MF	25V	cap electrolytic 220uF/25V
C0420	356508	KO-KER	0.10MF	50V 20%	cap ceramic 100nF
C0501	343532	KO-EL	100.000MF	25V	cap electrolytic 100uF/25V
C0502	343532	KO-EL	100.000MF	25V	cap electrolytic 100uF/25V
C0503	327568	KO-FOL	0.010MF	63V 5%	cap mylar 10nF
C0504	327568	KO-FOL	0.010MF	63V 5%	cap mylar 10nF
C0505	327568	KO-FOL	0.010MF	63V 5%	cap mylar 10nF
C0506	327568	KO-FOL	0.010MF	63V 5%	cap mylar 10nF
C0507	326924	KO-FOL	2200.000PF	100V 5%	cap mylar 2200pF
C0508	326924	KO-FOL	2200.000PF	100V 5%	cap mylar 2200pF
C0509	343530	KO-EL	47.000MF	50V	cap electrolytic 47uF/50V
C0510	343530	KO-EL	47.000MF	50V	cap electrolytic 47uF/50V
C0511	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0512	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0513	343530	KO-EL	47.000MF	50V	cap electrolytic 47uF/50V
C0514	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0515	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0516	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0517	301530	KO-KER	100.0PF	500V 10%	cap ceramic 100pF
C0518	343533	KO-EL	220.000MF	25V	cap electrolytic 220uF/25V
C0519	343533	KO-EL	220.000MF	25V	cap electrolytic 220uF/25V
C0520	356508	KO-KER	0.10MF	50V 20%	cap ceramic 100nF
C0550	340522	KO-EL	10.000MF	35V	cap electrolytic 10uF/35
C0551	356508	KO-KER	0.10MF	50V 20%	cap ceramic 100nF
C0552	340522	KO-EL	10.000MF	35V	cap electrolytic 10uF/35
C0553	356508	KO-KER	0.10MF	50V 20%	cap ceramic 100nF
C0554	356508	KO-KER	0.10MF	50V 20%	cap ceramic 100nF
C0555	340522	KO-EL	10.000MF	35V	cap electrolytic 10uF/35
C0556	356508	KO-KER	0.10MF	50V 20%	cap ceramic 100nF
C0557	340522	KO-EL	10.000MF	35V	cap electrolytic 10uF/35
C0558	301472	KO-EL	10.000MF	63V	cap electrolytic 10uF/63V
C0559	301472	KO-EL	10.000MF	63V	cap electrolytic 10uF/63V
C0560	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0561	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0562	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0563	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0564	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0565	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0566	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0567	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0568	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0569	329021	KO-KER	0.10MF	100V 20%	cap ceramic 100nF
C0601	343532	KO-EL	100.000MF	25V	cap electrolytic 100uF/25V
C0602	343532	KO-EL	100.000MF	25V	cap electrolytic 100uF/25V
C0603	327568	KO-FOL	0.010MF	63V 5%	cap mylar 10nF
C0604	327568	KO-FOL	0.010MF	63V 5%	cap mylar 10nF
C0605	327568	KO-FOL	0.010MF	63V 5%	cap mylar 10nF

Pos. Nr.	Best. Nr.			Description
Ref. No.	Part No.	Bezeichnung		
C0606	327568	KO-FOL	0.010MF 63V 5%	cap mylar 10nF
C0607	326924	KO-FOL	2200.000PF 100V 5%	cap mylar 2200pF
C0608	326924	KO-FOL	2200.000PF 100V 5%	cap mylar 2200pF
C0609	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0610	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0611	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0612	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0613	343530	KO-EL	47.000MF 50V	cap electrolytic 47uF/50V
C0614	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0615	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0616	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0617	301530	KO-KER	100.0PF 500V 10%	cap ceramic 100pF
C0618	343533	KO-EL	220.000MF 25V	cap electrolytic 220uF/25V
C0619	343533	KO-EL	220.000MF 25V	cap electrolytic 220uF/25V
C0620	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0701	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0702	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0703	342923	KO-FOL	0.220MF 63V 5%	cap mylar 220nF
C0704	342923	KO-FOL	0.220MF 63V 5%	cap mylar 220nF
C0705	335909	KO-EL	220.000MF 50V	cap electrolytic 220uF/50V
C0706	335909	KO-EL	220.000MF 50V	cap electrolytic 220uF/50V
C0707	342937	KO-FOL	1.000MF 63V 5%	cap mylar 1uF
C0708	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0709	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0710	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0711	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0712	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0713	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0714	356763	KO-EL	47.000MF 35V	cap electrolytic 47uF/35
C0715	356763	KO-EL	47.000MF 35V	cap electrolytic 47uF/35
C0716	301566	KO-KER	2200.0PF 100V 10%	cap ceramic 2200pF
C0717	356763	KO-EL	47.000MF 35V	cap electrolytic 47uF/35
C0718	356763	KO-EL	47.000MF 35V	cap electrolytic 47uF/35
C0719	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0720	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0721	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0722	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0723	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0724	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0725	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0726	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0727	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0728	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0729	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0730	356508	KO-KER	0.10MF 50V 20%	cap ceramic 100nF
C0801	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0804	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
D0101	301297	DIODE BAT	85	diode BAT 85
D0102	301297	DIODE BAT	85	diode BAT 85
D0103	301297	DIODE BAT	85	diode BAT 85
D0104	301297	DIODE BAT	85	diode BAT 85
D0105	301297	DIODE BAT	85	diode BAT 85
D0106	301297	DIODE BAT	85	diode BAT 85

