



Service Documents

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Do not disclose this information to or share these documents
with third parties.***

***Vertraulich! Nur für autorisierte Servicetechniker!
Nicht zur Weitergabe an Dritte freigegeben!***

Note!

The components used in this product - particularly parts affecting safety as well as speakers and transformers - were developed and manufactured to certain specifications. Please use original spare parts only to ensure the product remains fully functional and safe.

Achtung!

Die in diesem Produkt verwendeten Komponenten, insbesondere sicherheitsrelevante Teile, Lautsprecher und Transformatoren wurden nach spezifischen Vorgaben entwickelt und gefertigt. Bitte benutzen Sie ausschließlich Original-Ersatzteile – nur so ist die volle Funktionalität und Sicherheit gewährleistet.



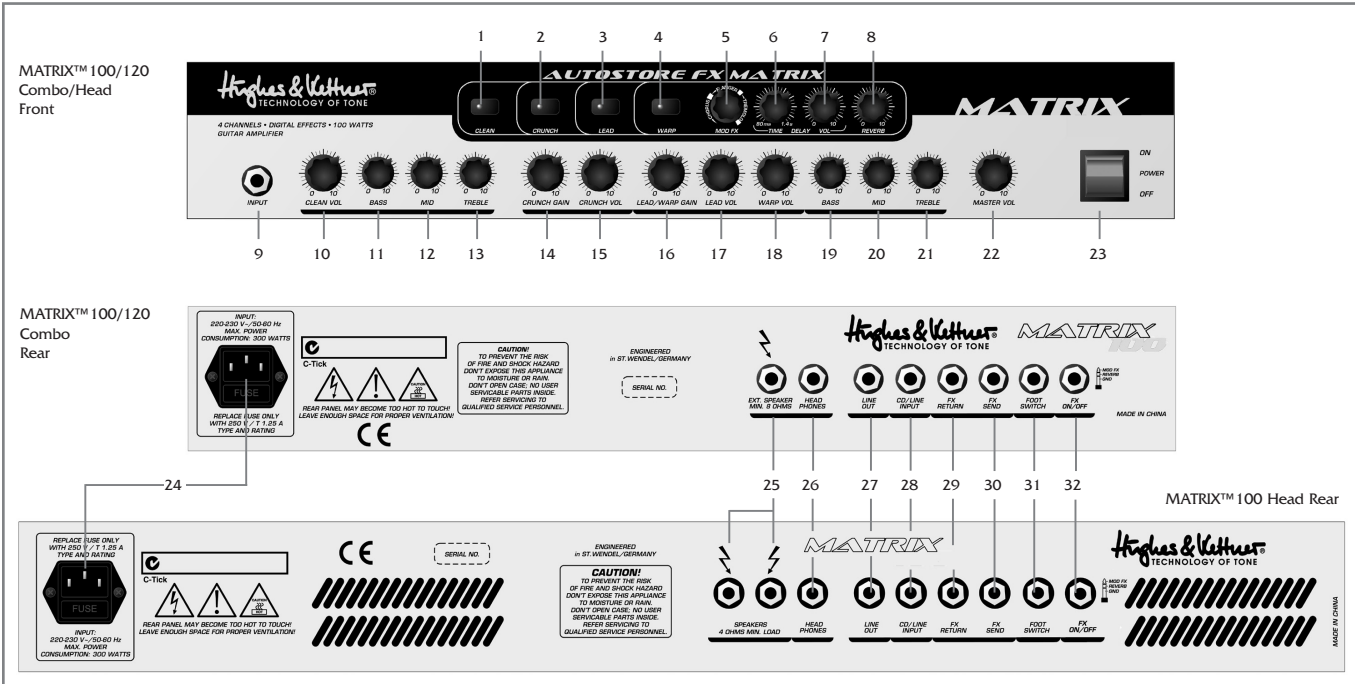
TECHNICAL SERVICE:

***Stamer Musikanlagen GmbH • Magdeburger Str. 8 • 66606 St.Wendel • Germany
Music & Sales P.E. GmbH • Leipziger Str. 3 • 66606 St.Wendel • Germany***



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1 Overview of Control Features and Connectors

1.1 Selecting channels and effect parameters

Use buttons 1 to 4 to select the MATRIX™’s four channels, CLEAN, CRUNCH, LEAD and WARP. These buttons correspond to the buttons on the included footswitch. When the footswitch is connected, buttons 1 to 4 serve display purposes only, and the footswitch switches channels.

Use knobs 5 to 8 to adjust the effect for the given channel. The FX MATRIX’s Autostore function automatically saves the edited effect settings for every channel. You do not need to store settings separately. Even if the amp is suddenly switched off or power fails, the FX MATRIX™ will recall your settings.

1.2 Instrument inputs, channels and master volume

Connect your guitar to input 9. Please use high-quality shielded cords only.

Use knobs 10 to 21 to shape the sound and determine the volume of individual channels. You’ll find a detailed description of the channels in section 2. Knob 22 determines the amp’s overall volume level. Always turn the MASTER knob all the way down – that is, counterclockwise as far as it will go - before powering your amp up.

Knobs 10 to 22 work in the same tried-and-true manner as the controls on a classic amp. These settings are not stored. This means that the actual position of the knob determines the amp’s sounds.

1.3 Mains switch and mains socket

Use switch 23 to turn the MATRIX™ on and off. Make a habit of checking to make sure that the switch is set to the OFF position before you connect the power cable to a mains power

supply. The MATRIX™ ships with a separate power cord that connects to socket 24. Please ensure that the mains voltage matches the value indicated on the back panel of the MATRIX™. Get in touch with your Hughes & Kettner® dealer immediately if this is not the case or the included mains cord’s plug does not fit into the wall outlet.

1.4 Speaker out

Use jack or jack pair 25, EXTERNAL SPEAKER or SPEAKERS, to connect speakers. All speakers are connected in parallel for both the combo and the head.

MATRIX™ 100 COMBO

EXTERNAL SPEAKER: Connect cabinets with 8 ohms minimum impedance to this jack. The impedance of connected speakers must never be lower than 8 ohms!

MATRIX™ 120 COMBO

EXTERNAL SPEAKER: Connect cabinets with 4 ohms minimum impedance to this jack.

MATRIX™ HEAD

SPEAKERS: You can connect two cabinets to the head. The minimum impedance is 4 ohms; ensure your rig’s impedance never drops below 4 ohms! If you plug cabs into both jacks, each cabinet’s impedance must be 8 ohms or higher. If you plug a cab into just one jack, its impedance must be 4 ohms or higher.

1.5 Headphones out

Connect standard stereo headphones to jack 26, HEADPHONES. Adjust the volume via the MASTER knob. Always plug in a stereo 1/4” jack when connecting headphones. The headphones output may be damaged if you insert a mono plug into the jack. The MATRIX™ speaker output is deactivated when a plug is inserted into this jack.

1.6 LINE OUT

Use jack 27, LINE OUT, (mono 1/4" jack) to patch out the amp's signal, including all effects, to another power amp or a DI box (for example, the Hughes & Kettner® RED BOX).

1.7 CD/LINE INPUT

Use jack 28, CD/LINE INPUT, to patch in any type of line signal. For example, you could plug in a CD player to play along with a recorded track. Use a cord equipped with stereo 1/4" jack plugs to do this. Adjust the level using knob 22, MASTER VOLUME.

1.8 FX SEND/RETURN

Connect an effect device's output to jack 29, FX RETURN; connect an effect device's input to jack 30, FX SEND. The effects loop is a serial circuit, so adjust the effect amount (or wet-to-dry balance) at the effect device. The entire preamp signal is routed through the inserted effector and processed there. Please note that your rig's sound quality depends to a considerable extent on the quality of the employed effect device. A poor-quality signal processor can have an adverse effect on the MATRIX™'s sound quality.

- Use high-quality patch cords only to prevent signal loss, background noise and drop-outs.
- Ensure that the effect device is not being overdriven. Be sure to keep an eye on whatever type of level meter, gain indicator or overload lamp the effects device is equipped with, and adjust its input and output controls accordingly.
- Fuzz boxes, overdrives and distortion units don't belong in an FX loop. Plug them into the amp's input.

1.9 FOOTSWITCH

Your MATRIX™ comes with a four-way footswitch that plugs into jack 31. The buttons on the footswitch correspond to buttons 1 to 4 on the MATRIX™'s front panel. When the footswitch is plugged into the amp, buttons 1 to 4 serve display purposes only, and the footswitch switches channels.

1.10 FX ON/OFF

Especially for live performances, the MATRIX™ enables you to turn the internal effects on and off individually, in addition to the 4 switchable channels. To do this, you need to connect a footswitch to the stereo 32 FX ON/OFF jack. Using a simple footswitch (such as the Hughes & Kettner® FS-1) will enable you to switch the modulation effects and DELAY at the same time, leaving REVERB unaffected. You can use a double footswitch (such as the Hughes & Kettner® FS-2) to switch the modulation effects and DELAY, and REVERB separately.

1.11 MATRIX FX-ON/OFF Programming

The switching function of the stereo socket FX-ON/OFF on the back of the MATRIX can be programmed by turning the MOD FX knob and holding CLEAN and LEAD pressed down. The following configurations show which effects blocks are assigned in this way to switch 1 and switch 2 of the double foot switch:

1) MOD FX knob is in 6:00 - 9:00 range
 switch 1: MOD+DLY, switch 2: REV (factory preset)

2) MOD FX knob is in 9:00 - 12:00 range
 switch 1: MOD, switch 2: DLY (reverb is not connected)

3) MOD FX knob is in 12:00 - 15:00 range
 switch 1: MOD, switch 2: DLY + REV

4) MOD FX knob is in 15:00 - 18:00 range
 switch 1: MOD+DLY+REV, switch 2 remains free (as "global bypass when single footswitch is used")

After switching-on, the MATRIX 100 confirms the selected configuration by making all four channel selecting switches blink on and off a corresponding number of times. For example, once for combination 1, and twice for combination 2, etc.. As soon as the LEDs are flashing, you can let go of CLEAN and LEAD.

ATTENTION: If CLEAN and WARP are kept pressed down at the same time, the entire AMP (all sounds and the FX-ON/OFF configuration) is reset to the factory presets.

2 The MATRIX™'s four Channels

2.1 CLEAN

The Clean channel is tweaked to sound sweet when driven by single-coil as well as humbucking pickups.

2.1.1 CLEAN VOL

Adjusts the CLEAN channel's volume level. Players who opt for this class of amp demand a clean channel with enough head-room to ensure it remains clean. This amp certainly does that. Depending on the pickups' output power, you may also be able to dial in a touch of grit. For single-coils, we recommend that you turn the knob well up. Do this, and the amp will reward you with tight & punchy midrange response that is both crisp and fat. If your axe sports humbuckers, set this knob some-where around the 12 o'clock position for crystal-clear clean tone.

2.1.2 Clean Voicing Section: BASS, MID and TREBLE

knobs. MID and TREBLE controls influence each other, as is standard and desirable in the tube amps that this voicing section is patterned on. If you boost the high end, mids are cut and vice versa. This sound-shaping feature lets you to dial in a wide variety of subtle tonal variations. We recommend that you go easy on the bass for the CLEAN channel. Generally, the more mids you dial in, the more assertive your clean tone in the band's soundscape. Note that the TREBLE knob shapes your guitar signal's bell-like overtones.

2.2 CRUNCH

Overdriven sounds à la carte! This channel covers a diverse tonal spectrum ranging from squeaky clean to gritty overdrive. It responds to every nuance in your picking attack, granting you precise control over the amount of overdrive via your guitar's volume knob. Higher CRUNCH knob settings elicit warm sustain that is ideal for singing leads with breathy dynamics.

2.2.1 CRUNCH GAIN

Controls the CRUNCH channel's input sensitivity and thus the amount of saturation. You can dial in anything from tone that is just sweet enough to pass for clean to throaty tones that are distinctly rough around the edges. Again, crank the knob for single-coils; back it off a bit for humbuckers.

2.2.2 CRUNCH VOL

Controls the CRUNCH channel's level; use it to determine the balance between it and the other channels.

2.3 LEAD

Yields hard-hitting, snarling British rock tone.

2.3.1 LEAD/WARP GAIN

Controls the LEAD and WARP channel's input sensitivity and thus the amount of saturation, with distortion option ranges from creamy smooth to British grit and chunky NuMetal thunder.

2.3.2 LEAD Vol

Controls the LEAD channel's level; use it to determine the balance between it and the other channels.

2.4 WARP

Beware! The MATRIX™'s heart of darkness, this channel offers fierce high-gain sounds of a flavor favored by popular NuMetal bands. This brand of distortion is best described as an angry roar. Depending on this channel's settings, you can dial monster NuMetal tone, grinding post-grunge and alternative sounds, and thunderous death and Gothic metal noise.

2.4.1 WARP VOL

Controls the WARP channel's level; use it to determine the balance between it and the other channels.

2.5 CRUNCH, LEAD, WARP Voicing Section

For handling ease, the MATRIX™'s three overdrive channels share common voicing controls. However, behind these tone controls are three different EQ circuits that are automatically switched along with the channel. This is why an EQ setting that you have dialed in for the LEAD channel works so well with the CRUNCH and WARP channels.

knob's control range, FLANGER to the second, and TREMOLO to the final third. You can sweep the knob within each third to adjust the effect's characteristics. We staked out the parameters so that you can swiftly and easily dial in settings that elicit good-sounding, useful variations of the desired effect. To switch off modulation effects, simply twist the knob to the far left. Twisting the knob clockwise adjust the modulation effect's rate. Modulation depth is adjusted automatically according to the rate setting so that every knob position yields a hip effect sound offering real-world utility.

3.1.1 CHORUS

Low CHORUS settings yield a slow throb for thick, underwater sounds that work great with ballads. Courtesy of automatic effect depth adjustment, higher CHORUS settings do not evoke that dreaded "seasick" tone.

3.1.2 FLANGER

Slow FLANGER settings yield a stately sweeping whoosh effect, while faster settings give you swirly effects often heard in contemporary rock and pop tunes.

3.1.3 TREMOLO

Though the classic TREMOLO effect is great for recreating the sounds of '60s, it also serves up some hip effects that work wonders for contemporary tunes.

3.2 DELAY

DELAY is controlled via two knobs: TIME is an infinitely variable knob that sweeps smoothly to the next repetition from 80 ms to 1400 ms. Feedback is adjusted accordingly and automatically. Short DELAYS with minimal feedback conjure great slap-back rockabilly sounds, while medium-length DELAYS are perfect for U2-style jangle. Long DELAY times let you come up with cascading, Queen-style licks. The VOLUME knob determines the level of repetitions, with a control range sweeping from off to as loud as the original signal.

3.3 REVERB

The REVERB is an authentic-sounding emulation of a classic spring reverb. It handles and responds just like the original: Simply twist the REVERB knob to adjust the spring REVERB's volume.

3

The MATRIX™'s Effects

The MATRIX™ features three independent effects - modulation, DELAY and REVERB. All three effect models may be used simultaneously and adjusted independently. The MATRIX™ FX automatically stores settings for each channel.

