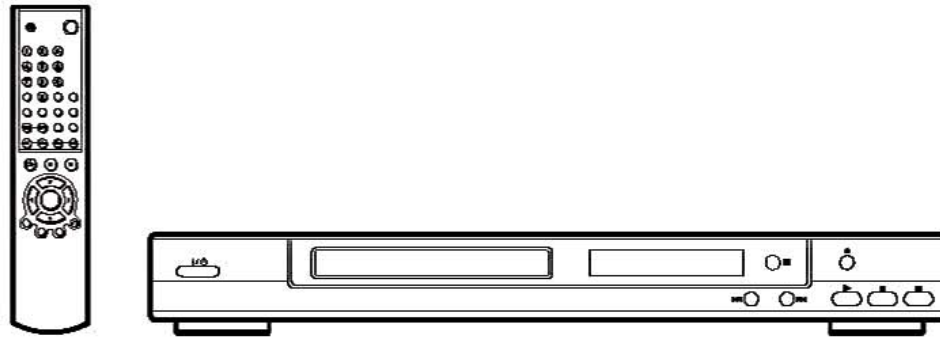


XD-AX10

RM-Z400A/Z400E

SERVICE MANUAL



*Canadian Model
AEP Model
UK Model
E Model
Singapore Model
Middle East Model
Australian Model
New Zealand Model
Hong Kong Model
Saudi Arabia Model
Russian Model*

SPECIFICATIONS

System

Laser: Semiconductor laser

Signal format system: NTSC/PAL

Audio characteristics

Frequency response: DVD VIDEO (PCM 96 kHz): 2 Hz to 44 kHz (± 1.0 dB)/DVD VIDEO (PCM 48 kHz): 2 Hz to 22 kHz (± 0.5 dB)/CD: 2 Hz to 20 kHz (± 0.5 dB)

Signal-to-noise ratio (S/N ratio): 115 dB (LINE OUT (L/R) AUDIO jacks only)

Harmonic distortion: 0.003 %

Dynamic range: DVD VIDEO: 103 dB/CD: 99 dB

Wow and flutter: Less than detected value ($\pm 0.001\%$ W PEAK)

The signals from LINE OUT L/R (AUDIO) jacks are measured. When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (COAXIAL) jack are converted to 48 kHz sampling frequency.

Outputs/Inputs

(Jack name: Jack type/Output or Input level/ Load impedance)

LINE OUT (AUDIO): Phono jack/2 V_{rms}/10 kilohms

DIGITAL OUT (COAXIAL): Phono jack/0.5 V_{p-p}/75 ohms

COMPONENT VIDEO OUT

(Y, P_B, P_R): Phono jack/Y: 1.0 V_{p-p}/P_B, P_R: 0.65 V_{p-p}/75 ohms

(Y, P_B/C_B, P_R/C_R): Phono jack/Y: 1.0 V_{p-p}/P_B/C_B, P_R/C_R: 0.7 V_{p-p}/75 ohms

LINE OUT (VIDEO): Phono jack/1.0 V_{p-p}/75 ohms

S VIDEO OUT: 4-pin mini DIN/Y: 1.0 V_{p-p}, C: 0.286 V_{p-p} (NTSC)/75 ohms
1.0 V_{p-p}, C: 0.3 V_{p-p} (PAL)/75 ohms

General

Power requirements:

120 V AC, 60 Hz

110 to 240 V AC, 50/60 Hz

220 to 240 V AC, 50/60 Hz

See page 1-1 for further information.

Power consumption: 13 W

Dimensions (approx.): 430 × 55.5 × 234 mm (17 × 2 3/16 × 9 1/4 in.) (width/height/depth) incl. projecting parts

Mass (approx.): 2.2 kg (4 lb 14 oz)

Operating temperature: 5 °C to 35 °C (41 °F to 95 °F)

Operating humidity: 25 % to 80 %

Supplied accessories

Check that you have the following items:

- Audio/video cord (pinplug × 3 ↔ pinplug × 3) (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)
- A plug adaptor is included with some models.

Specifications and design are subject to change without notice.