Pos. Nr.	Best. Nr.			Description
Ref. No.	Part No.	Bezeichnung		
D0107	301297	DIODE BAT 85		diode BAT 85
D0108	301297	DIODE BAT 85		diode BAT 85
D0110	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
D0111	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
D0112	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
D0201	301297	DIODE BAT 85		diode BAT 85
D0202	301297	DIODE BAT 85		diode BAT 85
D0203	301297	DIODE BAT 85		diode BAT 85
D0204	301297	DIODE BAT 85		diode BAT 85
D0205	301297	DIODE BAT 85		diode BAT 85
D0206	301297	DIODE BAT 85		diode BAT 85
D0207	301297	DIODE BAT 85		diode BAT 85
D0208	301297	DIODE BAT 85		diode BAT 85
D0210	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
D0211	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
D0301	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
D0401	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
D0501	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
D0601	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
D0701	352129	DIODE MUR 120 RL		diode mur 120 rl
D0801	301254	DIODE 1N 4148	AXIAL	diode 1N 4148
FL101	346765	KO-SO MTB 271 KB	FILTER	safety component
FL102	346765	KO-SO MTB 271 KB	FILTER	safety component
FL201	346765	KO-SO MTB 271 KB	FILTER	safety component
FL202	346765	KO-SO MTB 271 KB	FILTER	safety component
FL301	346765	KO-SO MTB 271 KB	FILTER	safety component
FL302	346765	KO-SO MTB 271 KB	FILTER	safety component
FL401	346765	KO-SO MTB 271 KB	FILTER	safety component
FL402	346765	KO-SO MTB 271 KB	FILTER	safety component
FL501	346765	KO-SO MTB 271 KB	FILTER	safety component
FL502	346765	KO-SO MTB 271 KB	FILTER	safety component
FL601	346765	KO-SO MTB 271 KB	FILTER	safety component
FL602	346765	KO-SO MTB 271 KB	FILTER	safety component
IC101	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC102	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC103	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC104	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC106	332984	IC LM 339	4FACH VCOMP	IC LM 339
IC201	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC202	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC203	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC204	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC302	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC303	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC304	344864	IC NJM 4556 AD	2-FACH OP	IC NJM 4556 D
IC402	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC403	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC404	344864	IC NJM 4556 AD	2-FACH OP	IC NJM 4556 D
IC502	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC503	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC504	344864	IC NJM 4556 AD	2-FACH OP	IC NJM 4556 D
IC602	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N
IC603	327197	IC NE 5532 P	2FACH OP	IC NE 5532 N