3.1 MOD FX

The MATRIX™ puts at your disposal the three most sought-after modulation effects: A CHORUS, FLANGER and TREMOLO are all assigned to one knob. CHORUS is assigned to the first third of the

4 Technical Specifications

Safety-related Data

Primary fuses:	220 – 230V 117V 100V	T 1.25 A T 2.5 A T 3.15 A
Secondary fuses:	T 2.5 A (2 each)	
Max. power consumption:	300 watts	
Continuous power:	100 watts	
Minimum impedance:	4 ohms	
Operational temperature range:	-10°C – +35°C	

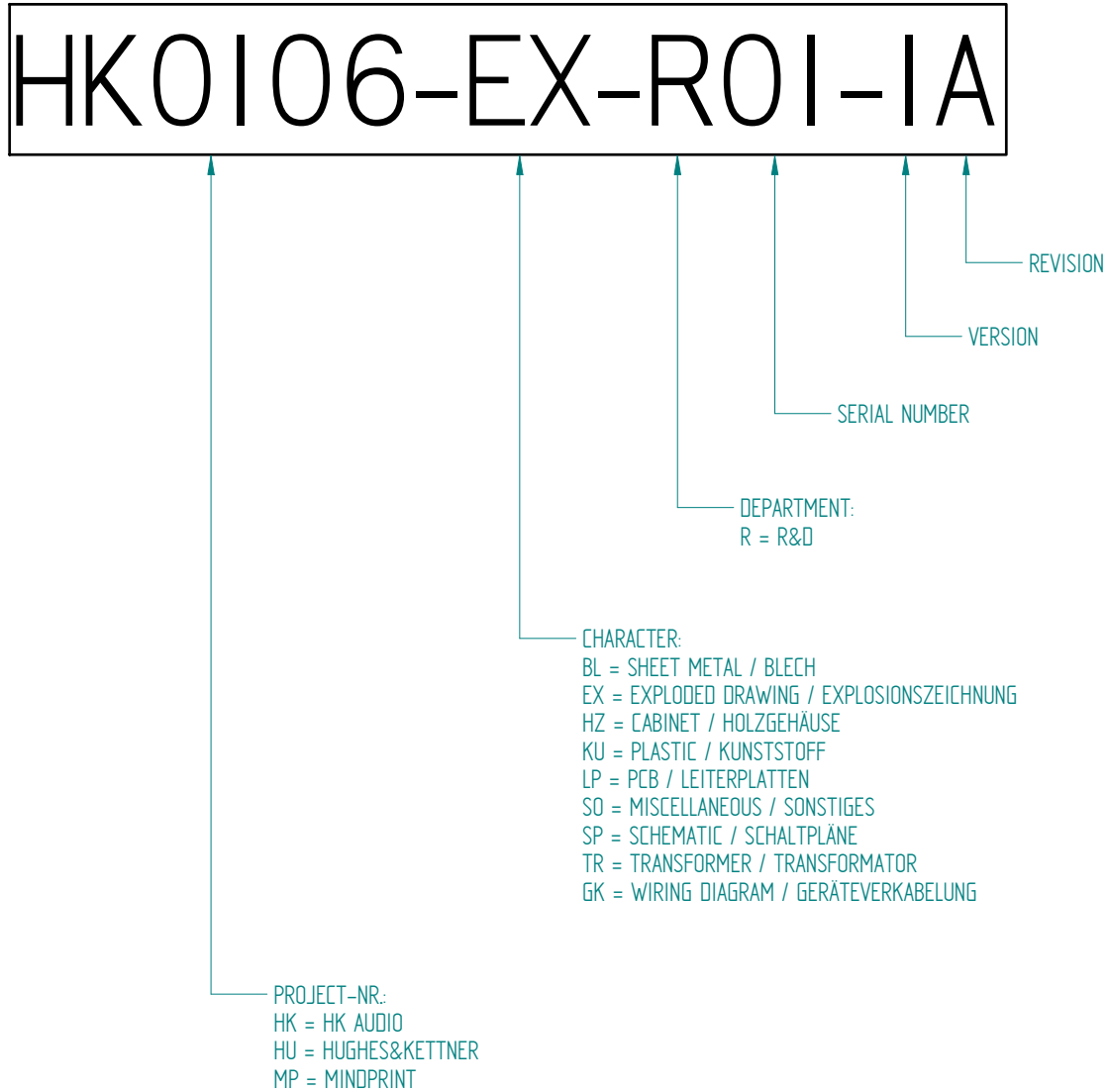
Inputs

INPUT:	Jack type:	1/4"
	Input impedance:	1 Mohms
	Sensitivity:	- 16 dBV
	Max. input level:	+ 4 dBV
FX Return:	Jack type:	1/4"
	Input impedance:	6 Kohms
	Sensitivity:	+ 3 dBV
	Max. input level:	+ 14 dBV
CD INPUT:	Jack type:	1/4"
	Input impedance:	22 Kohms
	Sensitivity:	- 2 dBV
	Max. input level:	+ 14 dBV

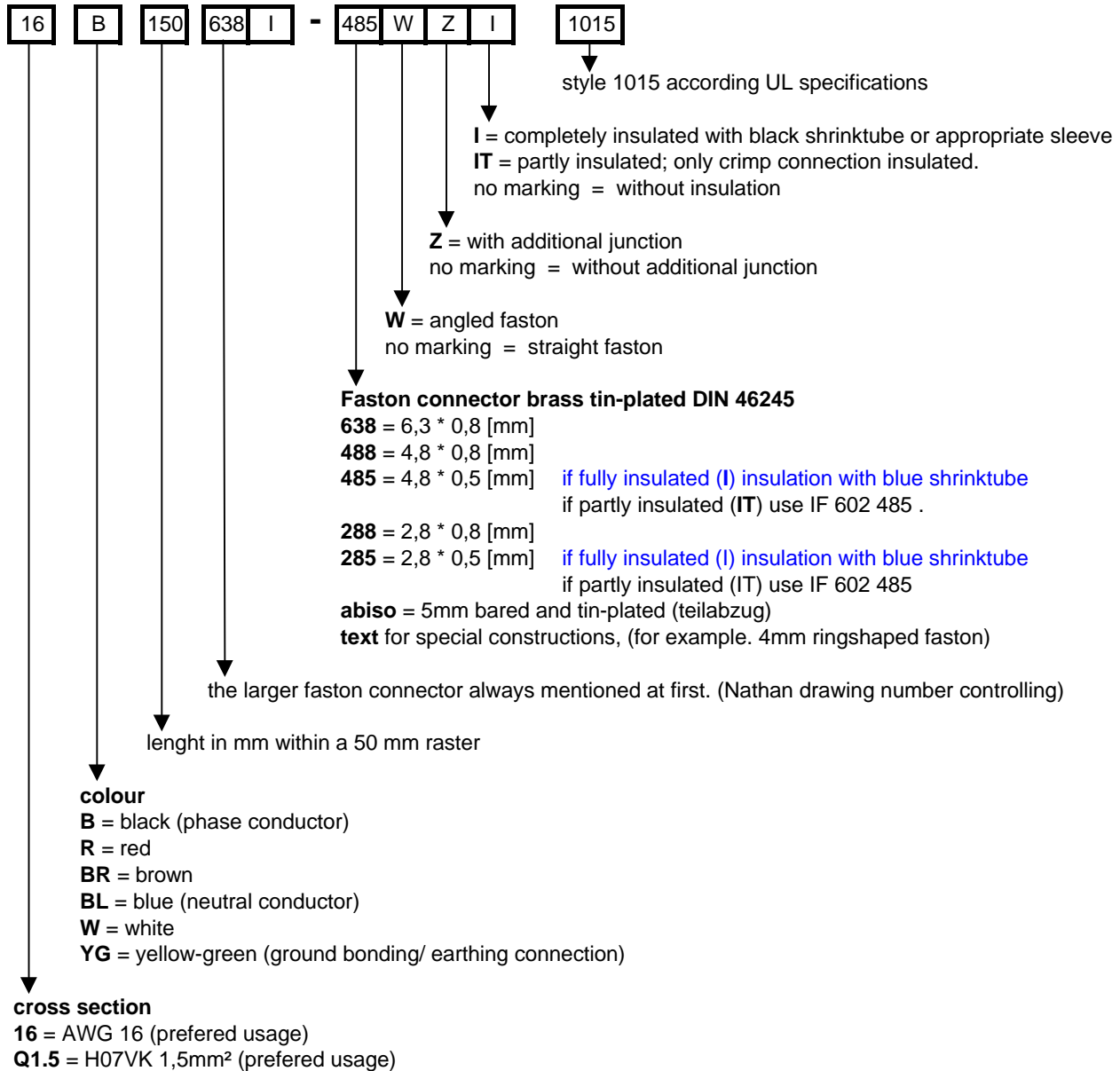
Outputs

FX Send:	Jack type:	1/4"
	Output impedance:	500 ohms
	Output level:	3 dBV
	Max. output level:	+ 10 dBV
LINE Output:	Jack type:	1/4"
	Output impedance:	220 ohms
	Output level:	6 dBV
	Max. output level:	+ 20 dBV
External Speaker Matrix 100:	Jack type:	1/4"
	Circuit:	parallel
	Impedance:	8 to 16 ohms
External Speaker Matrix 120:	Jack type:	1/4"
	Circuit:	serial
	Impedance:	4 to 8 ohms
Speakers: (HEAD only)	Jack type:	Two 1/4"
	Circuit:	parallel
	Impedance:	1x4 to 2x16 ohms
Headphones:	Jack type:	1/4" stereo
	Output impedance:	550 ohms
	Output level:	100 mW an 4 - 600 ohms

DRAWING-NUMBERS EXAMPLE



Standard for single wire confection.



wire designation:

P + lfd Nr. = AWG single wire black, red, blue, brown or white

E + lfd Nr. = AWG single wire green- yellow

L + lfd Nr. = twisted AWG double wire, length specification always in twisted condition

FQL + lfd Nr. = crossover wiring H07VK

Regarding special wirings like wiring harness or similar, drawings will be prepared and appropriate drawing numbers will be stored in the article archive.



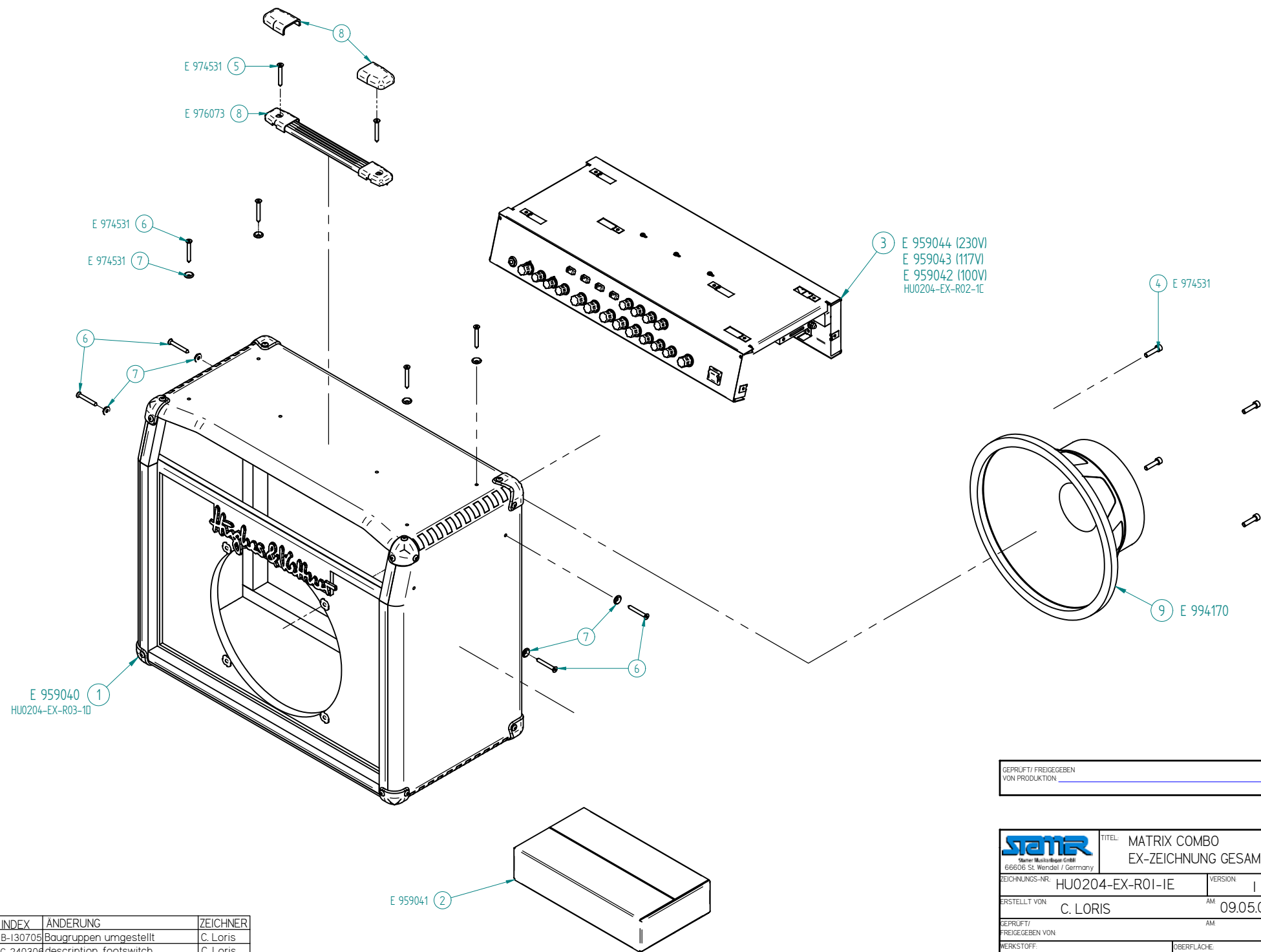
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GEPRÜFT / FREIGEgeben
 VON PRODUKTION: _____ AM

INDEX	ÄNDERUNG	ZEICHNER
B-130705	Baugruppen umgestellt	C. Loris
C-240306	description, footswitch	C. Loris
D-060406	screw connetions	C. Loris
E-090506	current issue, with strap handle	C. Loris


		TITEL: MATRIX COMBO EX-ZEICHNUNG GESAMT	
ZEICHNUNGS-NR. HU0204-EX-R01-IE	VERSION I	REVISION E	
ERSTELLT VON C. LORIS	AM 09.05.06	BLATT: 1/2	
GEPRÜFT / FREIGEgeben VON AM			BLATT BLATT
WERKSTOFF:	OBERFLÄCHE:		
DATEINAME: HU0204-EX-R01-IE-GESAMT			