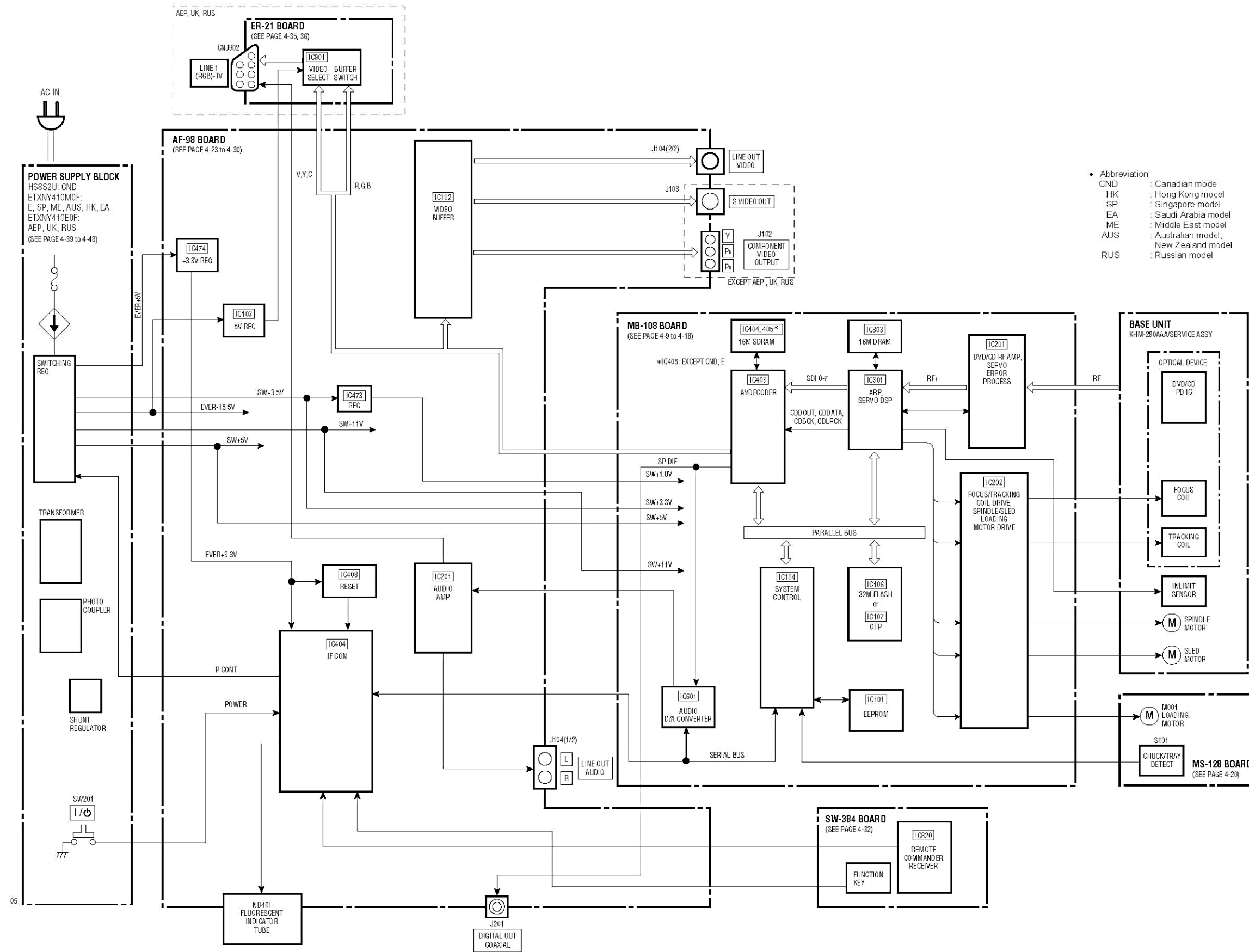


CD/DVD PLAYER



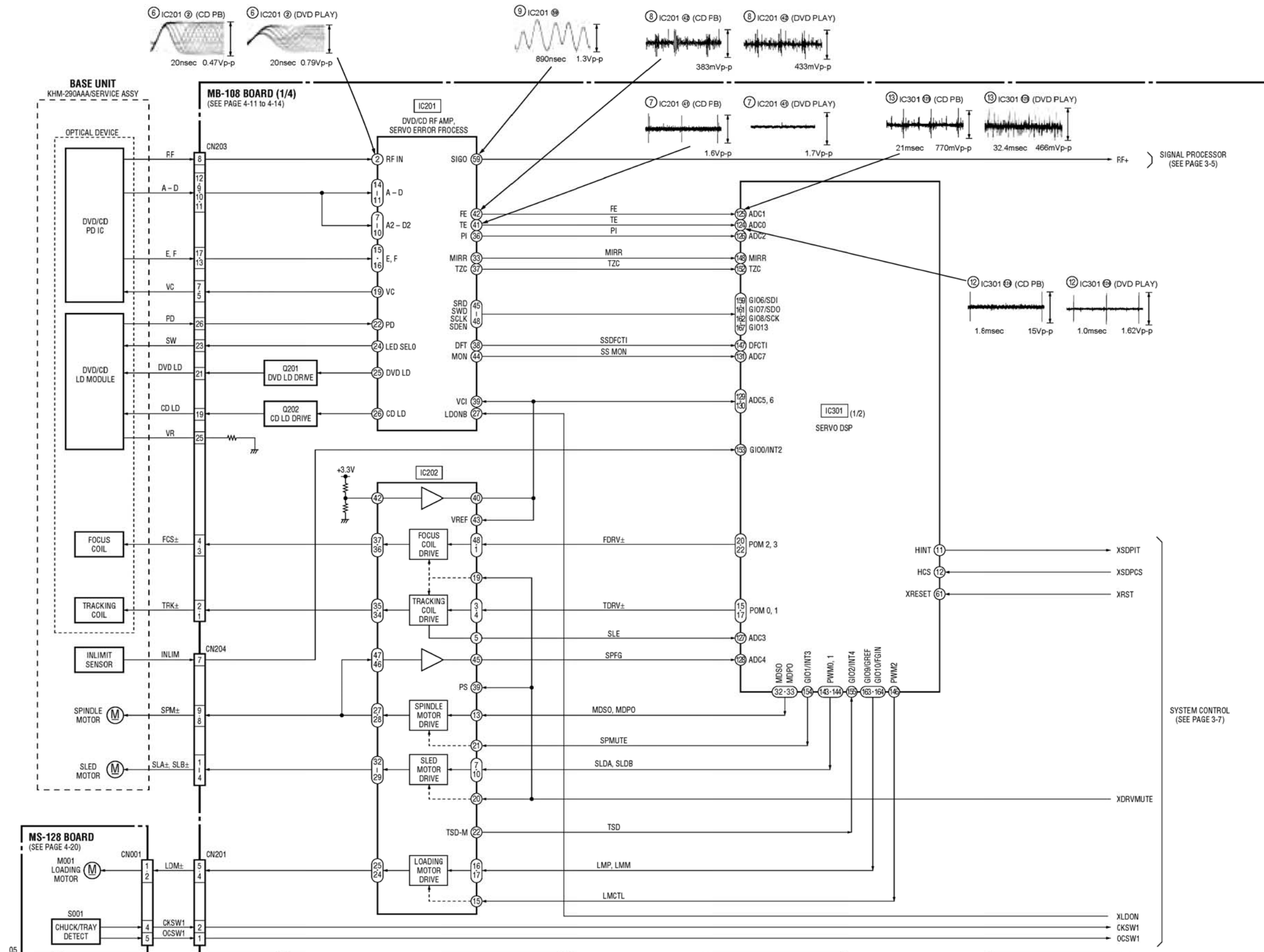
SECTION 3 BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

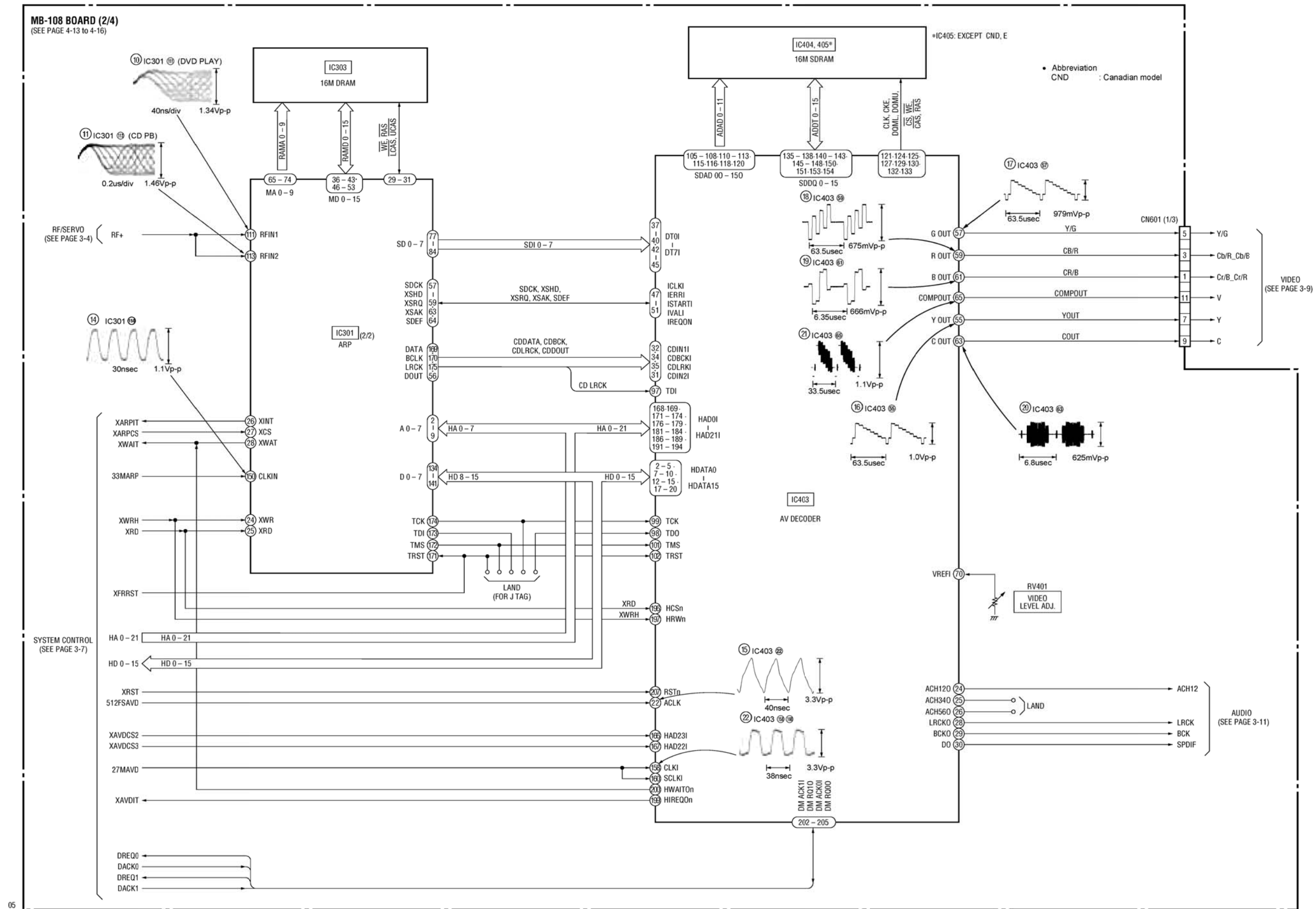


- Abbreviation
- CND : Canadian model
- HK : Hong Kong model
- SP : Singapore model
- EA : Saudi Arabia model
- ME : Middle East model
- AUS : Australian model, New Zealand model
- RUS : Russian model