Pos. Nr.	Best. Nr.		
Ref. No.	Part No.	Bezeichnung	Description
IC604	344864	IC NJM 4556 AD 2-FACH OP	IC NJM 4556 D
IC701	357034	IC SPNG.REG. LM 2940 CT-15	IC LM 2940 voltage regul.
IC702	357033	IC SPNG.REG. LM 2990 T -15	IC LM 2990 voltage regul.
IC703	354201	IC SPNG.REG. LM 2594N ADJ	IC LM2594N voltage regul.
IC704	356764	IC SPNG.REG. BA 05 T	IC BA 05 voltage regul.
IC801	333739	IC PC 900 OPTOKOPPLER	IC PC 900
IC802	333458	IC MC 74 HC 14 AN	IC MC 74 HC 14
JS101	354555	BUCHSE-FL. XLR 3POL	connector xlr female 3-pin
JS102	351816	STECKER-FL. XLR 3POL PRINTB	xlr connector male
JS201	354555	BUCHSE-FL. XLR 3POL	connector xlr female 3-pin
JS202	351816	STECKER-FL. XLR 3POL PRINTB	xlr connector male
JS301	351816	STECKER-FL. XLR 3POL PRINTB	xlr connector male
JS401	351816	STECKER-FL. XLR 3POL PRINTB	xlr connector male
JS501	351816	STECKER-FL. XLR 3POL PRINTB	xlr connector male
JS601	351816	STECKER-FL. XLR 3POL PRINTB	xlr connector male
JS801	303093	BUCHSE-DIODE 5POL	socket DIN 5-pole
JS802	303093	BUCHSE-DIODE 5POL	socket DIN 5-pole
JS803	303093	BUCHSE-DIODE 5POL	socket DIN 5-pole
L0701	354450	DROSSEL 150.00UH/0.70A	coil 150uH
L0702	354450	DROSSEL 150.00UH/0.70A	coil 150uH
L0703	335966	DROSSEL 47.00UH/0.45A	coil 47 UH
L0704	354450	DROSSEL 150.00UH/0.70A	coil 150uH
L0705	354202	DROSSEL 47.00UH/1.10A	inductor 47uH/1.1A
L0801	339139	FERRITPERLE EXC-ELDR35C	coil
L0802	339139	FERRITPERLE EXC-ELDR35C	coil
L0803	339139	FERRITPERLE EXC-ELDR35C	coil
L0804	339139	FERRITPERLE EXC-ELDR35C	coil
L0805	339139	FERRITPERLE EXC-ELDR35C	coil
L0806	339139	FERRITPERLE EXC-ELDR35C	coil
Q0350	346764	TRANS BS 170 N-CHAN	trans. BS 170
Q0351	301184	TRANS BC 550 C	transistor BC 550 B
RL301	356761	RELAIS M4-12H	relay m4-12h
RL401	356761	RELAIS M4-12H	relay m4-12h
RL501	356761	RELAIS M4-12H	relay m4-12h
RL601	356761	RELAIS M4-12H	relay m4-12h
R0135	340299	WI-SI 2.20 OHM 0.30W 5%	safety resistor 2.20 Ohm
R0235	340299	WI-SI 2.20 OHM 0.30W 5%	safety resistor 2.20 Ohm
R0350	329215	WI-SI 10.00 OHM 0.30W 5%	safety resistor 10 ohm
R0550	329215	WI-SI 10.00 OHM 0.30W 5%	safety resistor 10 ohm
VR301	348487	WI-TRI 4.70 KOHM LIN	pot trim 4.7 kohm lin
VR401	348487	WI-TRI 4.70 KOHM LIN	pot trim 4.7 kohm lin
VR501	348487	WI-TRI 4.70 KOHM LIN	pot trim 4.7 kohm lin
VR601	348487	WI-TRI 4.70 KOHM LIN	pot trim 4.7 kohm lin
<b>804568</b>	<b>PCB--*DX 38</b>	<b>N 3</b>	<b>pcb assy 80456</b>
CN301	348676	STIFTLEISTE 3POL MLSS	connector male 3-pin
CN302	356505	MESSERLST. 26POL MICS 26	connector male 26-pin
CN303	346759	MESSERLST. 18POL	connector male 18-pin
CN304	345489	MESSERLST. 6POL	connector male 6-pin
CN305	356742	FEDERLEISTE 48POL V42254-B2	connector female 48-pole
C0201	340988	KO-FOL 0.470MF 63V 5%	cap mylar 470nF
C0202	340244	KO-FOL 0.330MF 63V 5%	cap mylar 330nF
C0303	340522	KO-EL 10.000MF 35V	cap electrolytic 10uF/35

Pos. Nr.	Best. Nr.			Description
Ref. No.	Part No.	Bezeichnung		
C0305	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0306	340522	KO-EL	10.000MF 35V	cap electrolytic 10uF/35
C0308	343532	KO-EL	100.000MF 25V	cap electrolytic 100uF/25V
C0309	343532	KO-EL	100.000MF 25V	cap electrolytic 100uF/25V
D0101	351469	LED RT	3MM LS 3369-EH	led red
D0102	351469	LED RT	3MM LS 3369-EH	led red
X0201	348962	QUARZ-OSZIL.	12.2880MHZ	crystal 12.288 mhz