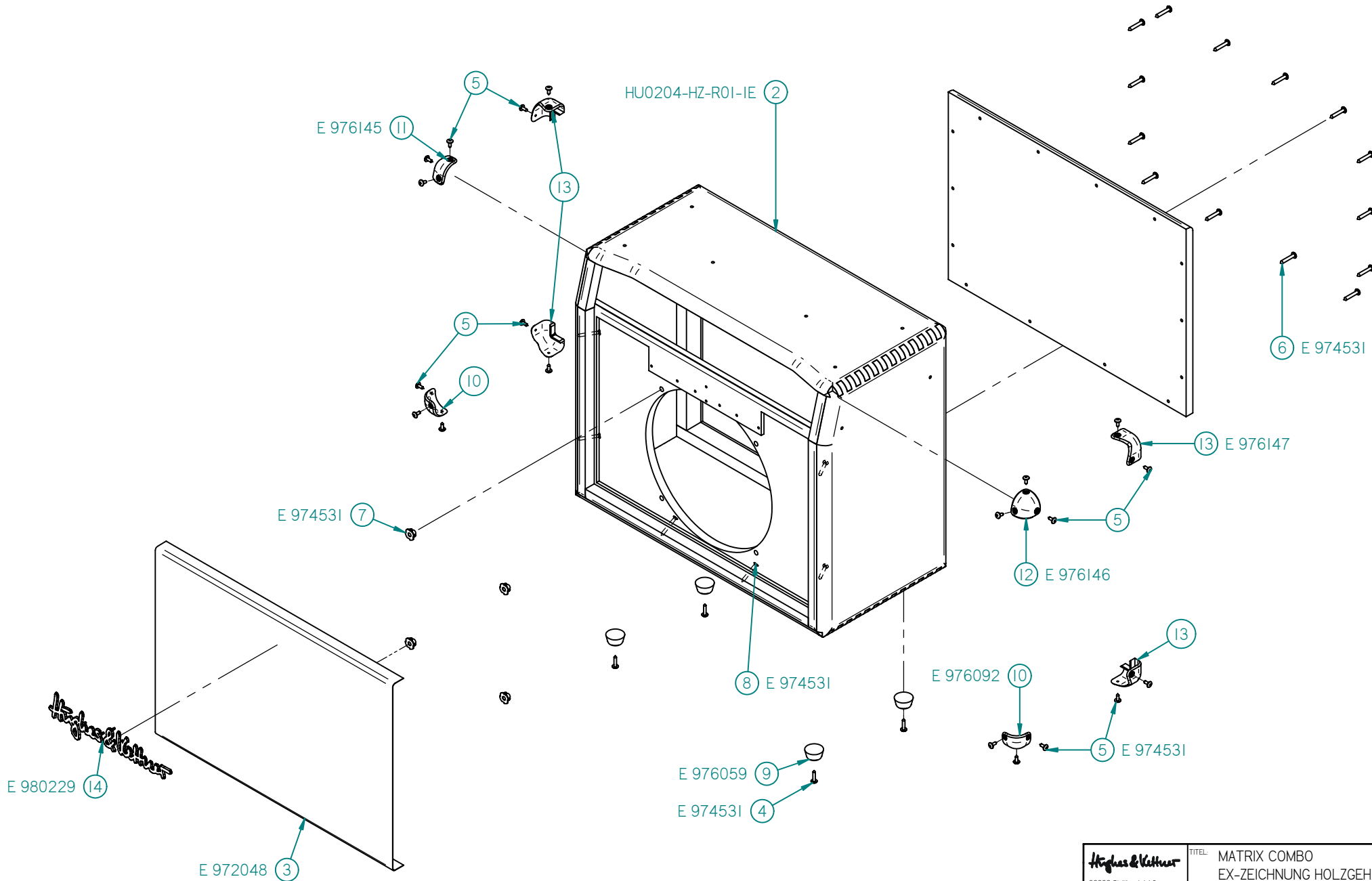
Pos.	Artikel-Nr. 1	Artikel-Nr. 2	Artikel-Nr. 3	description	Titel	Menge
1	959040			complete cabinet Matrix 100	Vormont. Matrix Combo	1
2	959041			footswitch FS4 Matrix 100 complete in small brown carton	Footswitch FS4 Matrix 100 komplett im Karton	1
3	959044 (230V)	959043 (117V)	959042 (100V)	chassis Matrix 100 Combo	Chassis Matrix 100 Combo	1
4	974531			hexagon socket head cap screw, M6x25, black	Inbusschraube M6*25 sw	4
5	974531			sink head screw A5x40	Senkkopfschraube A5x40	2
6	974531			sink head screw A5x35	Senkkopfschraube A5x35	8
7	974531			arch gasket M5	Rosette Polyamid M5	8
8	976073			strap handle 'Hughes & Kettner'	Bandgriff 'Hughes & Kettner'	1
9	994170			Celestion G12T-100 Matrix 100	Celestion G12T-100 Matrix 100	1

item-nr. 974531 is a screw-set with all fittings used in HU0204-Matrix 100

GEPRÜFT / FREIGEgeben
VON PRODUKTION: _____ AM

INDEX	ÄNDERUNG	ZEICHNER
B-130705	Baugruppen umgestellt	C. Loris
C-240306	description, footswitch	C. Loris
D-060406	screw connetions	C. Loris
E-090506	current issue, with strap handle	C. Loris

		TITEL: MATRIX COMBO	
66606 St. Wendel / Germany		EX-ZEICHNUNG GESAMT	
ZEICHNUNGS-NR.	HU0204-EX-R01-IE	VERSION	I
ERSTELLT VON	C. LORIS	AM	09.05.06
REVISION	E	BLATT:	2/2
GEPRÜFT / FREIGEgeben VON	AM	BLATTER	
WERKSTOFF:	OBERFLÄCHE:		
DATEINAME: HU0204-EX-R01-IE-GESAMT			



INDEX	ÄNDERUNG	ZEICHNER
IB	description	C. Loris
IC	screw connection	C. Loris
ID	Tolex, without strap handle	C. Loris

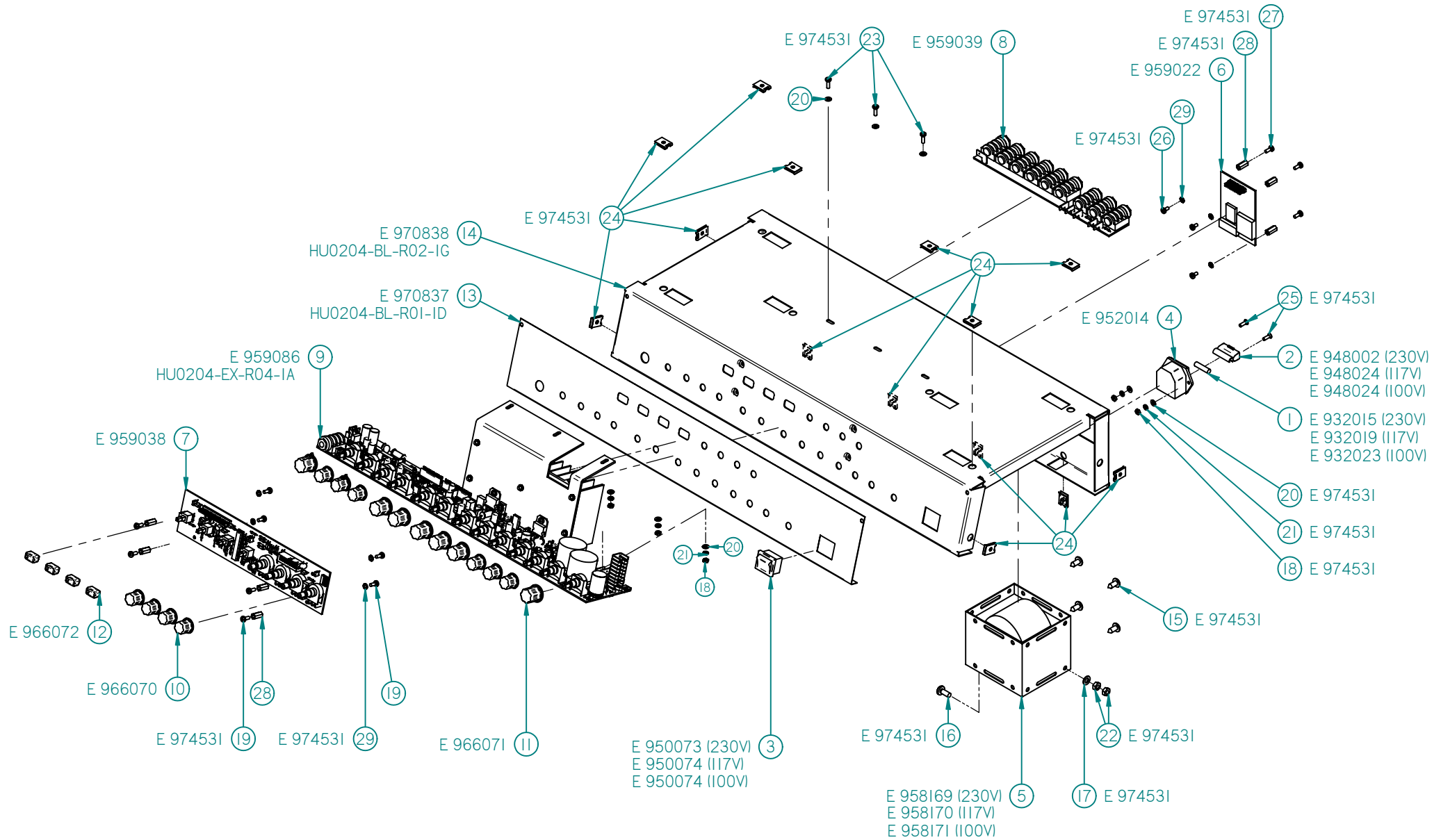
Hughes & Kottner 66606 St. Wendel / Germany		TITEL: MATRIX COMBO EX-ZEICHNUNG HOLZGEHÄUSE	
ZEICHNUNGS-NR.	HU0204-EX-R03-ID	VERSION	I
ERSTELLT VON	C. LORIS	AM	08.05.06
GEPRÜFT / FREIGEgeben VON		AM	
WERKSTOFF:		OBERFLÄCHE:	
REVISION	D	BLATT:	1/2
DATENNAME: HU0204-EX-R03-ID-HOLZGEHAUSE			

Pos.	Artikel-Nr. 1	description	Titel	Menge
1*		Tolex leather finish	Tolex Lederbezug	1
2		cabinet Matrix 100 Combo	Holzgehäuse Matrix 100 Combo	1
3	972048	clothing material 'Club Reverb'	Bespannstoff Club Reverb	1
4	974531	flat head screw A4x20	Rückwandschraube A4x20	4
5	974531	flat head screw A4x12	Rückwandschraube A4x12	20
6	974531	flat head screw A5x30	Rückwandschraube A5x30	14
7	974531	pronged T-nut, M6x9, zinc plated	Einschlagmutter Stahl M6x9mm	4
8	974531	sink head screw A4,5x37	Senkkopfschraube A4,5x37	6
9	976059	rubber foot conical D30-23/H15mm	Gummifuss konisch D30-23/H15mm	4
10	976092	corner CR-4	Ecke Corner CR-4	2
11	976145	corner CR-6 left	Ecke CR-6 links	1
12	976146	corner CR6 right	Ecke CR-6 Rechts	1
13	976147	corner CR-7	Ecke Corner CR-7 f. 15mm Mat.par	4
14	980229	logo silver, 3 parts	Logo 3-teilig Silber	1

item-nr. 974531 is a screw-set with all fittings used in HU0204-Matrix 100

INDEX	ÄNDERUNG	ZEICHNER
IB	description	C. Loris
IC	screw connection	C. Loris
ID	Tolex, without strap handle	C. Loris

Hughes & Kettner		TITEL: MATRIX COMBO	
66606 St. Wendel / Germany		EX-ZEICHNUNG HOLZGEHÄUSE	
ZEICHNUNGS-NR.	HU0204-EX-R03-ID	VERSION	I
ERSTELLT VON	C. LORIS	AM	08.05.06
REVISION	D	BLATT:	2/2
GEPRÜFT/ FREIGEgeben VON		AM	
WERKSTOFF:	OBERFLÄCHE:		
DATEI-NAME:	HU0204-EX-R03-ID-HOLZGEHAUSE		



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IB-240306	description, Verkabelungsplan, Übersicht	C. Loris
C-090506	screw connection details	C. Loris

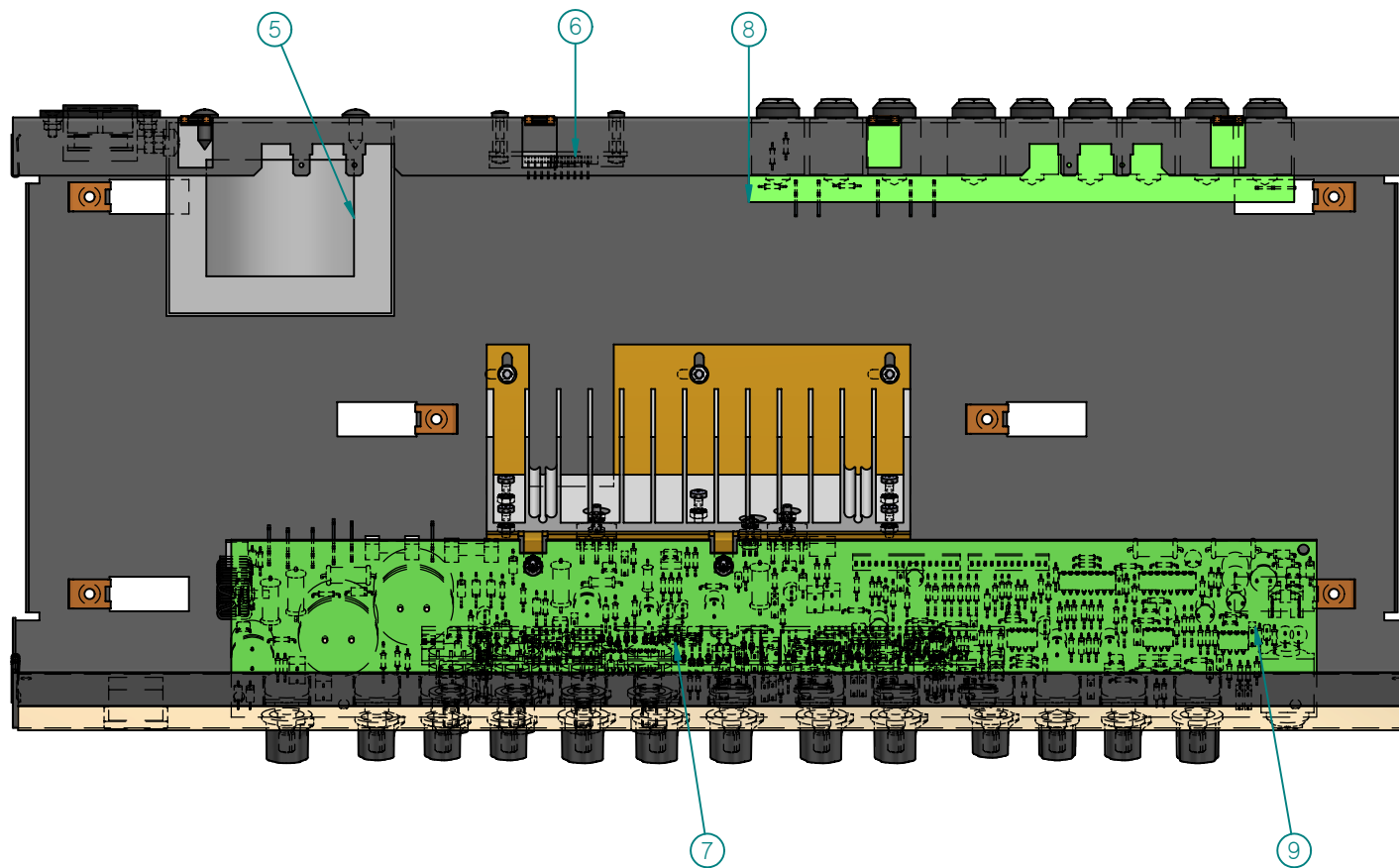
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66606 St. Wendel / Germany			
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ERSTELLT VON	C. LORIS	AM	BLATT:
GEPRÜFT / FREIGEgeben VON		AM	5 BLÄTTER
WERKSTOFF:	OBERFLÄCHE:		
DATENNAME: HU0204-EX-R02-IC-CHASSIS			