3-2. RF/SERVO BLOCK DIAGRAM

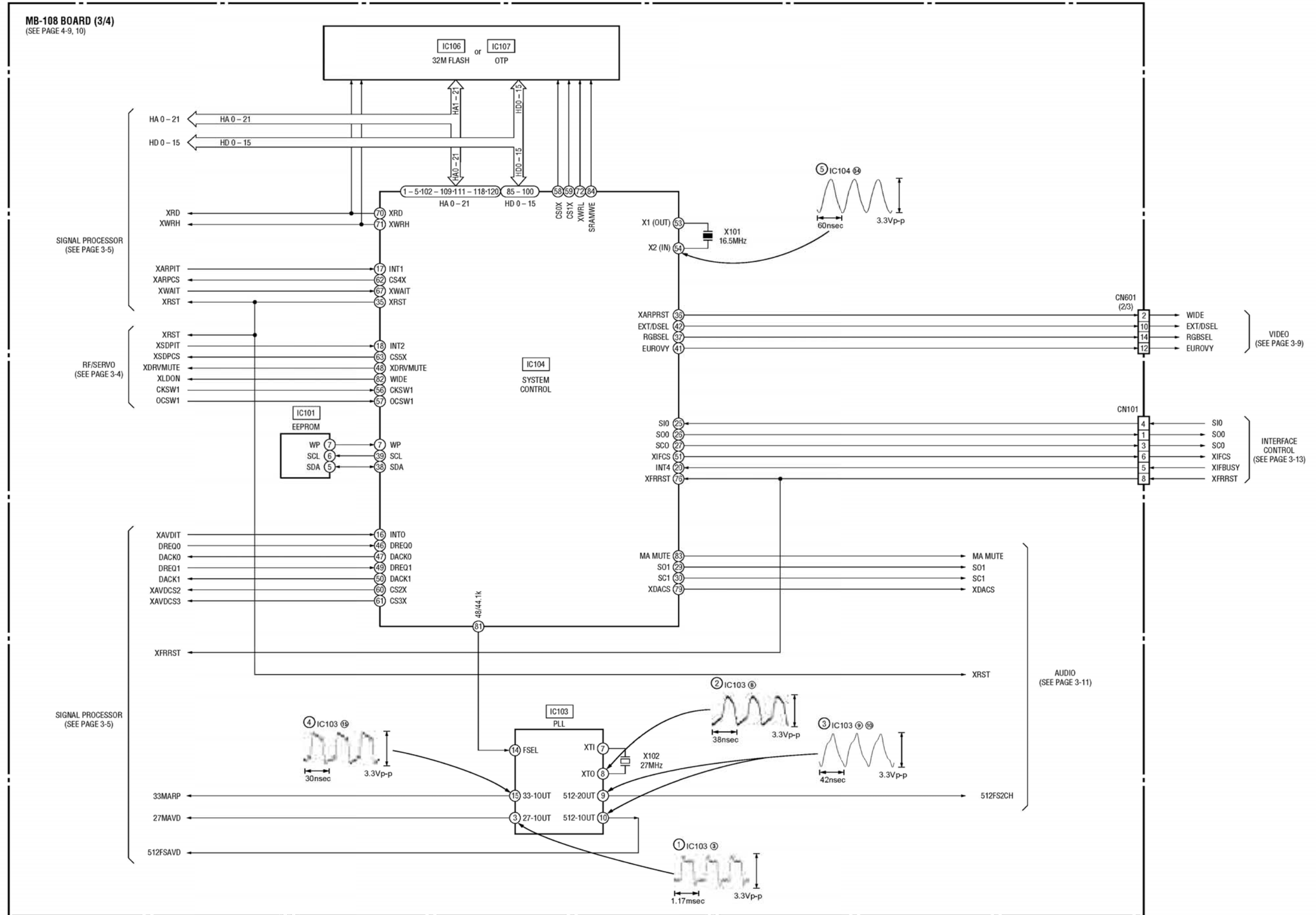


3-3. SIGNAL PROCESSOR BLOCK DIAGRAM



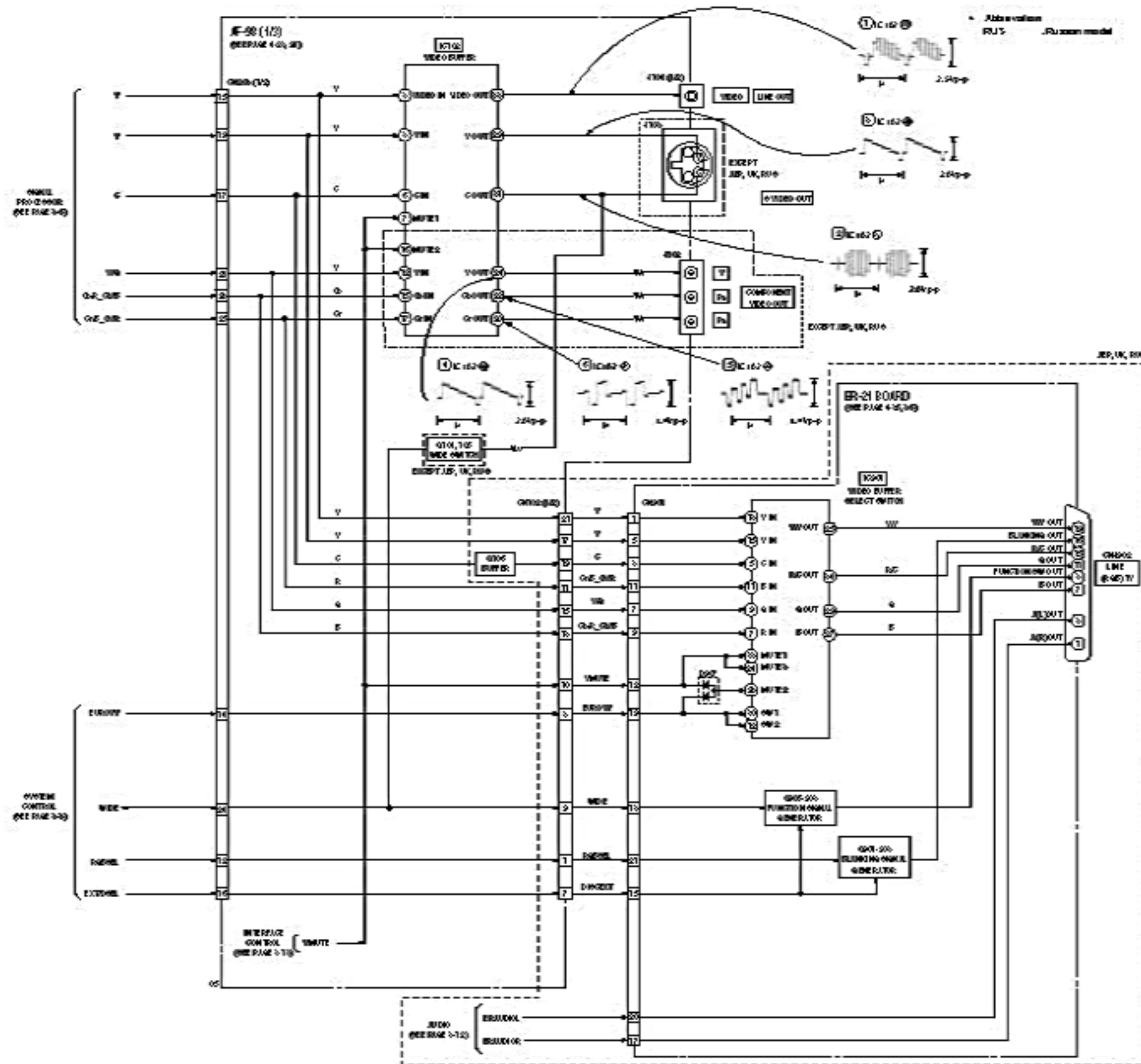
05

3-4. SYSTEM CONTROL BLOCK DIAGRAM

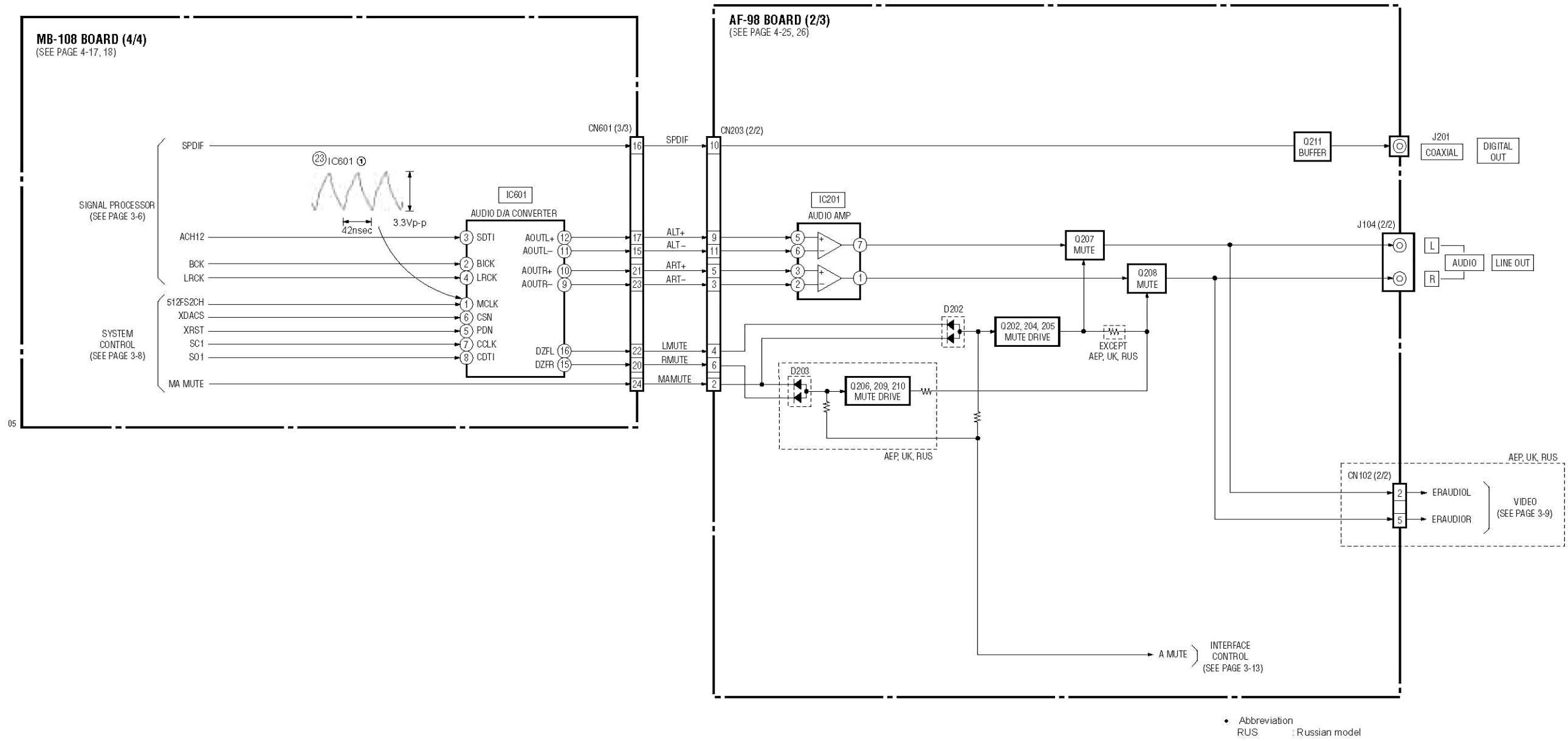


05

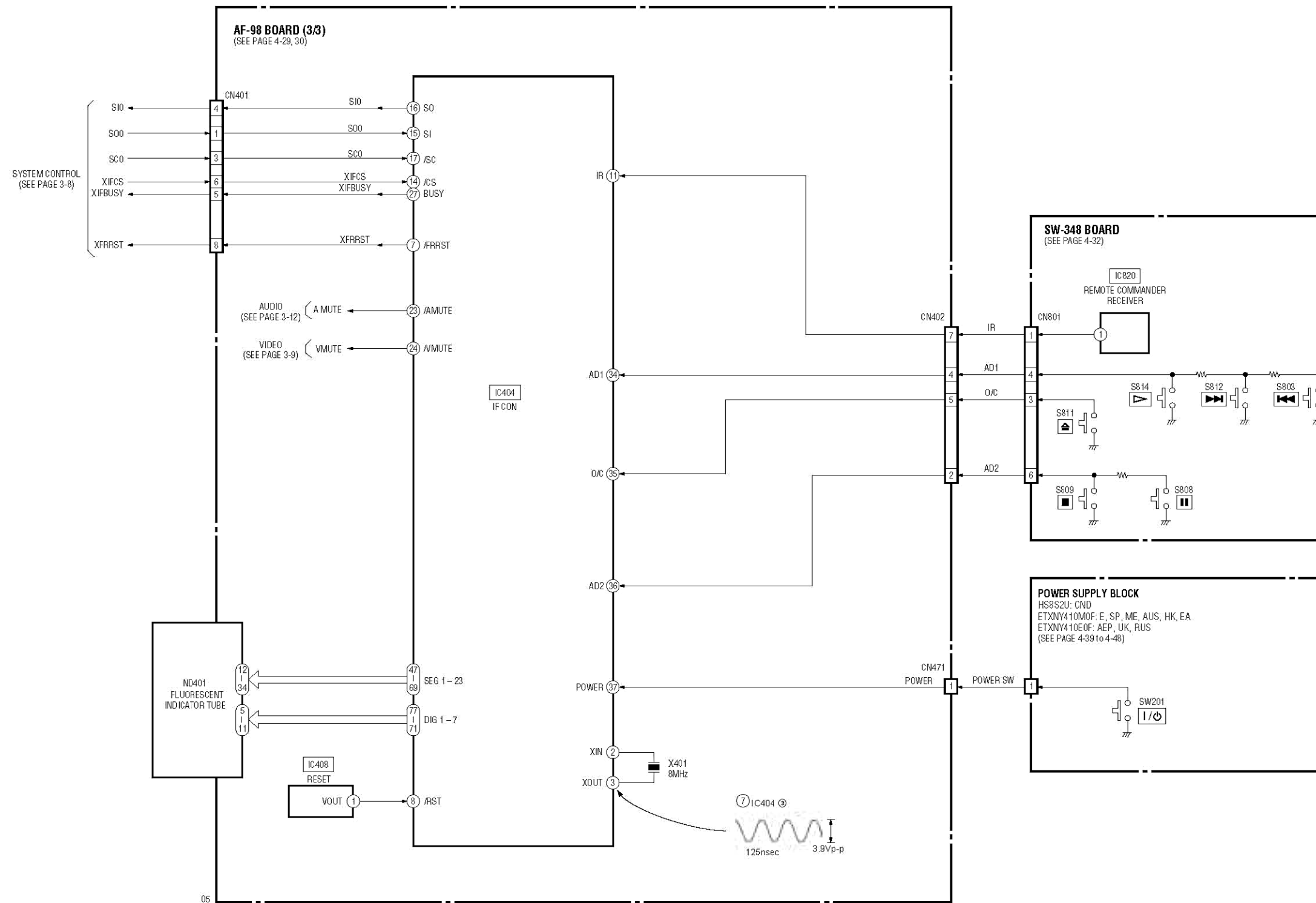
3-5. VIDEO BLOCK DIAGRAM



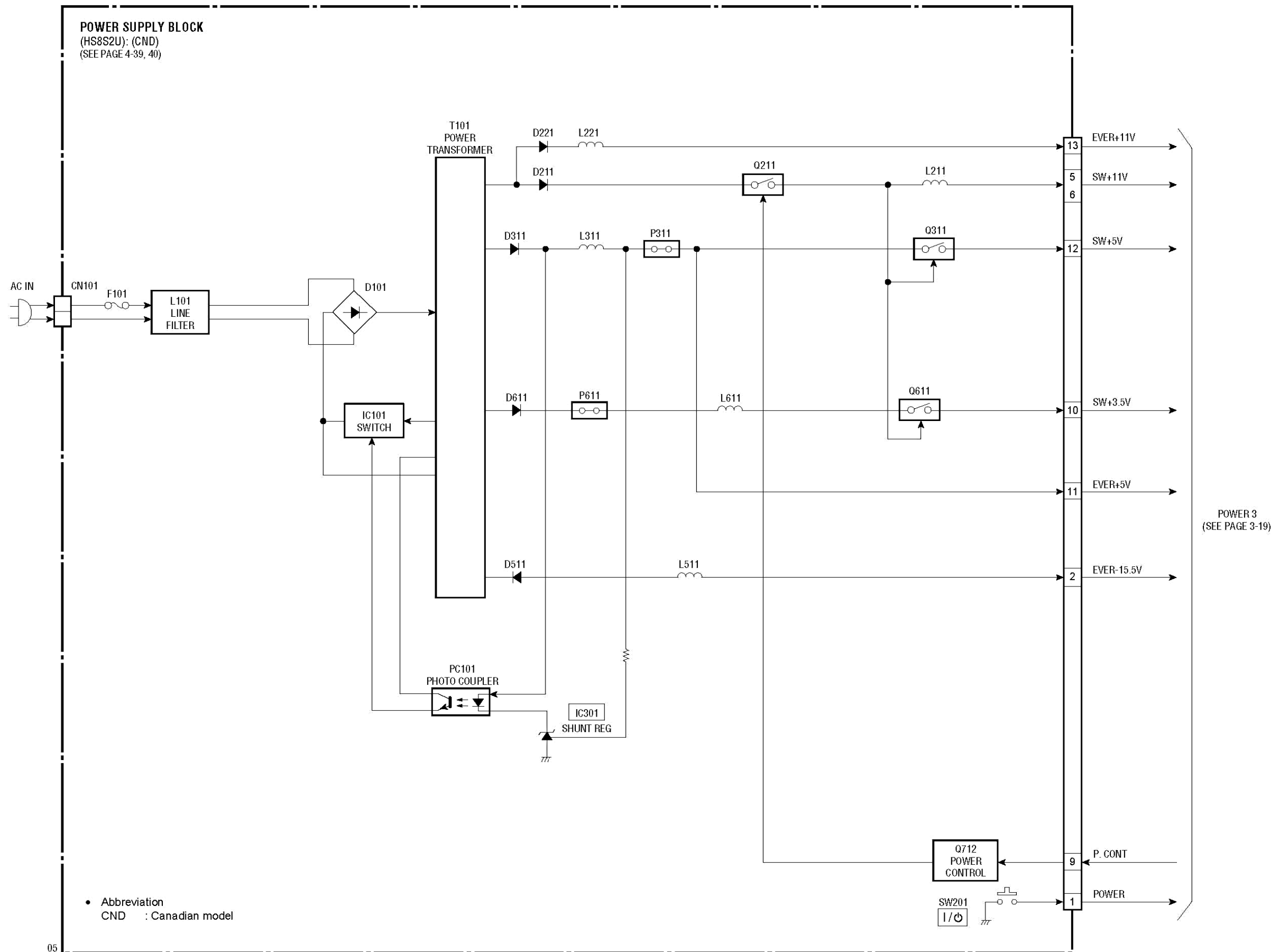
3-6. AUDIO BLOCK DIAGRAM



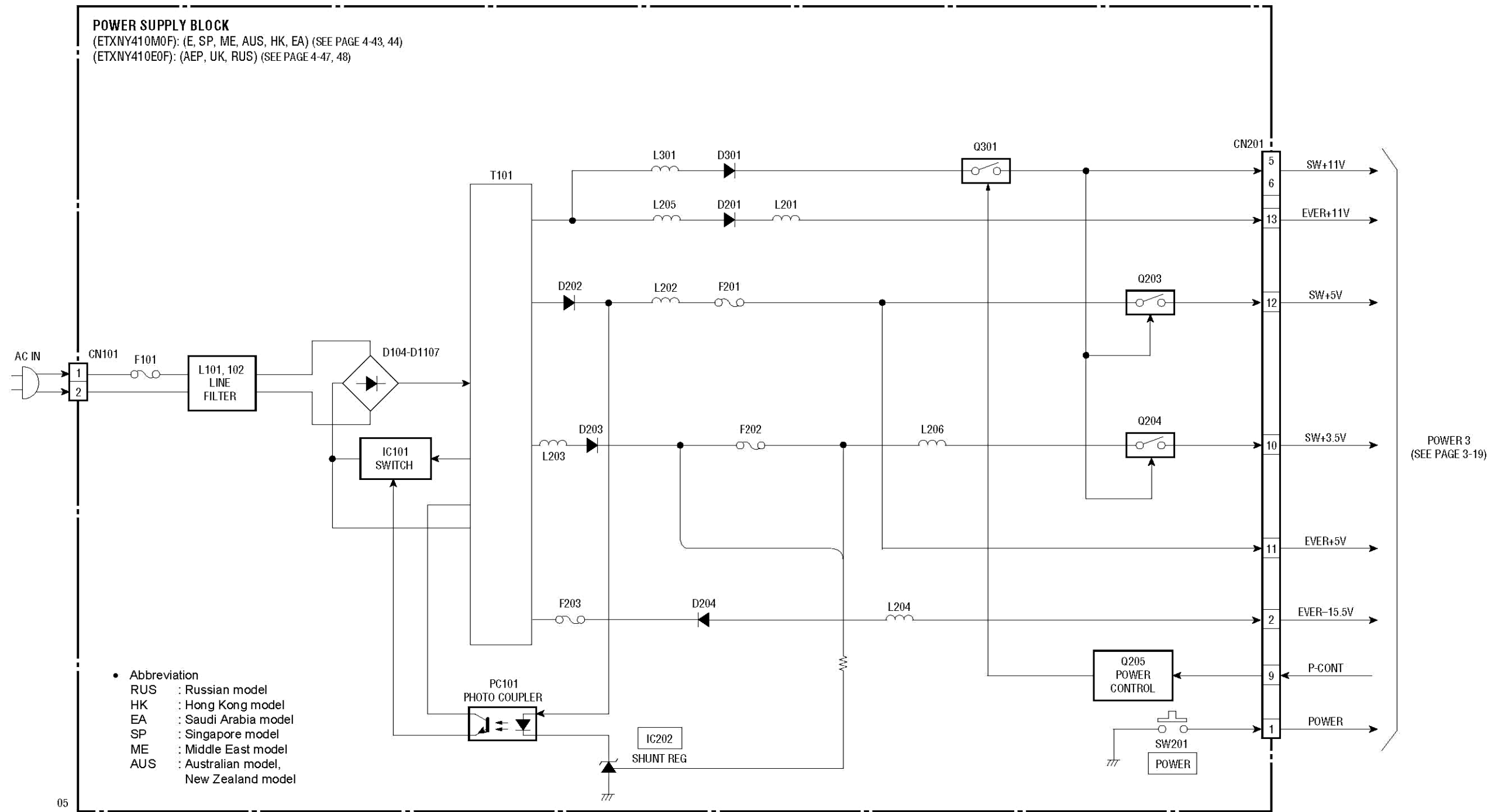
3-7. INTERFACE CONTROL BLOCK DIAGRAM