<b>862468</b>		<b>PCBSB*DX 38</b>		<b>pcb assy 86246</b>
CN001	356505	MESSERLST. 26POL MICS 26		connector male 26-pin
CN002	356504	FEDERLEISTE 20POL SL-120-TT		connector female 20-pole
CN003	345489	MESSERLST. 6POL		connector male 6-pin
CN004	345489	MESSERLST. 6POL		connector male 6-pin
CN005	345489	MESSERLST. 6POL		connector male 6-pin
CN006	354851	STECKERLEISTE 2POL 11730		connector male 2-pin
D0001	354003	LED RT	3MM LOW CURRENT	led red
D0002	354004	LED GN	3MM LOW CURRENT	led green
D0003	354004	LED GN	3MM LOW CURRENT	led green
D0004	354004	LED GN	3MM LOW CURRENT	led green
D0005	354004	LED GN	3MM LOW CURRENT	led green
D0006	354004	LED GN	3MM LOW CURRENT	led green
D0007	354003	LED RT	3MM LOW CURRENT	led red
D0008	354004	LED GN	3MM LOW CURRENT	led green
D0009	354004	LED GN	3MM LOW CURRENT	led green
D0010	354004	LED GN	3MM LOW CURRENT	led green
D0011	354004	LED GN	3MM LOW CURRENT	led green
D0012	354004	LED GN	3MM LOW CURRENT	led green
LCD01	356588	DISPLAY LCD PS 12232LRU-BNN		lcd display
S0001	346243	SCHALTER-TAST 2XUM		switch momentary dpdt
S0002	346243	SCHALTER-TAST 2XUM		switch momentary dpdt
S0003	346243	SCHALTER-TAST 2XUM		switch momentary dpdt
S0004	346243	SCHALTER-TAST 2XUM		switch momentary dpdt
S0005	349114	SCHALTER-NETZ		mains switch
VR001	354889	P-DREH	10KOHM LIN B	pot rotary 10k lin
VR002	354889	P-DREH	10KOHM LIN B	pot rotary 10k lin
VR003	354889	P-DREH	10KOHM LIN B	pot rotary 10k lin
VR004	354889	P-DREH	10KOHM LIN B	pot rotary 10k lin

<b>862478</b>		<b>PCBSB*DX 38</b>		<b>pcb assy 86247</b>
CN020	345489	MESSERLST. 6POL		connector male 6-pin
CN021	346759	MESSERLST. 18POL		connector male 18-pin
D0020	356501	LED RT	3MM L-934 LID	led red
D0021	356503	LED GE	3MM L-934 LYD	led yellow
D0022	356502	LED GN	3MM LOW CURRENT	led green
D0023	356502	LED GN	3MM LOW CURRENT	led green
D0024	356502	LED GN	3MM LOW CURRENT	led green
D0025	356503	LED GE	3MM L-934 LYD	led yellow
D0026	356503	LED GE	3MM L-934 LYD	led yellow
D0027	356503	LED GE	3MM L-934 LYD	led yellow
D0028	356501	LED RT	3MM L-934 LID	led red
D0029	356503	LED GE	3MM L-934 LYD	led yellow
D0030	356502	LED GN	3MM LOW CURRENT	led green
D0031	356502	LED GN	3MM LOW CURRENT	led green