Pos.	Artikel-Nr. 1	Artikel-Nr. 2	Artikel-Nr. 3	description	Titel	Menge
1	932015 (230V)	932019 (117V)	932023 (100V)	microfuse, slowblow 5x20 IEC 127	Feinsicherung 5x20 IEC 127	1
2	948002 (230V)	948024 (117V)	948024 (100V)	fuse case for power inlet	Sicherungseins.Netzbuchse Fuse	1
3	950073 (230V)	950074 (117V)	950074 (100V)	mainswitch light color: blue	Netzschalter Lampe Blau	1
4	952014			power inlet	Euronetzbuchse MS3 SKT MS-3	1
5	958169 (230V)	958170 (117V)	958171 (100V)	maintransformer	Netztrafo Matrix 100 Combo	1
6	959022			effectboard H&K 5x7 PCB	Effect Board H&K 5x7 PCB	1
7	959038			controllerboard Matrix 100	Controllerboard Matrix 100	1
8	959039			outputboard Matrix 100 Combo	Outputboard Matrix 100 Combo	1
9	959086			mainboard assembly Matrix 100	Mainboard Baugruppe Matrix 100	1
10	966070			poti knob small Matrix 100	Knopf-Poti Matrix 100 klein	10
11	966071			poti knob large Matrix 100	Knopf-Poti Matrix 100 gross	7
12	966072			push-button Matrix 100	Knopf-Taster Matrix 100	4
13	970837			sheet metal front Matrix 100 Combo	Blech Frontblech Matrix 100 Combo	1
14	970838			sheet metal chassis Matrix 100 Combo	Blech Chassis Matrix 100 Combo	1
15	974531			flat head screw A5x12	Rückwandschraube A5x12	4
16	974531			cross recessed panhead screw, M5x12, brass	Linsenschraube M5 x 12 ms	1
17	974531			washer, form A, D=5.3mm, brass	Unterleg-Scheibe 5,3 ms	1
18	974531			hexagon nut, class 8, M3, zinc plated	Sechskantmutter M3 vz	5
19	974531			cross recessed panhead screw, M3x8, zinc plated	Linsenschraube M3 x 8 vz	8
20	974531			washer, form A, D=3.2mm, zinc plated	Unterleg-Scheibe 3,2 vz	8
21	974531			spring lock washer, M3	Federring M3 galv. verzinkt	5
22	974531			hexagon nut, class 8, M5, brass	Sechskantmutter M5 ms	2
23	974531			cross recessed panhead screw, M3x10, zinc plated	Linsenschraube M3 x 10 vz	3
24	974531			sheet metal nut, D=3.9mm, zinc plated	Blechmutter 3,9mm vz	14
25	974531			cross recessed countersunk screw, M3x10, black	Senkschrauben M3*10 sw	2
26	974531			cross recessed panhead screw, M3x6, zinc plated	Linsenschraube M3 x 6 vz	3
27	974531			cross recessed panhead screw, M3x8, black	Linsenschraube M3 x 8 sw	3
28	974531			hexagon PCB spacer, M3x13, brass	Dist. Bol 2xlnnengew. M3*12 ms	7
29	974531			toothed lock washer, D=3,2, AZ, zinc plated	Fächer-Scheibe az, 3,2 vz	7

item-nr. 974531 is a screw-set with all fittings used in HU0204-Matrix 100

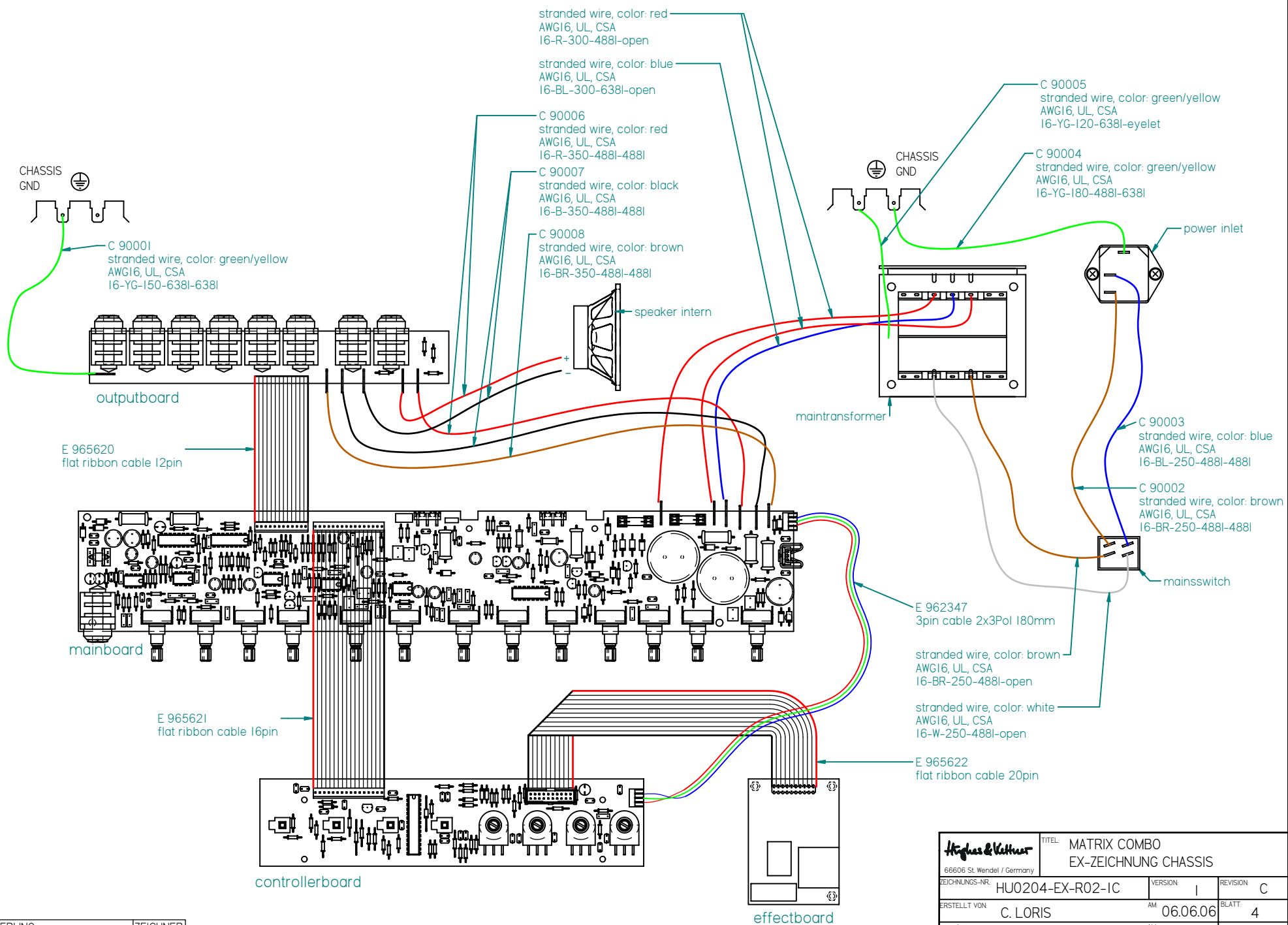
INDEX	ÄNDERUNG	ZEICHNER
IB-240306	description, Verkabelungsplan, Übersicht	C. Loris
C-090506	screw connection details	C. Loris

Hughes & Kettner		TITEL: MATRIX COMBO	
66606 St. Wendel / Germany		EX-ZEICHNUNG CHASSIS	
ZEICHNUNGS-NR.	HU0204-EX-R02-IC	VERSION	1
ERSTELLT VON	C. LORIS	AM	06.06.06
REVISION	C	BLATT	2
GEPRÜFT / FREIGEgeben VON		AM	5
WERKSTOFF:		OBERFLÄCHE:	
DATENNAME: HU0204-EX-R02-IC-CHASSIS			



INDEX	ÄNDERUNG	ZEICHNER
IB-240306	description, Verkabelungsplan, Übersicht	C. Loris
C-090506	screw connection details	C. Loris

		TITEL: MATRIX COMBO EX-ZEICHNUNG CHASSIS	
66606 St. Wendel / Germany		ZEICHNUNGS-NR. HU0204-EX-R02-IC	VERSION I REVISION C
ERSTELLT VON C. LORIS		AM 06.06.06	BLATT: 3
GEPRÜFT / FREIGEgeben VON		AM	5 BLÄTTER
WERKSTOFF:		OBERFLÄCHE:	
DATEI-NAMEN: HU0204-EX-R02-IC-CHASSIS			



INDEX	ÄNDERUNG	ZEICHNER
IB-240306	description, Verkabelungsplan, Übersicht	C. Loris
C-090506	screw connection details	C. Loris

Highes & Kettner 66606 St. Wendel / Germany		TITEL: MATRIX COMBO EX-ZEICHNUNG CHASSIS	
ZEICHNUNGS-NR.	HU0204-EX-R02-IC	VERSION	I
ERSTELLT VON	C. LORIS	AM	06.06.06
BEPRÜFT / FREIGEgeben VON		AM	
WERKSTOFF:		OBERFLÄCHE:	
DATEI-NR.	HU0204-EX-R02-IC-CHASSIS		
		REVISION	C
		BLATT:	4
			5 BLÄTTER

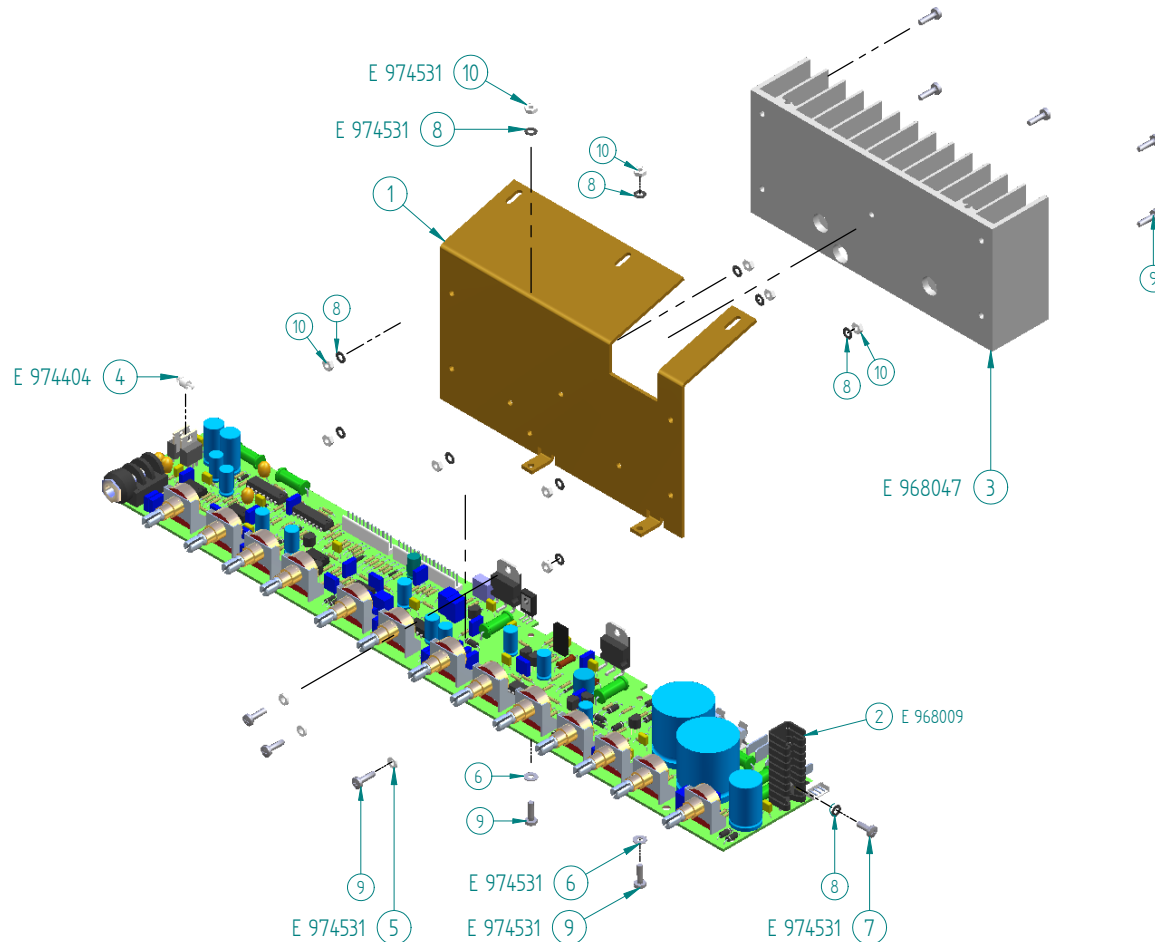
Pos.	Artikel-Nr. 1	Artikel-Nr. 2	Artikel-Nr. 3	description	Titel	Menge
1	962347			stranded wire 2x3pol 180mm type AXL	Litze 2x3pol 180mm type AXL	1
2	965620			Flat ribbon cable 12-2-180	Flat ribbon cable 12-2-181	1
3	965621			Flat ribbon cable 16-2-120	Flat ribbon cable 16-2-121	1
4	965622			Flat ribbon cable IDC 20-200	Flat ribbon cable IDC 20-201	1
5	C90001			stranded wire 16-YG-150-6381-6381, UL, csa	Litze 16-YG-150-6381-6381, UL, csa	1
6	C90002			stranded wire 16-BR-250-4881-4881, UL, CSA	Litze 16-BR-250-4881-4881, UL, CSA	1
7	C90003			stranded wire 16-BL-250-4881-4881, UL, CSA	Litze 16-BL-250-4881-4881, UL, CSA	1
8	C90004			stranded wire 16-YG-180-4881-6381, UL, CSA	Litze 16-YG-180-4881-6381, UL, CSA	1
9	C90005			stranded wire 16-YG-120-6381-eyelet, UL, CSA	Litze 16-YG-120-6381-eyelet, UL, CSA	1
10	C90006			stranded wire 19-R-350-4881-4881, UL, CSA	Litze 19-R-350-4881-4881, UL, CSA	2
11	C90007			stranded wire 16-B-350-4881-4881, UL, CSA	Litze 16-B-350-4881-4881, UL, CSA	2
12	C90008			stranded wire 16-BR-350-4881-4881, UL, CSA	Litze 16-BR-350-4881-4881, UL, CSA	1

INDEX	ÄNDERUNG	ZEICHNER


Hughes & Kettner 66606 St. Wendel / Germany		TITEL: MATRIX COMBO EX-ZEICHNUNG CHASSIS	
ZEICHNUNGS-NR.	HU0204-EX-R02-IC	VERSION	1
ERSTELLT VON	C. LORIS	AM	06.06.06
GEPRÜFT / FREIGEgeben VON		AM	
WERKSTOFF:		OBERFLÄCHE:	
REVISION	C	BLATT:	4
		5	BLÄTTER
DATEINAME: HU0204-EX-R02-IC-CHASSIS			