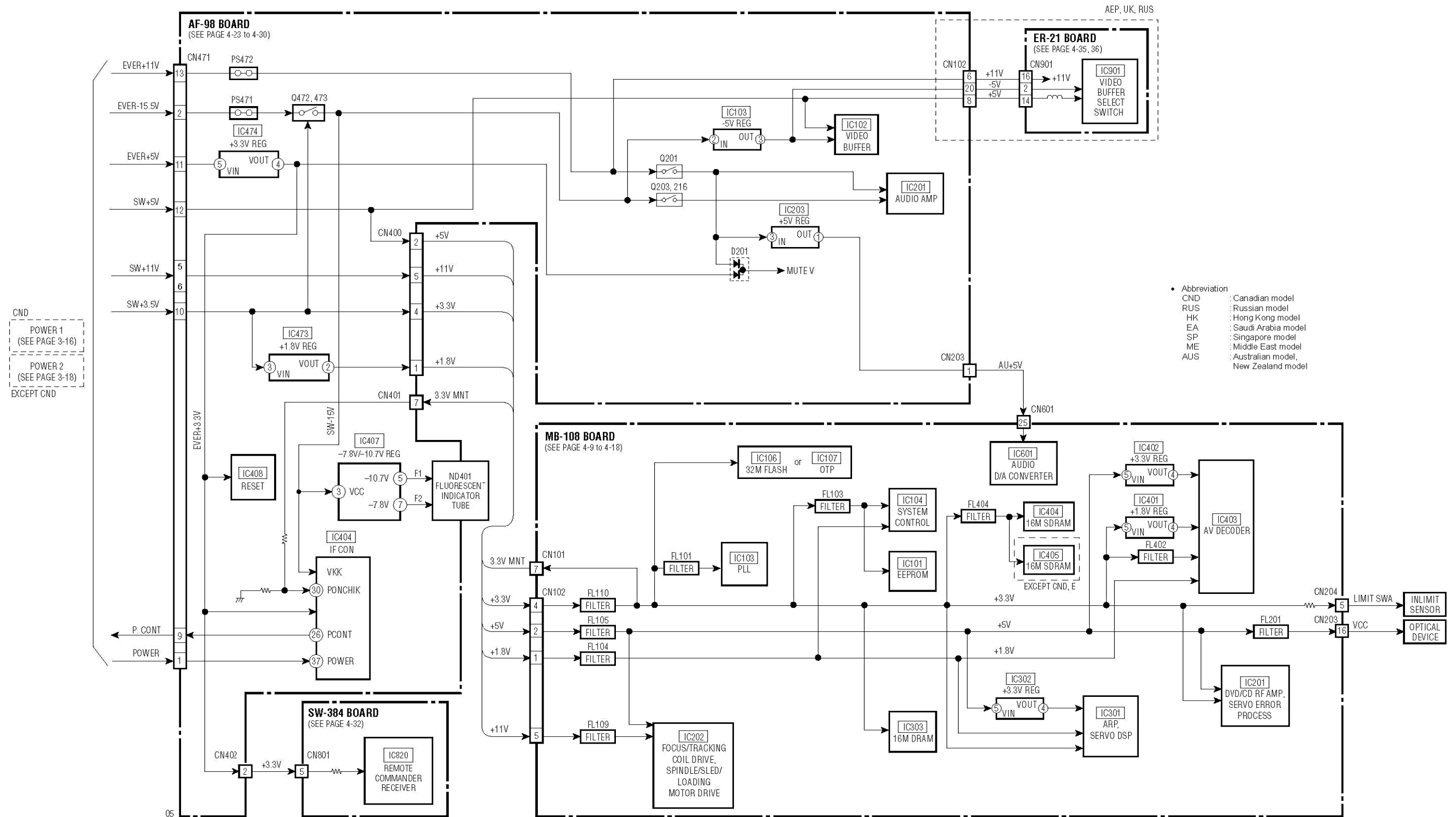
3-8. POWER 1 BLOCK DIAGRAM



3-9. POWER 2 BLOCK DIAGRAM







3-10. POWER 3 BLOCK DIAGRAM



SECTION 4 PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block)








For printed wiring boards:

-  : indicates a lead wire mounted on the component side.
-  : indicates a lead wire mounted on the printed side.
-  : Through hole.
-  : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)

Caution:

Pattern face side: (Side A)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side B)	Parts on the parts face side seen from the parts face are indicated.

For schematic diagram:

- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, $\frac{1}{4}$ W (Chip resistors : $\frac{1}{10}$ W) unless otherwise specified.
k Ω : 1000 Ω , M Ω : 1000k Ω .
- All capacitors are in μ F unless otherwise noted. pF : μ F
50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
-  : nonflammable resistor.
-  : fusible resistor.
-  : panel designation.
-  : internal component.
-  : adjustment for repair.
-  : B+ Line.
-  : B- Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10M Ω).
- Voltage variations may be noted due to normal production tolerances.

Note:

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

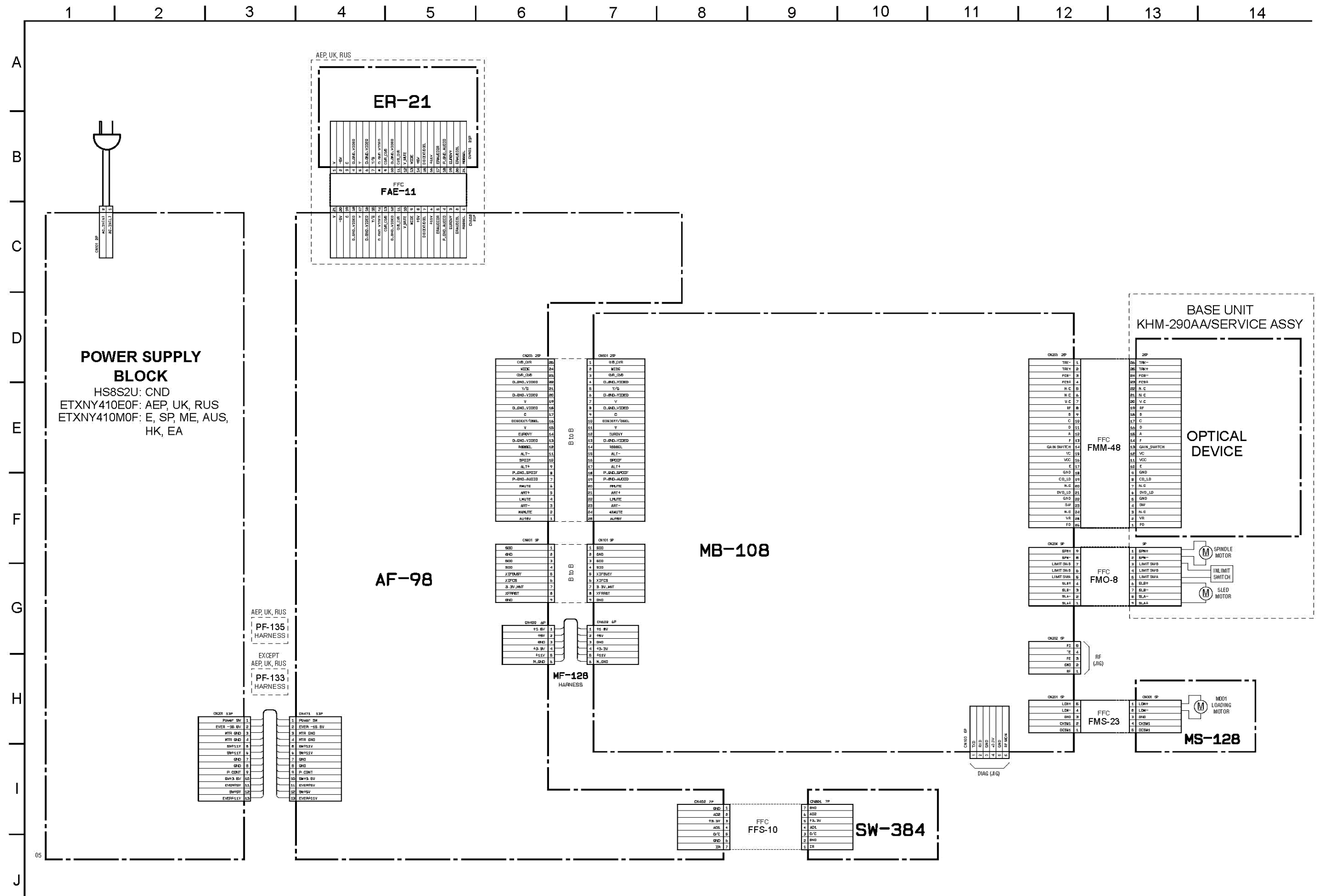
Note:

Les composants identifiés par une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