Pos. Nr.	Best. Nr.	Bezeichnung		Description
Ref. No.	Part No.			
D0032	356502	LED GN	3MM LOW CURRENT	led green
D0033	356503	LED GE	3MM L-934 LYD	led yellow
D0034	356503	LED GE	3MM L-934 LYD	led yellow
D0035	356503	LED GE	3MM L-934 LYD	led yellow
D0036	356501	LED RT	3MM L-934 LID	led red
D0037	356503	LED GE	3MM L-934 LYD	led yellow
D0038	356502	LED GN	3MM LOW CURRENT	led green
D0039	356502	LED GN	3MM LOW CURRENT	led green
D0040	356502	LED GN	3MM LOW CURRENT	led green
D0041	356503	LED GE	3MM L-934 LYD	led yellow
D0042	356503	LED GE	3MM L-934 LYD	led yellow
D0043	356503	LED GE	3MM L-934 LYD	led yellow
D0044	356501	LED RT	3MM L-934 LID	led red
D0045	356503	LED GE	3MM L-934 LYD	led yellow
D0046	356502	LED GN	3MM LOW CURRENT	led green
D0047	356502	LED GN	3MM LOW CURRENT	led green
D0048	356502	LED GN	3MM LOW CURRENT	led green
D0049	356503	LED GE	3MM L-934 LYD	led yellow
D0050	356503	LED GE	3MM L-934 LYD	led yellow
D0051	356503	LED GE	3MM L-934 LYD	led yellow
D0052	356503	LED GE	3MM L-934 LYD	led yellow
D0053	356503	LED GE	3MM L-934 LYD	led yellow
D0054	356503	LED GE	3MM L-934 LYD	led yellow
D0055	356503	LED GE	3MM L-934 LYD	led yellow
D0056	336399	LED RT	3MM TLUR 4401	LED red 3mm
D0057	336399	LED RT	3MM TLUR 4401	LED red 3mm
D0058	336399	LED RT	3MM TLUR 4401	LED red 3mm
D0059	336399	LED RT	3MM TLUR 4401	LED red 3mm
S0020	348874	SCHALTER-TAST	1XEIN SW	switch push momentary spst
S0021	348874	SCHALTER-TAST	1XEIN SW	switch push momentary spst
S0022	348874	SCHALTER-TAST	1XEIN SW	switch push momentary spst
S0023	348874	SCHALTER-TAST	1XEIN SW	switch push momentary spst
S0024	348874	SCHALTER-TAST	1XEIN SW	switch push momentary spst
S0025	348874	SCHALTER-TAST	1XEIN SW	switch push momentary spst
S0026	354891	SCHALTER-INCREMENTALGEBER		switch & encoder
new !! *1	357100	SCHALTER-INCREMENTALGEBER		switch & encoder
VR020	354890	P-DREH 2X 10KOHM LOG SEMI K		pot rotary 2x10k log (K)
VR021	354890	P-DREH 2X 10KOHM LOG SEMI K		pot rotary 2x10k log (K)

831138	PCBAR" DSP 244	N 6	pcb assy 83113
CN001	356589	STIFTLISTE 26POL	connector male 36-pin
CN002	352115	BUCHSE-SUB-D 9POL	d-sub connector 9-pin
C0001	301522	KO-KER 22.0PF 500V 10%	cap ceramic 22pF
C0002	301522	KO-KER 22.0PF 500V 10%	cap ceramic 22pF
C0003	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0004	340520	KO-EL 1.000MF 50V	cap electrolytic 1uF/50V
C0005	340520	KO-EL 1.000MF 50V	cap electrolytic 1uF/50V
C0006	340520	KO-EL 1.000MF 50V	cap electrolytic 1uF/50V
C0007	340520	KO-EL 1.000MF 50V	cap electrolytic 1uF/50V
C0008	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0009	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF
C0010	343532	KO-EL 100.000MF 25V	cap electrolytic 100uF/25V
C0011	329021	KO-KER 0.10MF 100V 20%	cap ceramic 100nF

Pos. Nr.	Best. Nr.			Description
Ref. No.	Part No.	Bezeichnung		
FL001	346765	KO-SO	MTB 271 KB FILTER	safety component
FL002	346765	KO-SO	MTB 271 KB FILTER	safety component
IC002	352105	IC	MAX 232 CPE	IC MAX 232
IC003	331913	IC	MC 74 HC 04 N	IC MC 74 HC 04 N
X0001	354376	QUARZ	3.6864MHZ HC-49-U	crystal 3.6864 mhz
00120	339842	FEDERLEISTE	6POL CE156-	connector female 6-pole
00130	344861	FEDERLEISTE	3POL CE156-	connector female 3-pole

<b>112766</b>	<b>NRS 90246</b>	<b>retrofit 90246</b>
		<b>contact closure interface</b>