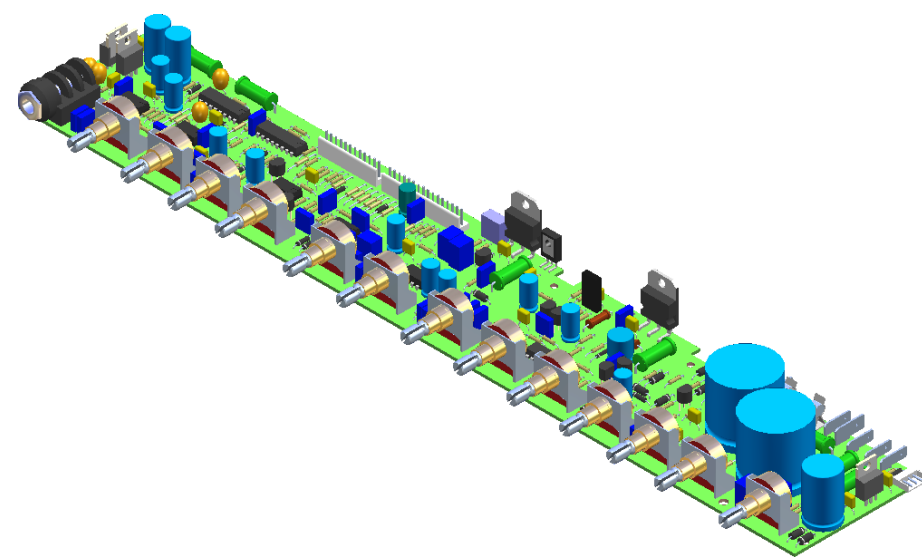
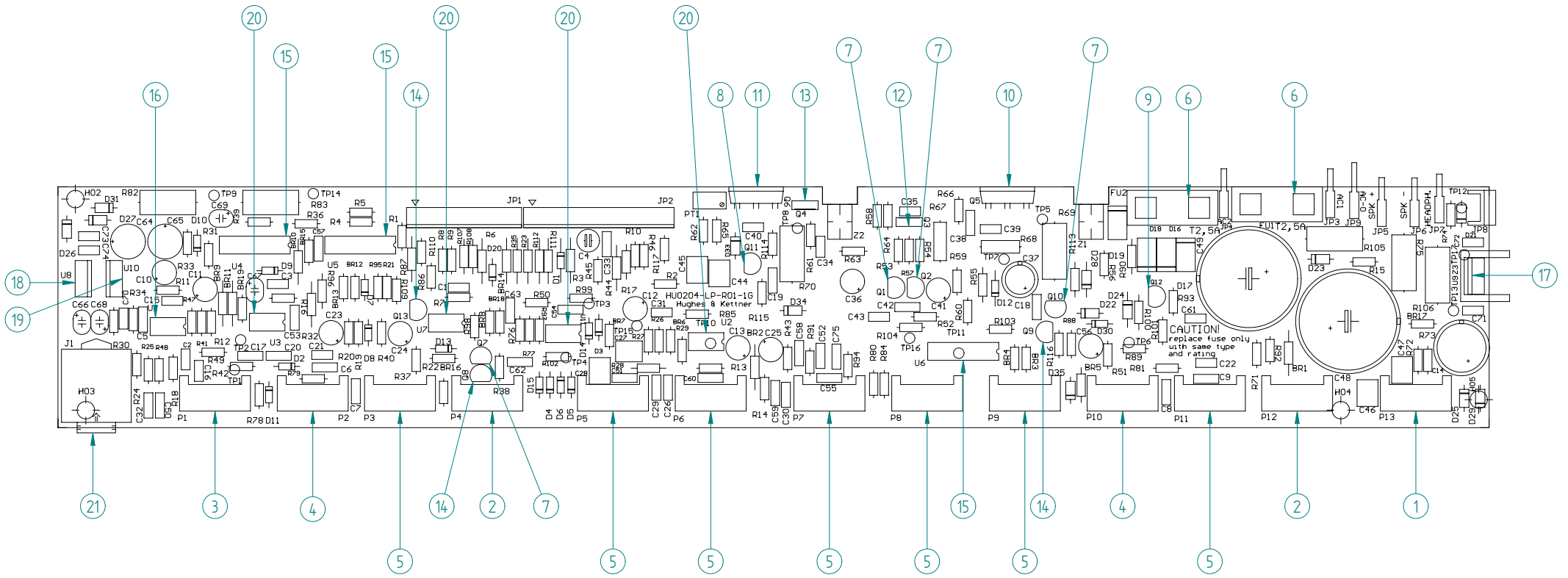
Pos.	Artikel-Nr. 1	description	Titel	Menge
1		mounting plate heatsink	Halte Winkel Kühlkörper	1
2	968009	Attachable heatsink FK240 SA220 VL	Kühlk. FK 240 SA 220 VL	1
3	968047	heatsink Matrix 100	Kühlkörper Matrix 100	1
4	974404	PCB-Distance Holder 4mm	Dist.Halter Plastik H=4mm	1
5	974531	Insulation Sleeve IB6	Isoierbuchse IB6	3
6	974531	washer, form A, D=3.2mm, zinc plated	Unterleg-Scheibe 3,2 vz	2
7	974531	cross recessed panhead screw, M3x8, zinc plated	Linsenschraube M3 x 8 vz	1
8	974531	toothed lock washer, D=32, AZ, zinc plated	Fächer-Scheibe az, 3,2 vz	11
9	974531	cross recessed panhead screw, M3x10, zinc plated	Linsenschraube M3 x 10 vz	10
10	974531	hexagon nut, class 8, M3, zinc plated	Sechskanmutter M3 vz	10

item-nr. 974531 is a screw-set with all fittings used in HU0204-Matrix 100



INDEX	ÄNDERUNG	ZEICHNER

TITEL:		REVISION	
 HU0204-MAINBOARD EXPLOSION DRAWING		A	
<small>66606 St. Wendel / Germany</small>		VERSION 1	REVISION A
ZEICHNUNGS-NR.	HU0204-EX-R04-1A	AM 09.05.2006	BLATT 1
ERSTELLT VON	C. LORIS	AM	1 BLÄTTER
GEPRÜFT/ FREIGEgeben VON:			
WERKSTOFF:	OBERFLÄCHE:	n/a	
DATEINAME: HU0204-EX-R04-1A-Mainboard			



INDEX	ÄNDERUNG	ZEICHNER
17.05.06	FK240 aus Liste entfernt. Bemerkung: Combo only gelöscht. Dist-Halter opt. unterdrückt	uba

		TITEL:	
66606 St. Wendel / Germany MATRIX 100 COMBO MAINBOARD			
ZEICHNUNGS-NR.	HU0204-LP-R01-1G	VERSION	1
ERSTELLT VON	ubaris	AM	17.05.2006
GEPRÜFT / FREIGEgeben VON		AM	
WERKSTOFF:		OBERFLÄCHE:	N/A
DATEI-NR.	HU0204-LP-R01-1G-Mainboard-Combo		
		REVISION	G
		BLATT:	1
			2 BLÄTTER

Spare Parts List for:

HU0204-LP-R01-1G

Project:

Matrix 100

Project Number:


HU0204

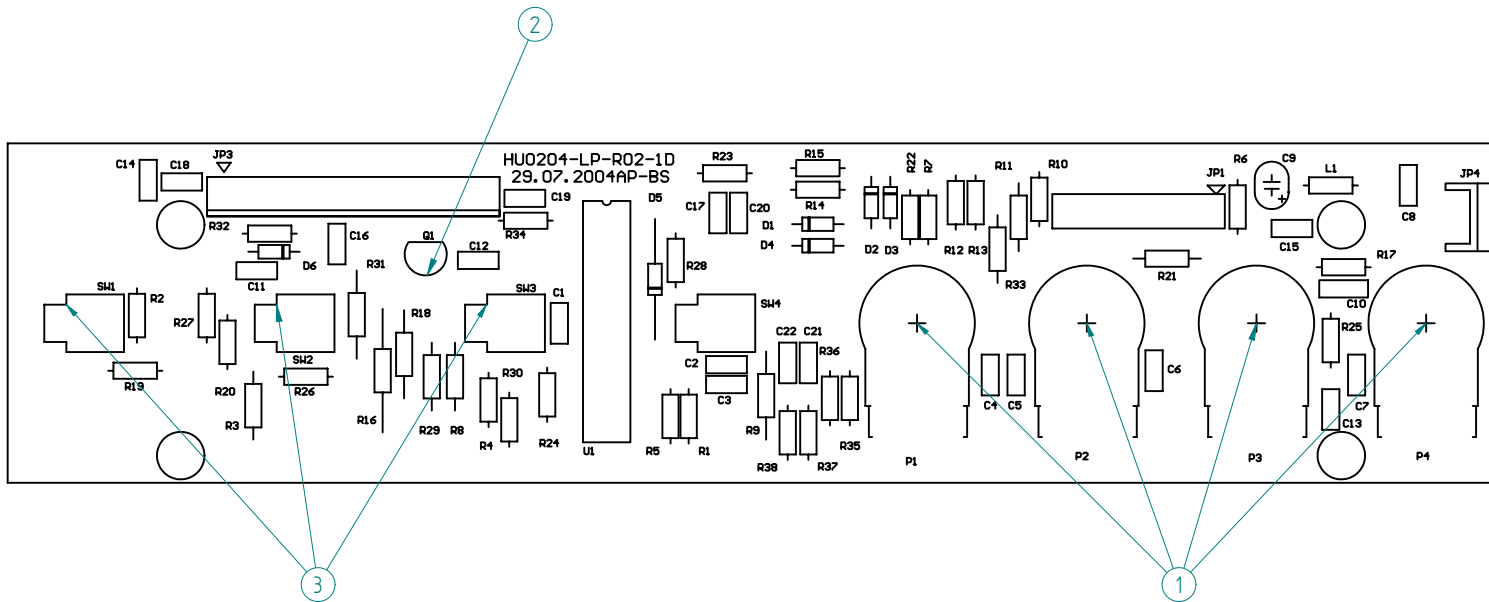
Assembly:

Mainboard Combo

Pos.	Article No.	Description	Bezeichnung	Ref.Description	Quantity
1	914033	Poti B10K lin mono RK16	Poti B10K lin mono RK16	P13	1
2	914043	Poti B250K lin mono RK16	Poti B250K lin mono RK16	P4, P12	2
3	914044	Poti A250K log mono RK16	Poti A250K log mono RK16	P1	1
4	914047	Poti A1M log mono RK16	Poti A1M log mono RK16	P2, P10	2
5	914048	Poti A25K log mono RK16	Poti A25K log mono RK16	P3, P5, P6, P7, P8, P9, P11	7
6	932019	Microfuse, 5x20mm, 2,5A, Slow blow	G-Sicherung, 5x20mm, 2,5A, träge	FU1, FU2	2
7	938009	Transistor BC 546B NPN TO92	Transistor BC 546B NPN TO92	Q1, Q2, Q7, Q10	4
8	938012	Transistor BC 556B PNP TO92	Transistor BC 556B PNP TO92	Q11	1
9	938014	Transistor BC 640 PNP TO92	Transistor BC 640 PNP TO92	Q12	1
10	938020	Transistor BDW83D NPN TO3p	Transistor BDW83D NPN TO3p	Q5	1
11	938021	Transistor BDW84D PNP TO3p	Transistor BDW84D PNP TO3p	Q6	1
12	938022	Transistor BD 238 PNP TO126	Transistor BD 238 PNP TO126	Q3	1
13	938024	Transistor BD 679 NPN TO126	Transistor BD 679 NPN TO126	Q4	1
14	938028	Transistor BF245B N-FET TO92	Transistor BF245B N-FET TO92	Q8, Q9, Q13	3
15	940002	IC HCF 4053 Multiplexer C-MOS	IC HCF 4053 Multiplexer C-MOS	U4, U5, U6	3
16	940004	IC NE 5532A Dual-OP	IC NE 5532A Dual-OP	U1	1
17	940006	IC L 7805CV +5V constant-voltage regulator	IC L 7805CV +5V Regler	U9	1
18	940007	IC L 7815CV +15V constant-voltage regulator	IC L 7815CV +15V Regler	U8	1
19	940008	IC L 7915CV -15V constant-voltage regulator	IC L 7915CV -15V Regler	U10	1
20	940032	IC MC 33078P 2*lo-noice ON	IC MC 33078P 2*lo-noice ON	U2, U3, U7, U11	4
21	952038	Jack Rean NMJ 4 HCD 1	Klinkenbuchse Rean NMJ 4 HCD 2	J1	1

INDEX	ÄNDERUNG	ZEICHNER
17.05.06	FK240 aus Liste entfernt. Bemerkung Combo only gelöscht. Dist-Halter opt. unterdrückt	uba

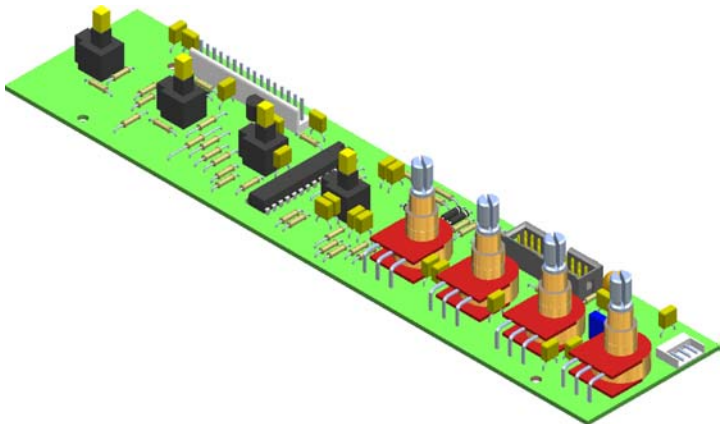
		TITEL:	
66606 St. Wendel / Germany		MATRIX 100 COMBO MAINBOARD	
ZEICHNUNGS-NR.	HU0204-LP-R01-1G	VERSION	1
ERSTELLT VON	ubaris	AM	17.05.2006
REVISION	G	BLATT	2
GEPRÜFT / FREIGEgeben VON		AM	
WERKSTOFF:		OBERFLÄCHE:	N/A
DATEINAME:	HU0204-LP-R01-1G-Mainboard-Combo		



Spare Parts List for: HU0204-LP-R02-1D

Project: Matrix 100
 Project Number: HU0204
 Assembly: Controllerboard

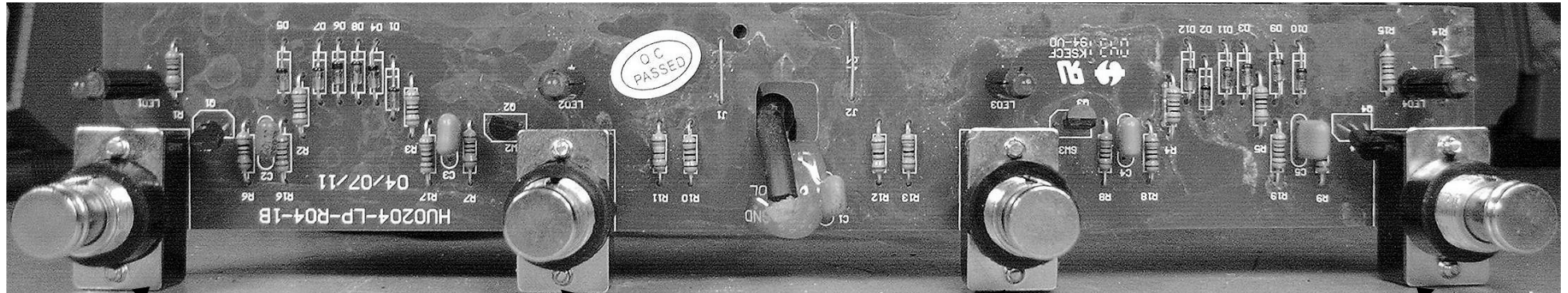
Pos.	Article No.	Description	Bezeichnung	Ref.Description	Quantity
1	914074	Poti B10K lin mono vert. RK16	Poti B10K lin mono vert. RK16	P4, P3, P2, P1	4
2	938009	Transistor BC 546B NPN TO92	Transistor BC 546B NPN TO92	Q1	1
3	950066	Push Sw itch KingbrightL934MBDL	Drucktaster mit LED blau	SW4, SW3, SW2, SW1	4



INDEX	ÄNDERUNG	ZEICHNER

		TITEL: MATRIX 100 COMBO CONTROLLERBOARD	
66606 St. Wendel / Germany ZEICHNUNGS-NR. HU0204-LP-R02-1D		VERSION 1	REVISION 0
ERSTELLT VON UWE BARIS		AM 24.03.2006	BLATT: 1
GEPRÜFT/ FREIGEgeben VON:		AM	1 BLÄTTER
WERKSTOFF:		OBERFLÄCHE: OBERFLÄCHE	
DATEINAME: HU0204-LP-R02-1D-Controllerboard			

Pos.	Article No. 1	Destricption	Bezeichnung	Quantity	Price/Part
1	950072	Push Button Matrix Stageboard FS4	Drucktaster Matrix Stageboard FS4	4	