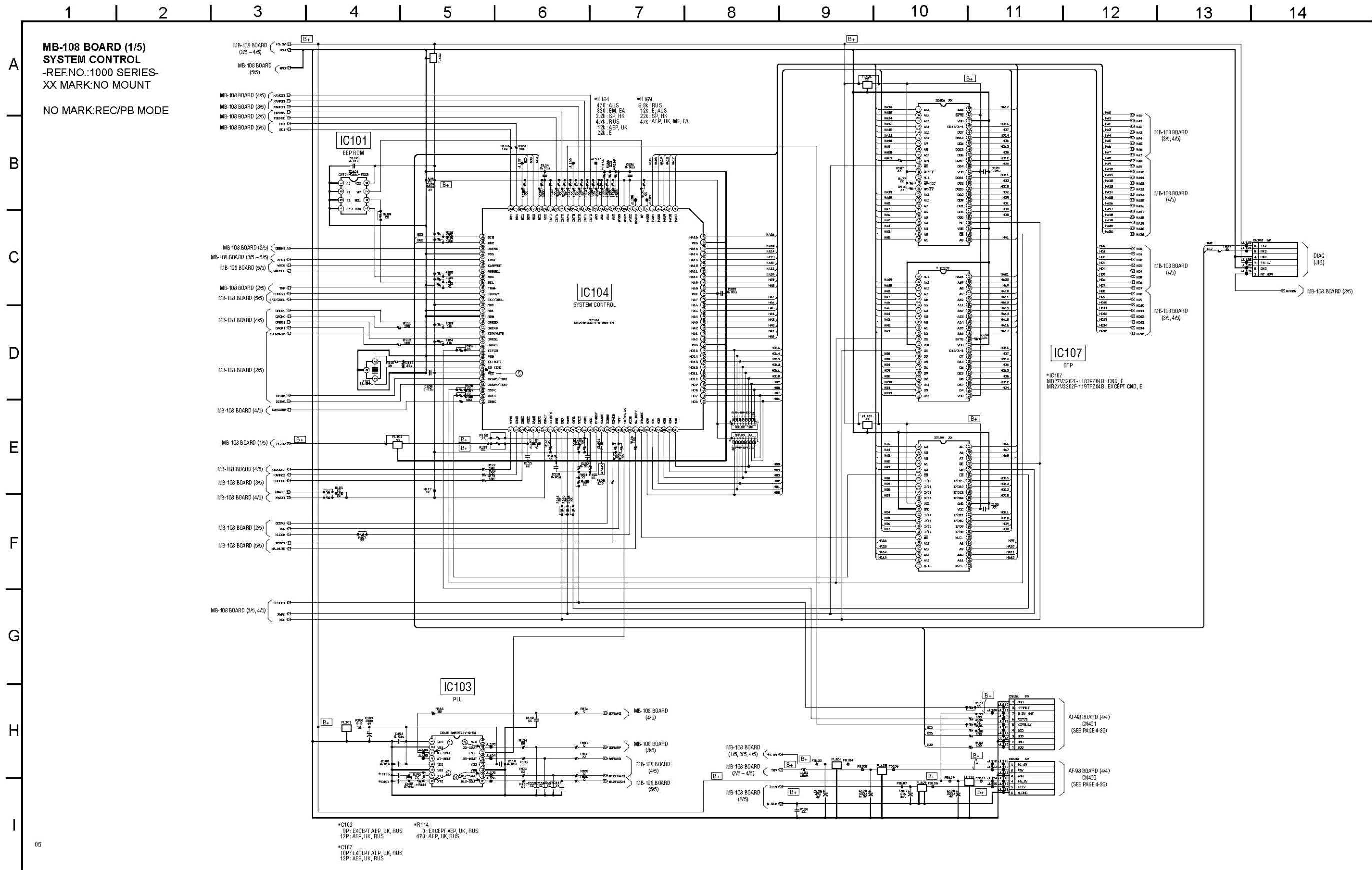
- Abbreviation
CND : Canadian model
HK : Hong Kong model
SP : Singapore model
EA : Saudi Arabia model
ME : Middle East model
AUS : Australian model,
New Zealand model
RUS : Russian model

4-1. FRAME SCHEMATIC DIAGRAM



MB-108 (SYSTEM CONTROL) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board, and see page 4-49 for waveforms.

- Ref. No.: MB-108 board; 1,000 series -



05

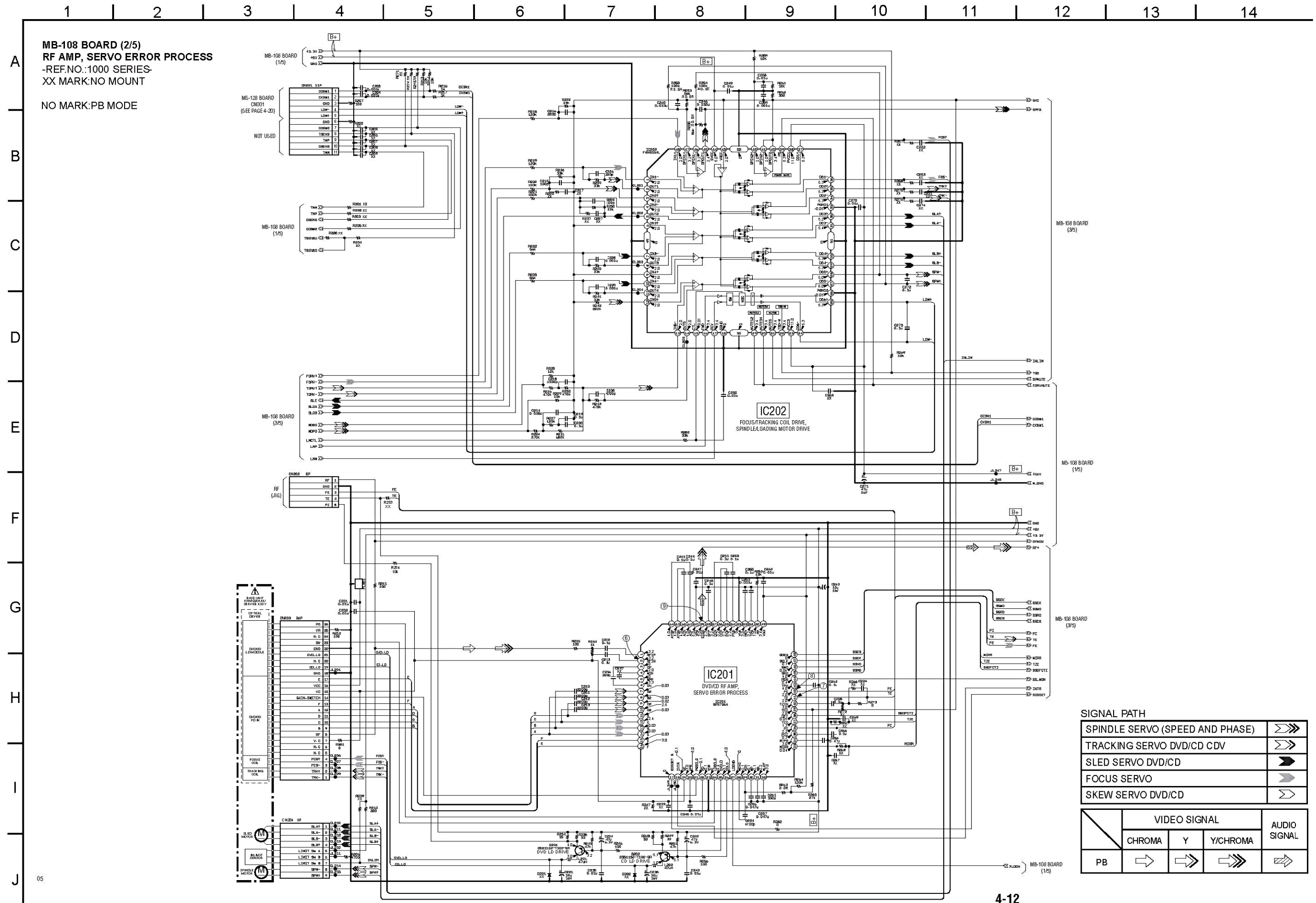
MB-108 (RF AMP, SERVO ERROR PROCESS) SCHEMATIC DIAGRAM

• See page 4-5 for printed wiring board, and see page 4-49 for waveforms.