357762      BLENDE-BED NRS 90246      panel retrofit 90246

<b>831148</b>	<b>PCB DSP 244</b>	<b>N 6</b>	<b>pcb retrofit 90246</b>
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CN001	356589	STIFTLEISTE	26POL	connector male 36-pin
CN002	348707	STECKER-SUB-D	9POL PRINTB.	connector sub-d 9-pin
C0001	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0002	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0003	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0004	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0005	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0006	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0007	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0008	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0009	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0010	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0011	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
IC001	341636	IC	SN 74 HC573 N	IC SN 74 HC573 N
IC002	341636	IC	SN 74 HC573 N	IC SN 74 HC573 N
IC003	331920	IC	MC 74 HC 00 N	IC MC 74 HC 00 N
L0001	339139	FERRITPERLE	EXC-ELDR35C	coil
RN001	339686	DICKS-NETZW.	SILT 09E 103J	resistor netw RKL 9S 103J
RN002	339686	DICKS-NETZW.	SILT 09E 103J	resistor netw RKL 9S 103J

<b>112767</b>	<b>NRS 90247</b>	<b>retrofit 90247</b>
		<b>RS-485 interface</b>

357761      BLENDE-BED NRS 90247      front panel retrofit 90247

<b>831158</b>	<b>PCBAR: DSP244</b>	<b>pcb retrofit 90247</b>
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CN001	356589	STIFTLEISTE	26POL	connector male 36-pin
C0001	301522	KO-KER	22.0PF 500V 10%	cap ceramic 22pF
C0002	301522	KO-KER	22.0PF 500V 10%	cap ceramic 22pF
C0003	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0004	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0005	329021	KO-KER	0.10MF 100V 20%	cap ceramic 100nF
C0006	343532	KO-EL	100.000MF 25V	cap electrolytic 100uF/25V
FL001	346765	KO-SO	MTB 271 KB FILTER	safety component
FL002	346765	KO-SO	MTB 271 KB FILTER	safety component
IC002	354175	IC	SN 75176 BP RS 485	IC SN 75176
IC003	331913	IC	MC 74 HC 04 N	IC MC 74 HC 04 N

<b>Pos. Nr.</b>	<b>Best. Nr.</b>		
<b>Ref. No.</b>	<b>Part No.</b>	<b>Bezeichnung</b>	<b>Description</b>
JS001	354555	BUCHSE-FL. XLR 3POL	connector xlr female 3-pole
JS002	351816	STECKER-FL. XLR 3POL PRINTB	xlr connector male 3-pin
X0001	354376	QUARZ 3.6864MHZ HC-49-U	crystal 3.6864 mhz

Notes:

\*1 please see service informations



## Stücklisten - Bill of materials

<b>112767</b>	<b>NRS 90247 RS-485 INTERFACE</b>	<b>retrofit 90247</b>
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Pos. Nr.	Best. Nr.		
Ref. No.	Part. No.	Bezeichnung	Description

	Zubehör	Accessories
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	334989	SCHRGWFW C M3 X 6-ST-H	screw M3x6
	336245	KRT. L 2100 160X88X64	carton
	347529	SCHUTZBEUTEL 127X305	poly bag