1

HU0204-LP-R01-1G-MAINBOARD

Article No.	Ref.Destricption	Description	Bezeichnung	Quantity
914033	P13	Poti B10K lin mono RK16	Poti B10K lin mono RK16	1
914043	P4, P12	Poti B250K lin mono RK16	Poti B250K lin mono RK16	2
914044	P1	Poti A250K log mono RK16	Poti A250K log mono RK16	1
914047	P2, P10	Poti A1M log mono RK16	Poti A1M log mono RK16	2
914048	P3, P5, P6, P7, P8, P9, P11	Poti A25K log mono RK16	Poti A25K log mono RK16	7
932019	FU1, FU2	Microfuse, 5x20mm, 2,5A, Slowblow	G-Sicherung, 5x20mm, 2,5A, träge	2
938009	Q1, Q2, Q7, Q10	Transistor BC 546B NPN TO92	Transistor BC 546B NPN TO92	4
938012	Q11	Transistor BC 556B PNP TO92	Transistor BC 556B PNP TO92	1
938014	Q12	Transistor BC 640 PNP TO92	Transistor BC 640 PNP TO92	1
938020	Q5	Transistor BDW83D NPN TO3p	Transistor BDW83D NPN TO3p	1
938021	Q6	Transistor BDW84D PNP TO3p	Transistor BDW84D PNP TO3p	1
938022	Q3	Transistor BD 238 PNP TO126	Transistor BD 238 PNP TO126	1
938024	Q4	Transistor BD 679 NPN TO126	Transistor BD 679 NPN TO126	1
938028	Q8, Q9, Q13	Transistor BF245B N-FET TO92	Transistor BF245B N-FET TO92	3
940002	U4, U5, U6	IC HCF 4053 Multiplexer C-MOS	IC HCF 4053 Multiplexer C-MOS	3
940004	U1	IC NE 5532A Dual-OP	IC NE 5532A Dual-OP	1
940006	U9	IC L 7805CV +5V constant-voltage regulator	IC L 7805CV +5V Regler	1
940007	U8	IC L 7815CV +15V constant-voltage regulator	IC L 7815CV +15V Regler	1
940008	U10	IC L 7915CV -15V constant-voltage regulator	IC L 7915CV -15V Regler	1
940032	U2, U3, U7, U11	IC MC 33078P 2*lo-noice ON	IC MC 33078P 2*lo-noice ON	4
952038	J1	Jack Rean NMJ 4 HCD 1	Klinkenbuchse Rean NMJ 4 HCD 2	1

HU0204-EX-R04-1A-MAINBOARD ASSEMBLY

Article No. 1 (230V)	Article No. 2 (117V)	Article No. 3 (100V)	Description	Bezeichnung	Quantity
			mounting plate heatsink	Haltewinkel Kühlkörper	1
968009			Attachable heatsink FK240 SA220 VL	Kühlk. FK 240 SA 220 VL	1
968047			heatsink Matrix 100	Kühlkörper Matrix 100	1
974404			PCB-Distance Holder 4mm	Dist.Halter Plastik H=4mm	1

HU0204-LP-R02-1D-CONTROLLERBOARD

Article No.	Ref.Destricption	Description	Bezeichnung	Quantity
914074	P4, P3, P2, P1	Poti B10K lin mono vert. RK16	Poti B10K lin mono vert. RK16	4
938009	Q1	Transistor BC 546B NPN TO92	Transistor BC 546B NPN TO92	1
950066	SW4, SW3, SW2, SW1	Push Switch KingbrightL934MBDL	Drucktaster mit LED blau	4

HU0204-EX-R02-1C-CHASSIS

Article No. 1 (230V)	Article No. 2 (117V)	Article No. 3 (100V)	Description	Bezeichnung	Quantity
932015	932019	932023	microfuse, slowblow 5x20 IEC 127	Feinsicherung 5x20 IEC 127	1
948002	948024	948024	fuse case for power inlet	Sicherungseins.Netzbuchse Fuse	1
950073	950074	950074	mainsswitch light color: blue	Netzschalter Lampe Blau	1
952014			power inlet	Euronetzbuchse MS3 SKT MS-3	1
962327			stranded wire 2x3pol 180mm type AXL	Litze 2x3Pol. 180mm Typ AXL	1
965620			Flat ribbon cable 12-2-180	Flachb. 12-2-180 Typ AXL	1
965621			Flat ribbon cable 16-2-120	Flachb. 16-2-120 Typ AXL	1
965622			Flat ribbon cable IDC 20-200	Flachb. IDC 20-200 Typ AXL	1
958169	958170	958171	maintransformer	Netztrafo Matrix 100 Combo	1
959022			effectboard H&K 5x7 PCB	Effect Board H&K 5x7 PCB	1

959038	controllerboard Matrix 100	Controllerboard Matrix 100	1
959039	outputboard Matrix 100 Combo	Outputboard Matrix 100 Combo	1
959086	mainboard assembly Matrix 100	Mainboard Baugruppe Matrix 100	1
966070	poti knob small Matrix 100	Knopf-Poti Matrix 100 klein	10
966071	poti knob large Matrix 100	Knopf-Poti Matrix 100 gross	7
966072	push-button Matrix 100	Knopf-Taster Matrix 100	4
970837	sheet metal front Matrix 100 Combo	Blech Frontblech Matrix 100 Combo	1
970838	sheet metal chassis Matrix 100 Combo	Blech Chassis Matrix 100 Combo	1
C90001	stranded wire I6-YG-150-638I-638I, UL,CSA	Litze I6-YG-150-638I-638I, UL,CSA	1
C90002	stranded wire I6-BR-250-488I-488I, UL, CSA	Litze I6-BR-250-488I-488I, UL, CSA	1
C90003	stranded wire I6-BL-250-488I-488I, UL, CSA	Litze I6-BL-250-488I-488I, UL, CSA	1
C90004	stranded wire I6-YG-180-488I-638I, UL, CSA	Litze I6-YG-180-488I-638I, UL, CSA	1
C90005	stranded wire I6-YG-120-638I-eyelet, UL, CSA	Litze I6-YG-120-638I-eyelet, UL, CSA	1
C90006	stranded wire I9-R-350-488I-488I, UL, CSA	Litze I9-R-350-488I-488I, UL, CSA	2
C90007	stranded wire I6-B-350-488I-488I,UL, CSA	Litze I6-B-350-488I-488I,UL, CSA	2
C90008	stranded wire I6-BR-350-488I-488I, UL, CSA	Litze I6-BR-350-488I-488I, UL, CSA	1

HU0204-EX-R03-1D-CABINET

Article No. 1 (230V)	Article No. 2 (117V)	Article No. 3 (100V)	Description	Bezeichnung	Quantity
			Tolex leather finish	Tolex Lederbezug	1
			cabinet Matrix 100 Combo	Holzgehäuse Matrix 100 Combo	1
972048			clothing material 'Club Reverb'	Bespannstoff Club Reverb	1
976059			rubber foot conical D30-23/H15mm	Gummifuss konisch D30-23/H15mm	4
976092			corner CR-4	Ecke Corner CR-4	2
976145			corner CR-6 left	Ecke CR-6 links	1
976146			corner CR6 right	Ecke CR-6 Rechts	1
976147			corner CR-7	Ecke Corner CR-7 f. 15mm Mat.par	4
980229			logo silver, 3 parts	Logo 3-teilig Silber	1

HU0204-EX-R01-1E-COMPLETE

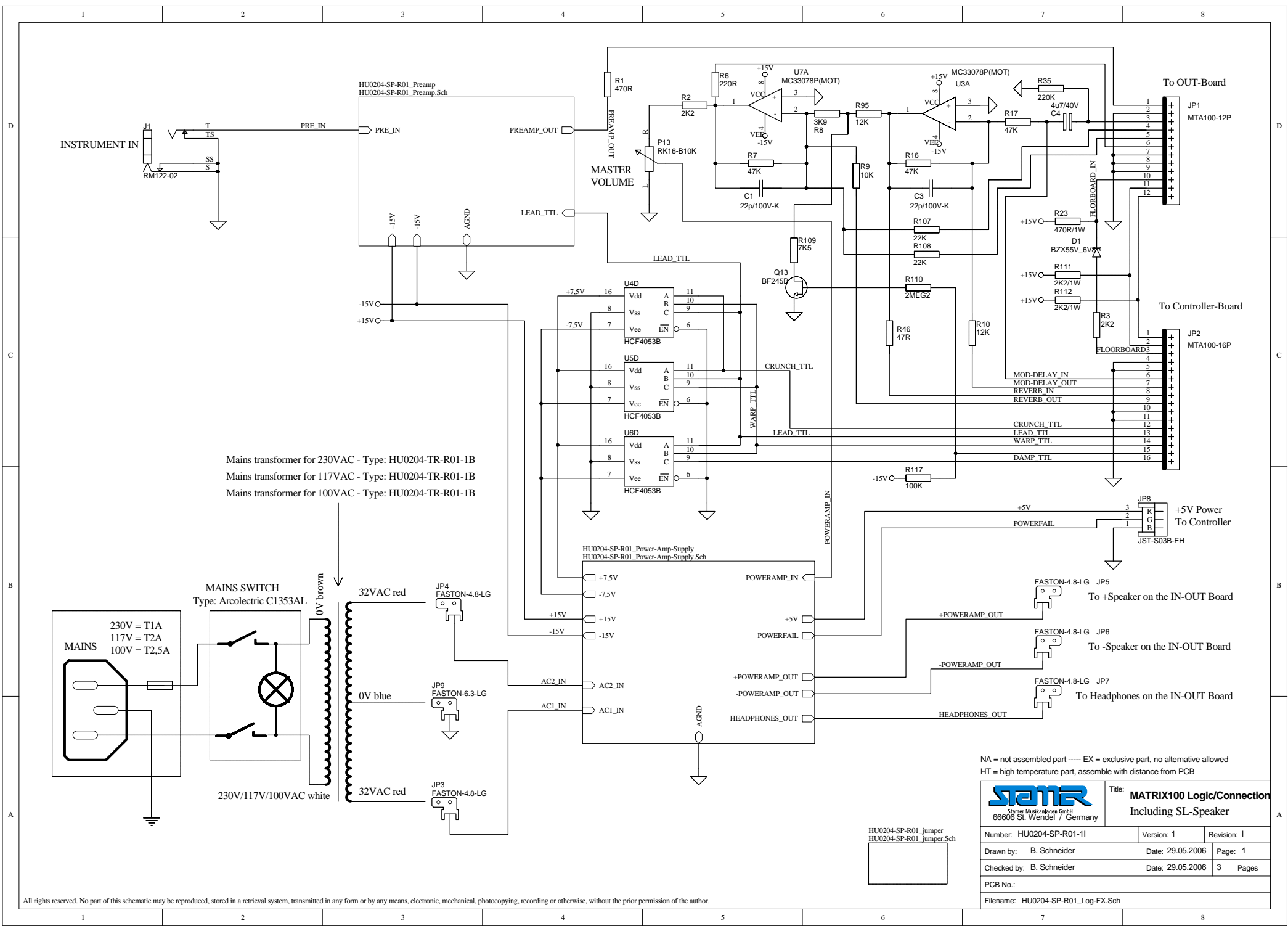
Article No. 1 (230V)	Article No. 2 (117V)	Article No. 3 (100V)	Description	Bezeichnung	Quantity
959040			complete cabinet Matrix 100	Vormont. Matrix Combo	1
959041			footswitch FS4 Matrix 100 complete in small brown carton	Footswitch FS4 Matrix 100 komplett im Karton	1
959044	959043	959042	chassis Matrix 100 Combo	Chassis Matrix 100 Combo	1
976073			strap handle 'Hughes & Kettner'	Bandgriff 'Hughes & Kettner'	1
994170			Celestion G12T-100 Matrix 100	Celestion G12T-100 Matrix 100	1

HU0204-LP-R04-1B-MATRIXSTAGEBOARD

Article No. 1 (230V)	Article No. 2 (117V)	Article No. 3 (100V)	Description	Bezeichnung	Quantity
950072			Push Button Matrix Stageboard FS4	Drucktaster Matrix Stageboard FS4	4


HU0204-SCREWSET ITEM-NR.:974531

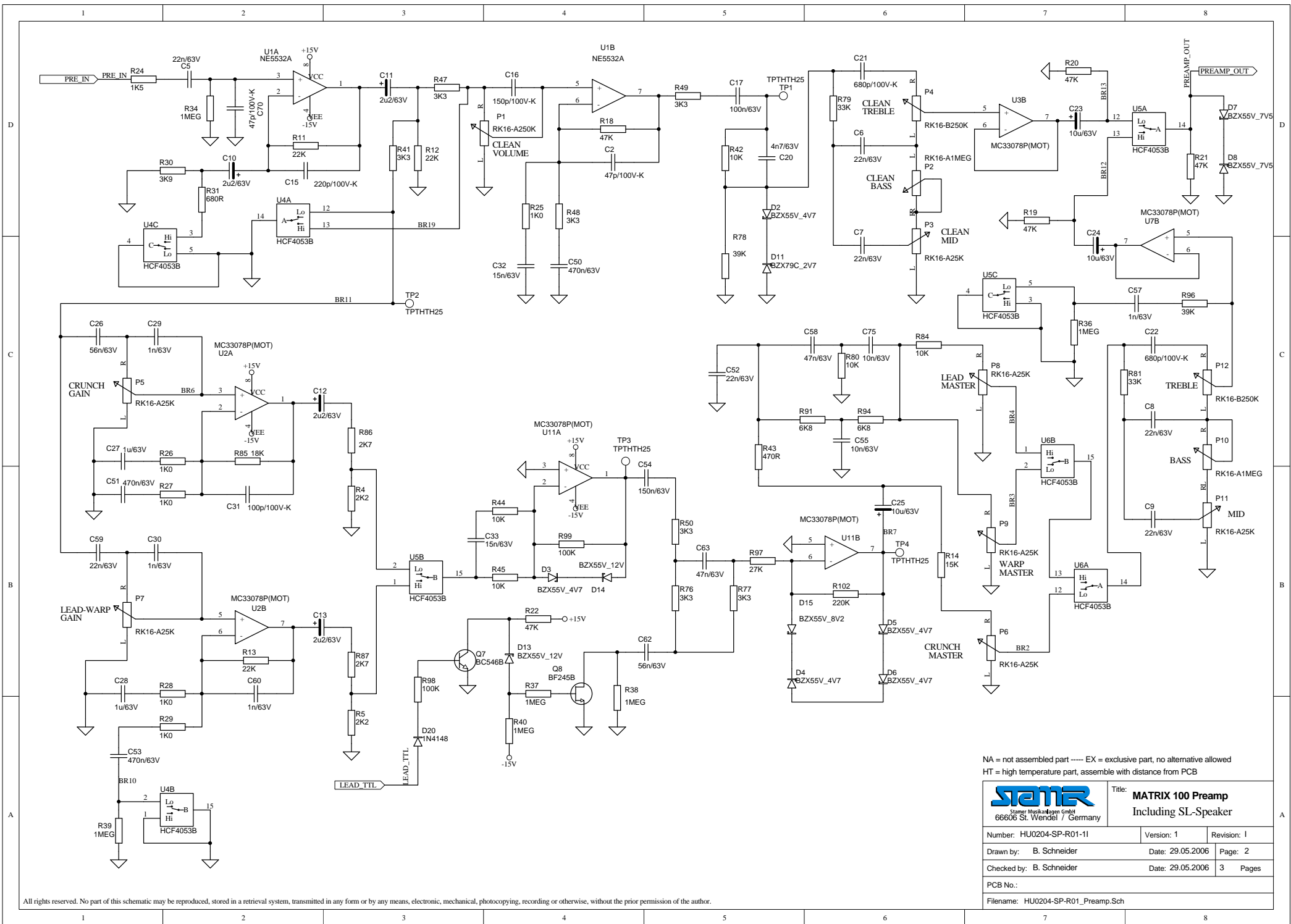
Article No. 1 (230V)	Article No. 2 (117V)	Article No. 3 (100V)	Description	Bezeichnung	Quantity
974531			sheet metal nut, D=3.9mm, zinc plated	Blechmutter 3,9mm vz	14
974531			hexagon PCB spacer, M3x13, brass	Dist. Bol 2xInnengew. M3*12 ms	7
974531			pronged T-nut, M6x9, zinc plated	Einschlagmutter Stahl M6x9mm	4
974531			toothed lock washer, D=3,2, AZ, zinc plated	Fächer-Scheibe az, 3,2 vz	18
974531			spring lock washer, M3	Federring M3 galv. verzinkt	5
974531			hexagon socket head cap screw, M6x25, black	Inbusschraube M6*25 sw	4
974531			Insulation Sleeve IB6	Isoierbuchse IB6	3
974531			cross recessed panhead screw, M3x10, zinc plated	Linsenschraube M3 x 10 vz	13
974531			cross recessed panhead screw, M3x6, zinc plated	Linsenschraube M3 x 6 vz	3
974531			cross recessed panhead screw, M3x8, black	Linsenschraube M3 x 8 sw	3
974531			cross recessed panhead screw, M3x8, zinc plated	Linsenschraube M3 x 8 vz	9
974531			cross recessed panhead screw, M5x12, brass	Linsenschraube M5 x 12 ms	1
974531			arch gasket M5	Rosette Polyamid M5	8
974531			flat head screw A4x12	Rückwandschraube A4x12	20
974531			flat head screw A4x20	Rückwandschraube A4x20	4
974531			flat head screw A5x12	Rückwandschraube A5x12	4
974531			flat head screw A5x30	Rückwandschraube A5x30	14
974531			hexagon nut, class 8, M3, zinc plated	Sechskantmutter M3 vz	15
974531			hexagon nut, class 8, M5, brass	Sechskantmutter M5 ms	2
974531			sink head screw A4,5x37	Senkkopfschraube A4,5x37	6
974531			sink head screw A5x35	Senkkopfschraube A5x35	8
974531			sink head screw A5x40	Senkkopfschraube A5x40	2
974531			cross recessed countersunk screw, M3x10, black	Senkschrauben M3*10 sw	2
974531			washer, form A, D=3.2mm, zinc plated	Unterleg-Scheibe 3,2 vz	10
974531			washer, form A, D=5.3mm, brass	Unterleg-Scheibe 5,3 ms	1




Mains transformer for 230VAC - Type: HU0204-TR-R01-1B
 Mains transformer for 117VAC - Type: HU0204-TR-R01-1B
 Mains transformer for 100VAC - Type: HU0204-TR-R01-1B

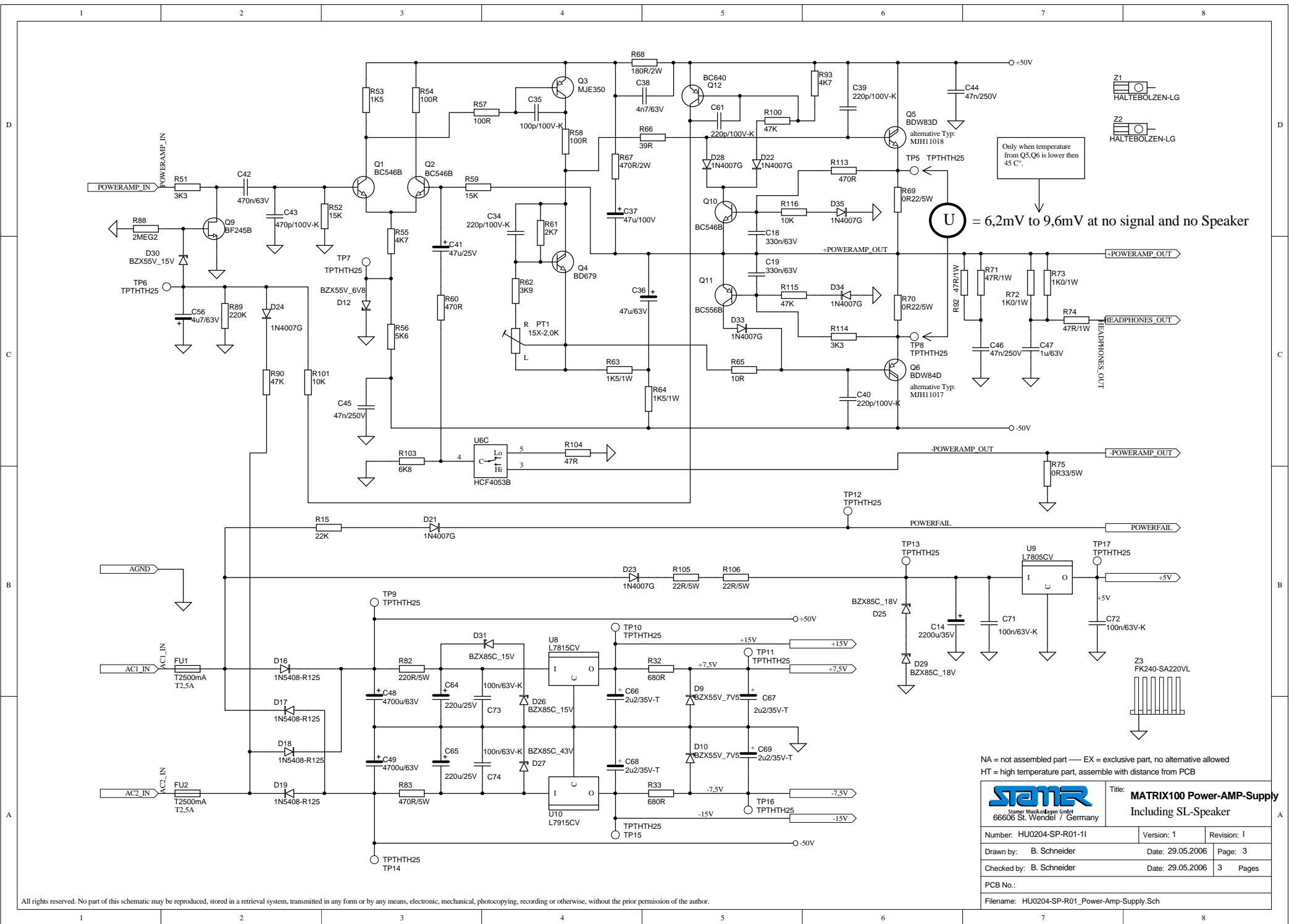
NA = not assembled part ---- EX = exclusive part, no alternative allowed
 HT = high temperature part, assemble with distance from PCB

		Title: MATRIX100 Logic/Connection Including SL-Speaker	
		Number: HU0204-SP-R01-1I	Version: 1
Drawn by: B. Schneider		Date: 29.05.2006	
Checked by: B. Schneider		Date: 29.05.2006	
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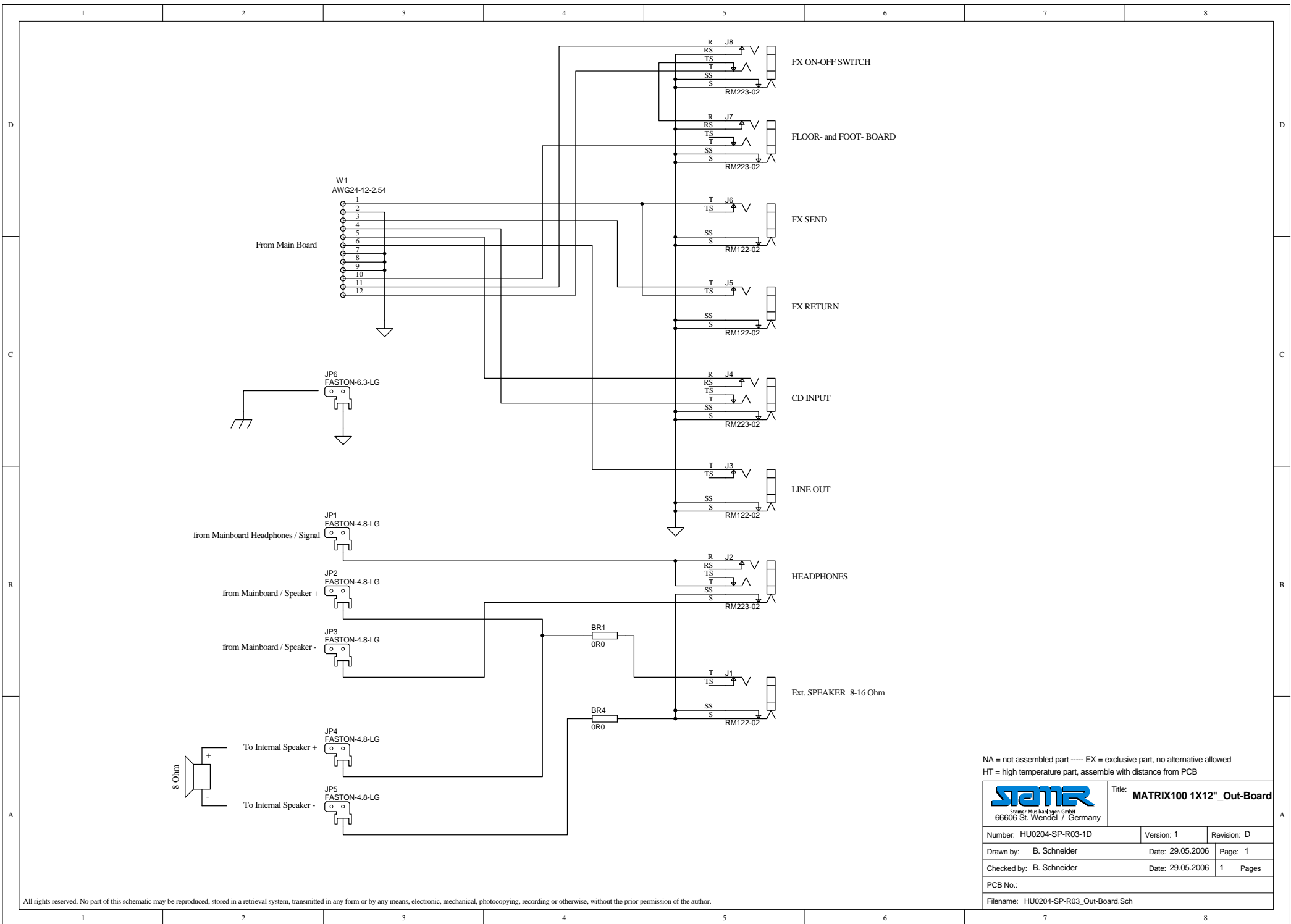
NA = not assembled part --- EX = exclusive part, no alternative allowed
 HT = high temperature part, assemble with distance from PCB

		Title: MATRIX 100 Preamp Including SL-Speaker	
		Number: HU0204-SP-R01-11	Version: 1
Drawn by: B. Schneider		Date: 29.05.2006	
Checked by: B. Schneider		Date: 29.05.2006	
PCB No.:		3 Pages	
Filename: HU0204-SP-R01_Preampl.Sch			




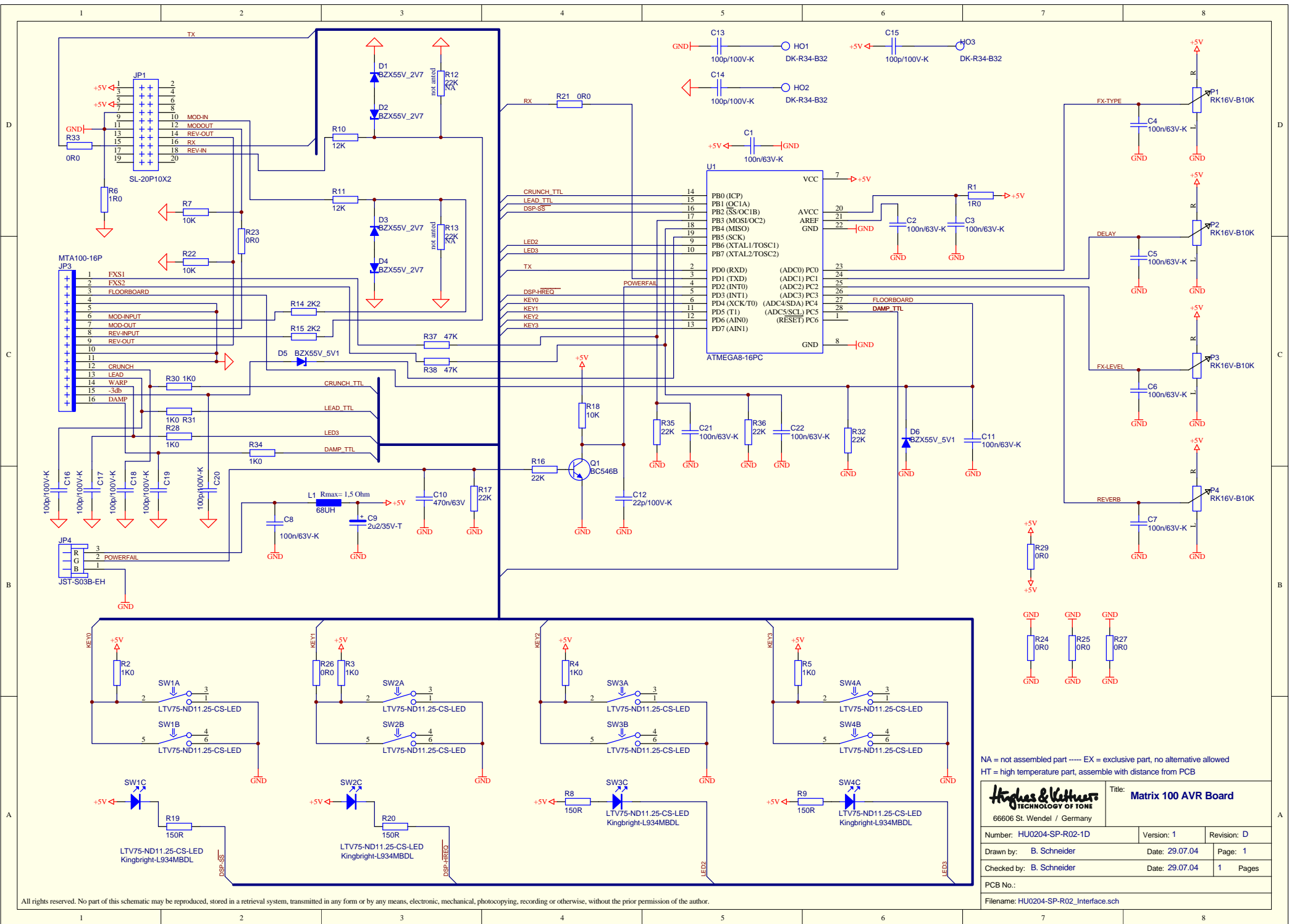
NA = not assembled part ----- EX = exclusive part, no alternative allowed
 HT = high temperature part, assemble with distance from PCB

		Title: MATRIX100 Power-AMP-Supply Including SL-Speaker	
Number: HU0204-SP-R01-1I	Version: 1	Revision: I	
Drawn by: B. Schneider	Date: 29.05.2006	Page: 3	
Checked by: B. Schneider	Date: 29.05.2006	3 Pages	
PCB No.:			
Filename: HU0204-SP-R01_Power-Amp-Supply.Sch			



NA = not assembled part ---- EX = exclusive part, no alternative allowed
 HT = high temperature part, assemble with distance from PCB

 Stamer Musikanlagen GmbH 66606 St. Wendel / Germany		Title: MATRIX100 1X12" _Out-Board	
		Number: HU0204-SP-R03-1D	Version: 1
Drawn by: B. Schneider	Date: 29.05.2006	Page: 1	
Checked by: B. Schneider	Date: 29.05.2006	1 Pages	
PCB No.:			
Filename: HU0204-SP-R03_Out-Board.Sch			