	Mechanische Teile	Metal work
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	357761	BLENDE-BED NRS 90247	front panel retrofit 90247
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	Platinen	Printed circuit boards
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	831158	PCBAR:DSP 244	N 6	pcb assy retrofit 90247
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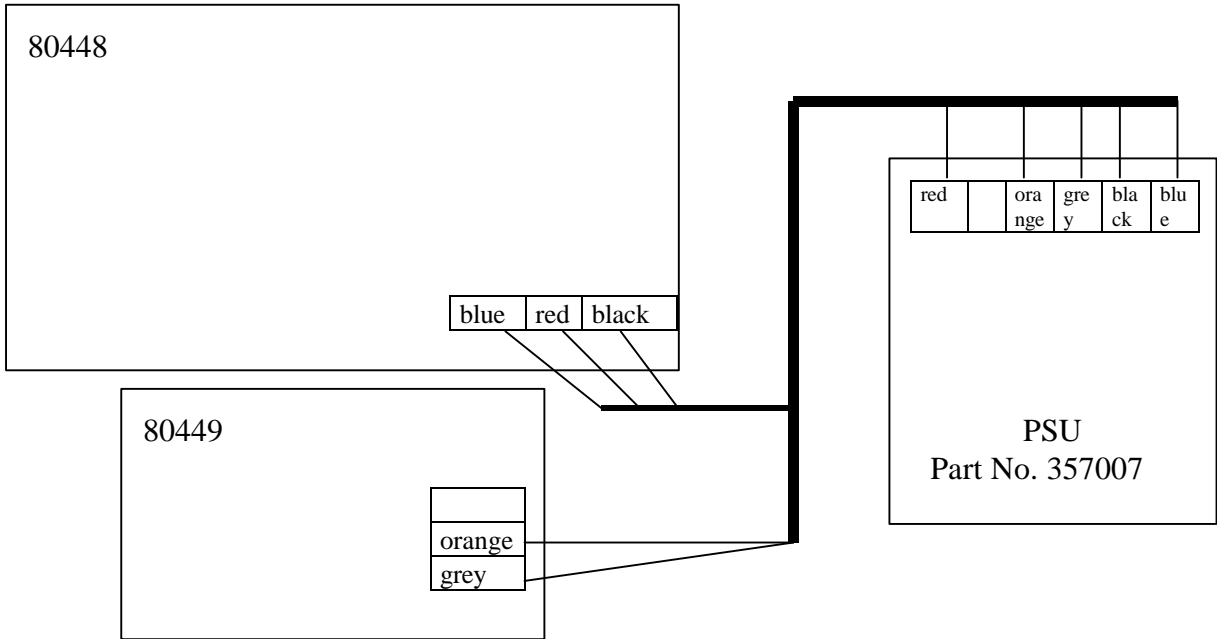
CN001	356589	STIFTLAISTE 26POL		connector male 36-pin
C0001	301522	KO-KER 22.0PF 500V 10%		cap ceramic 22pF
C0002	301522	KO-KER 22.0PF 500V 10%		cap ceramic 22pF
C0003	329021	KO-KER 0.10MF 100V 20%		cap ceramic 100nF
C0004	329021	KO-KER 0.10MF 100V 20%		cap ceramic 100nF
C0005	329021	KO-KER 0.10MF 100V 20%		cap ceramic 100nF
C0006	343532	KO-EL 100.000MF 25V		cap electrolytic 100uF/25V
C0007	340523	KO-EL 22.000MF 16V		cap electrolytic 22uF/16V
C0008	329021	KO-KER 0.10MF 100V 20%		cap ceramic 100nF
C0009	329021	KO-KER 0.10MF 100V 20%		cap ceramic 100nF
C0010	329021	KO-KER 0.10MF 100V 20%		cap ceramic 100nF
C0011	329021	KO-KER 0.10MF 100V 20%		cap ceramic 100nF
FL001	346765	KO-SO MTB 271 KB FILTER		safety component
FL002	346765	KO-SO MTB 271 KB FILTER		safety component
IC002	331937	IC MC 74 HC 86 N		IC MC 74 HC 86 N
IC004	354486	IC MAX 1480 BCPI		IC MAX 1480
JS001	354555	BUCHSE-FL. XLR 3POL		xlr connector female 3-pole
JS002	351816	STECKER-FL. XLR 3POL PRINTB		xlr connector male 3-pin
X0001	354376	QUARZ 3.6864MHZ HC-49-U		crystal 3.6864 mhz

**Replacing the power supply board on DX 38**

The switching Power supply board has been changed to a new one with part number 357007.

If the serial number on your Dx38 is lower than 11099, you have to replace the old cable harness by the provided cable harness (see drawing).

By checking the colours of the cables you can see, if there is the old or the new cable harness built in.



### **Replacing the Data-Encoder on DX 38**

If you have to replace the data-encoder, you have to use the old one ( part-# 354891 ) as long the serial number of your unit is below 11229.

All units with serial numbers 11229 and higher use the new encoder ( part-# 357100 ).

In case you want to use the new encoder on units with serial numbers below 11229 you have to replace the complete front pcb: #86247 and to update the software to enable the new encoder.

The current firmware version can be downloaded from our website::

[www.electro-voice.de](http://www.electro-voice.de)

To enable the new encoder you have to go to the service mode of the DX38:

- Press the SELECT-button to the right side and the EDIT-button simultaneously while switching power on.
- The unit will start in SERVICE MODE
- Step through test menu with the SELECT button until you reach "ENCODER TYPE".
- Push RECALL, the unit will show „STEPS/DETEND 2“
- Change with encoder to „STEPS/DETEND 1“
- Press RECALL again, then you can switch off the unit
- Your unit has stored the usage of the new encoder

#### **Wrong encoder behavior**

In some cases, especially on units which have a serial number below 10060 there could be a problem when upgrading to a firmware revision higher than 1.02.

If the encoder reacts wrong while turning and takes two steps instead of one, use the above service procedure and set the ENCODER TYPE to „STEP/DETEND 2“

#### **Warning:**

Never use any other service program on the unit !