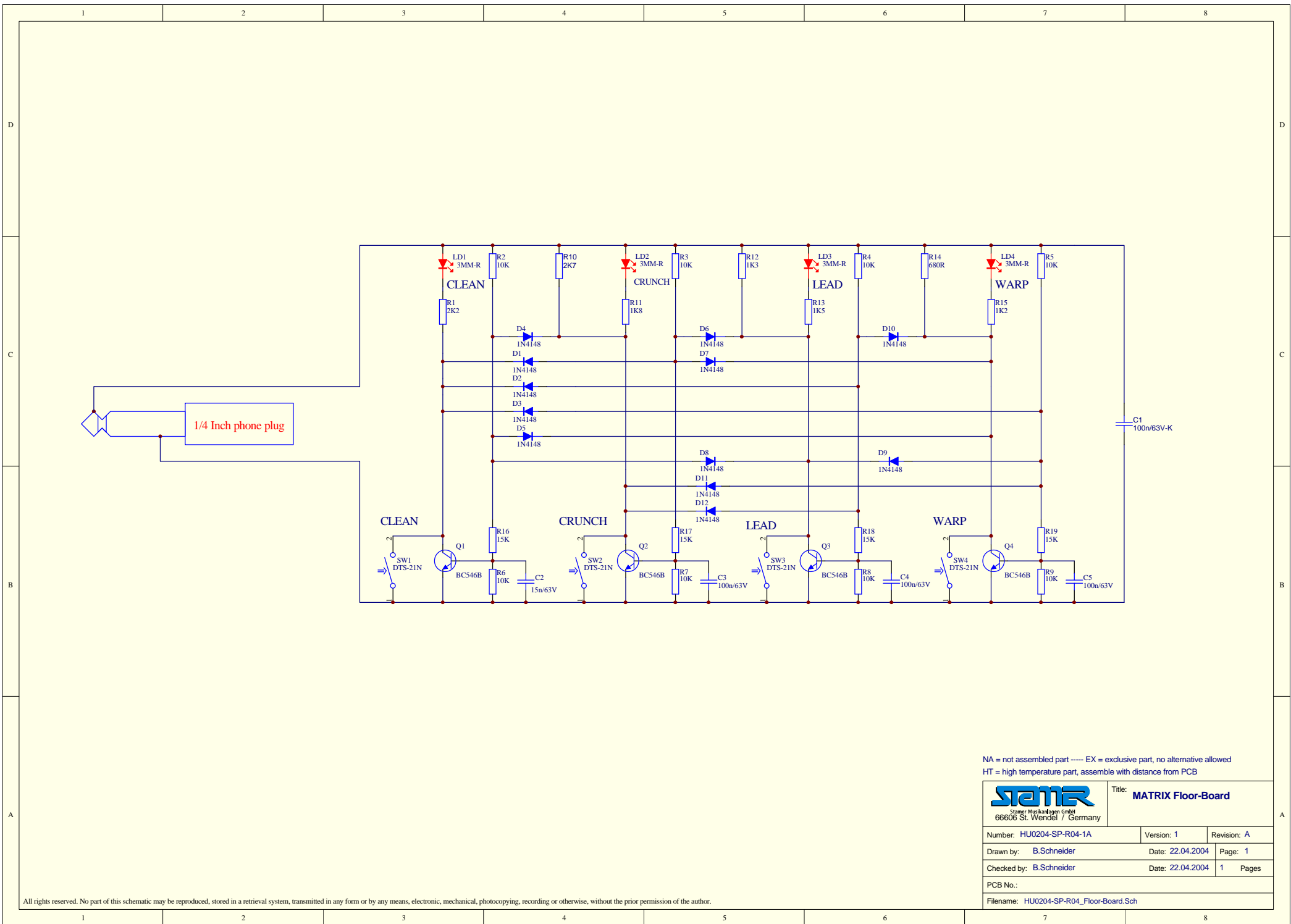


NA = not assembled part --- EX = exclusive part, no alternative allowed
 HT = high temperature part, assemble with distance from PCB


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Matrix 100 AVR Board

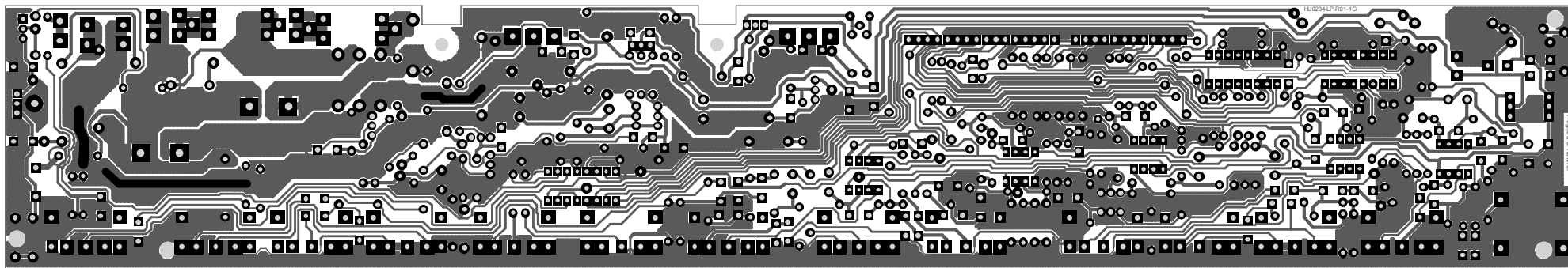
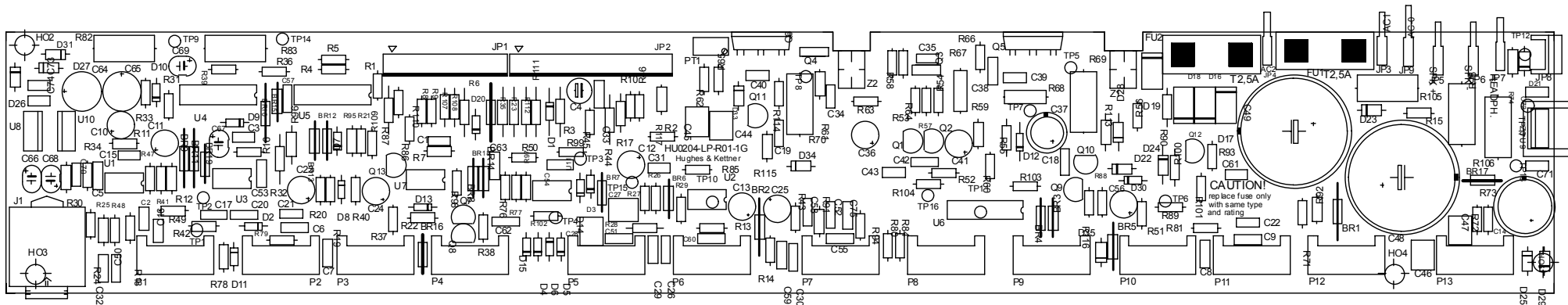
66606 St. Wendel / Germany		Revision: D	
Number: HU0204-SP-R02-1D	Version: 1	Page: 1	
Drawn by: B. Schneider	Date: 29.07.04	1 Pages	
Checked by: B. Schneider	Date: 29.07.04	PCB No.:	
Filename: HU0204-SP-R02_Interface.sch			

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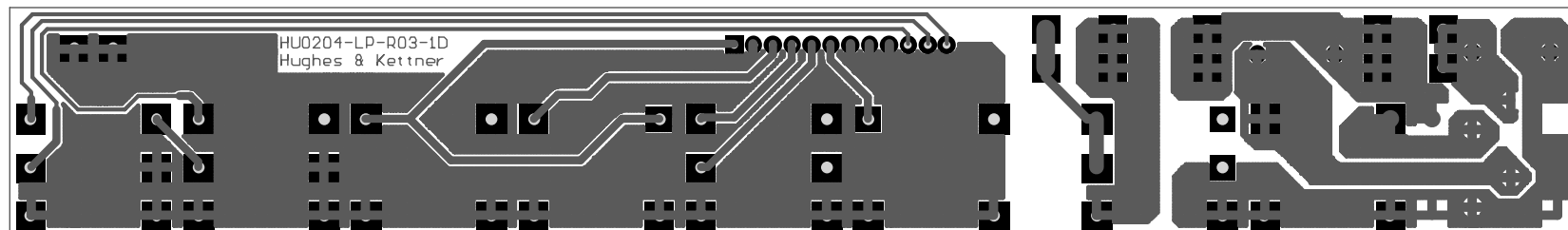
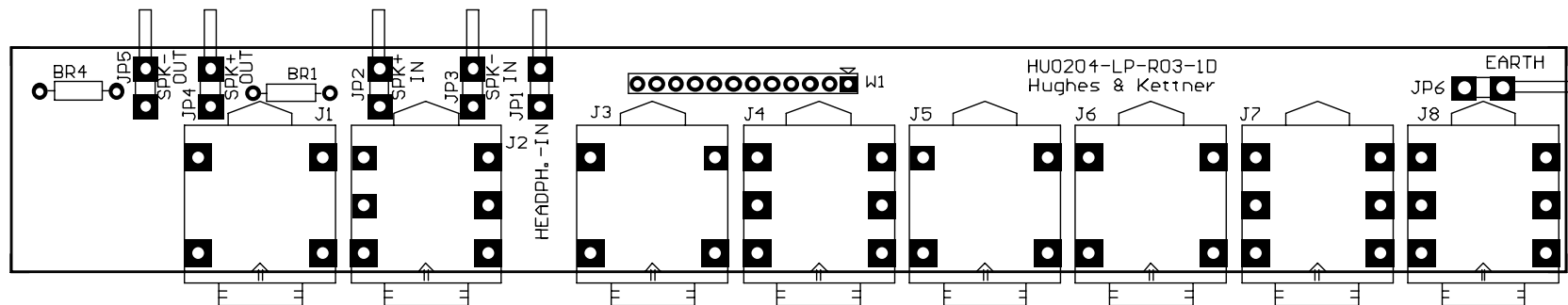
NA = not assembled part ---- EX = exclusive part, no alternative allowed
 HT = high temperature part, assemble with distance from PCB

 Stamer Musikinstrumente GmbH 66606 St. Wendel / Germany		Title: MATRIX Floor-Board	
		Number: HU0204-SP-R04-1A	Version: 1
Drawn by: B.Schneider	Date: 22.04.2004	Page: 1	
Checked by: B.Schneider	Date: 22.04.2004	1	Pages
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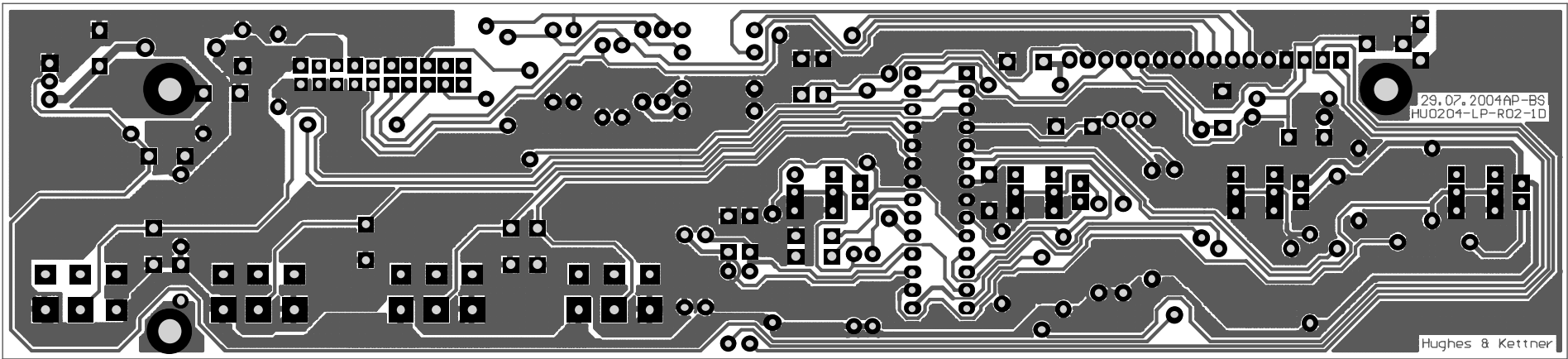
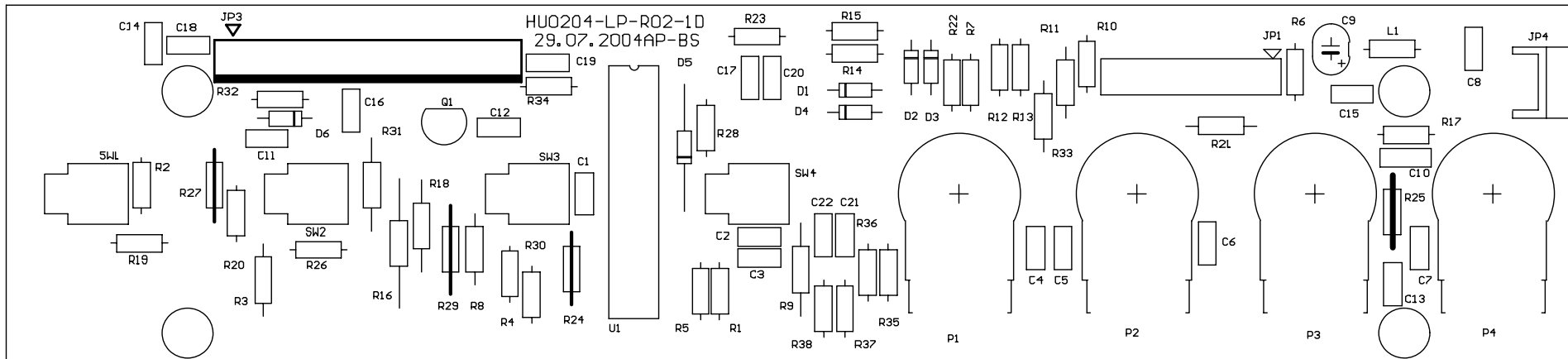
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		TITEL:	
66606 St. Wendel / Germany		HU0204 MATRIX 100 MAINBOARD	
ZEICHNUNGS-NR.	HU0204-LP-R01-1G	VERSION	1
ERSTELLT VON	UWE BARIS	AM	18.05.2006
GEPRÜFT / FREIGEgeben VON	AM	REVISION	G
WERKSTOFF:	OBERFLÄCHE:	BLATT:	1
DATEINAME:	HU0204-LP-R01-1G-LAYOUT-MAINBOARD		



INDEX	ÄNDERUNG	ZEICHNER

 66606 St. Wendel / Germany		TITEL:	
		HU0204 MATRIX 100 OUTPUTBOARD 1x12	
ZEICHNUNGS-NR.	HU0204-LP-R03-1D	VERSION	1
ERSTELLT VON	ubaris	AM	18.05.2006
GEPRÜFT/ FREIGEgeben VON		AM	1 BLATT
WERKSTOFF:	Fehler: Keine Referenz	OBERFLÄCHE:	OBERFLÄCHE
DATEINAME:	HU0204-LP-R03-1D-LAYOUT-112		



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		TITEL: HU0204 MATRIX 100 CONTROLLERBOARD	
66606 St. Wendel / Germany		ZEICHNUNGS-NR. HU0204-LP-R02-1D	VERSION 1
ERSTELLT VON ubaris		AM 18.05.2006	REVISION 0
GEPRÜFT/ FREIGEgeben VON		AM	BLATT 1
WERKSTOFF: Fehler: Keine Referenz		OBERFLÄCHE: OBERFLÄCHE	
DATEINAME: HU0204-LP-R02-1D-LAYOUT-CONTROLLER			