– Ref. No.: MB-108 board; 1,000 series –

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



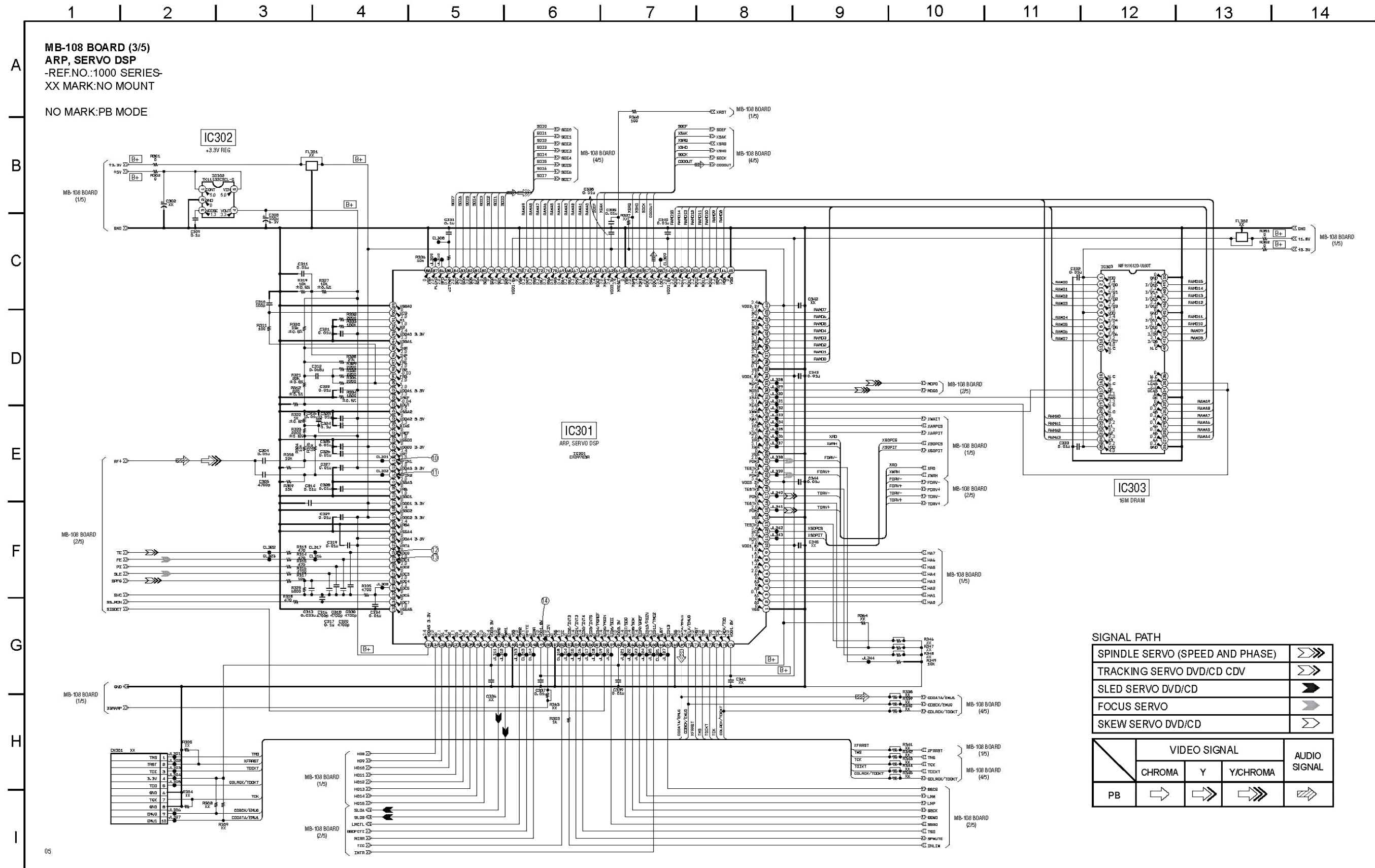
MB-108 BOARD (2/5)
RF AMP, SERVO ERROR PROCESS
 -REF.NO.:1000 SERIES-
 XX MARK:NO MOUNT
 NO MARK:PB MODE

SIGNAL PATH

SPINDLE SERVO (SPEED AND PHASE)	➤➤➤➤			
TRACKING SERVO DVD/CD CDV	➤➤➤➤			
SLED SERVO DVD/CD	➤➤➤➤			
FOCUS SERVO	➤➤➤➤			
SKREW SERVO DVD/CD	➤➤➤➤			
VIDEO SIGNAL	CHROMA	Y	Y/CHROMA	AUDIO SIGNAL
	➤➤➤➤	➤➤➤➤	➤➤➤➤	
PB	➤➤➤➤	➤➤➤➤	➤➤➤➤	➤➤➤➤

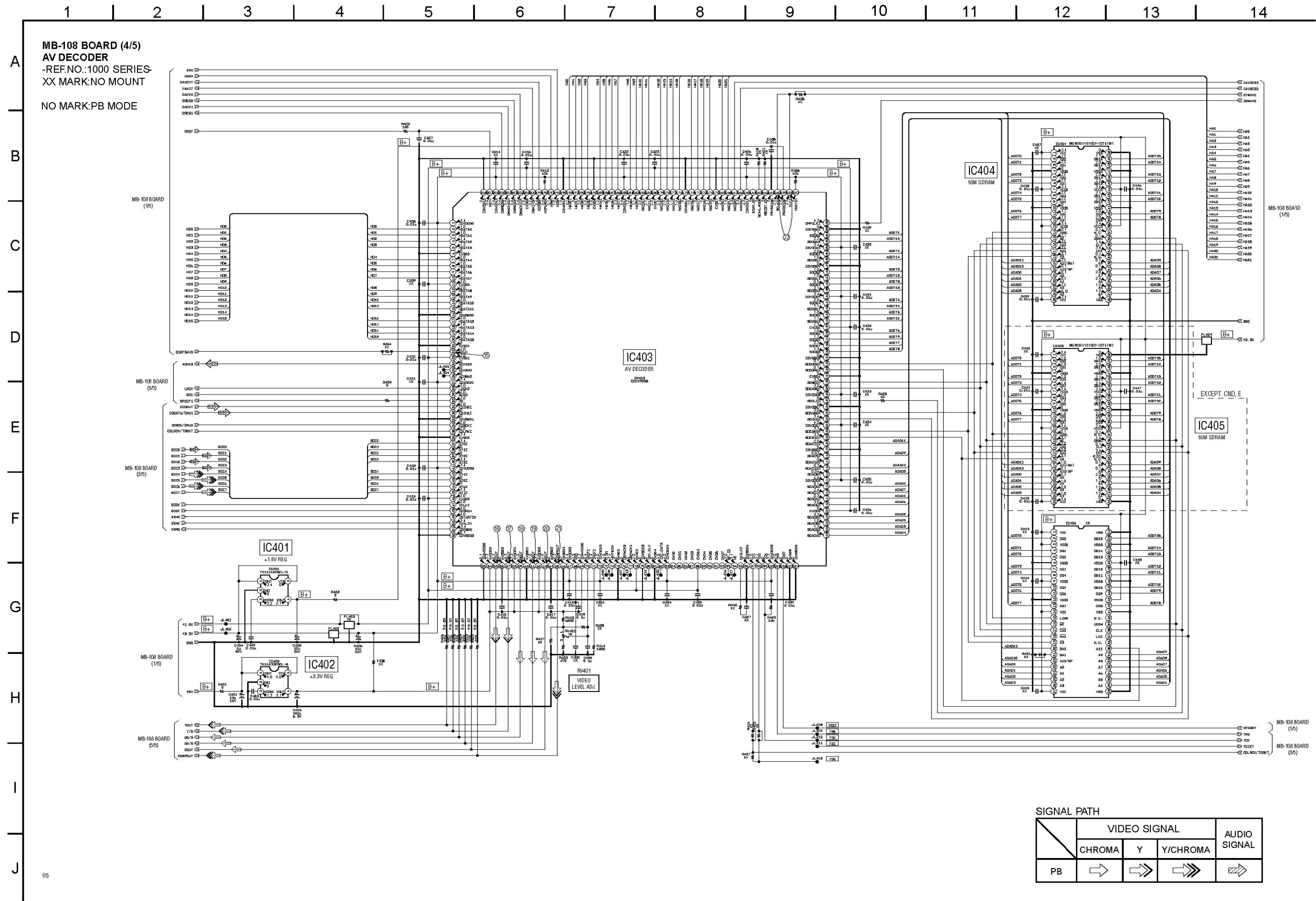
MB-108 (ARP, SERVO DSP) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board, and see page 4-49 for waveforms.

- Ref. No.: MB-108 board; 1,000 series -



MB-108 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board, and see page 4-49 for waveforms.

- Ref. No.: MB-108 board; 1,000 series -



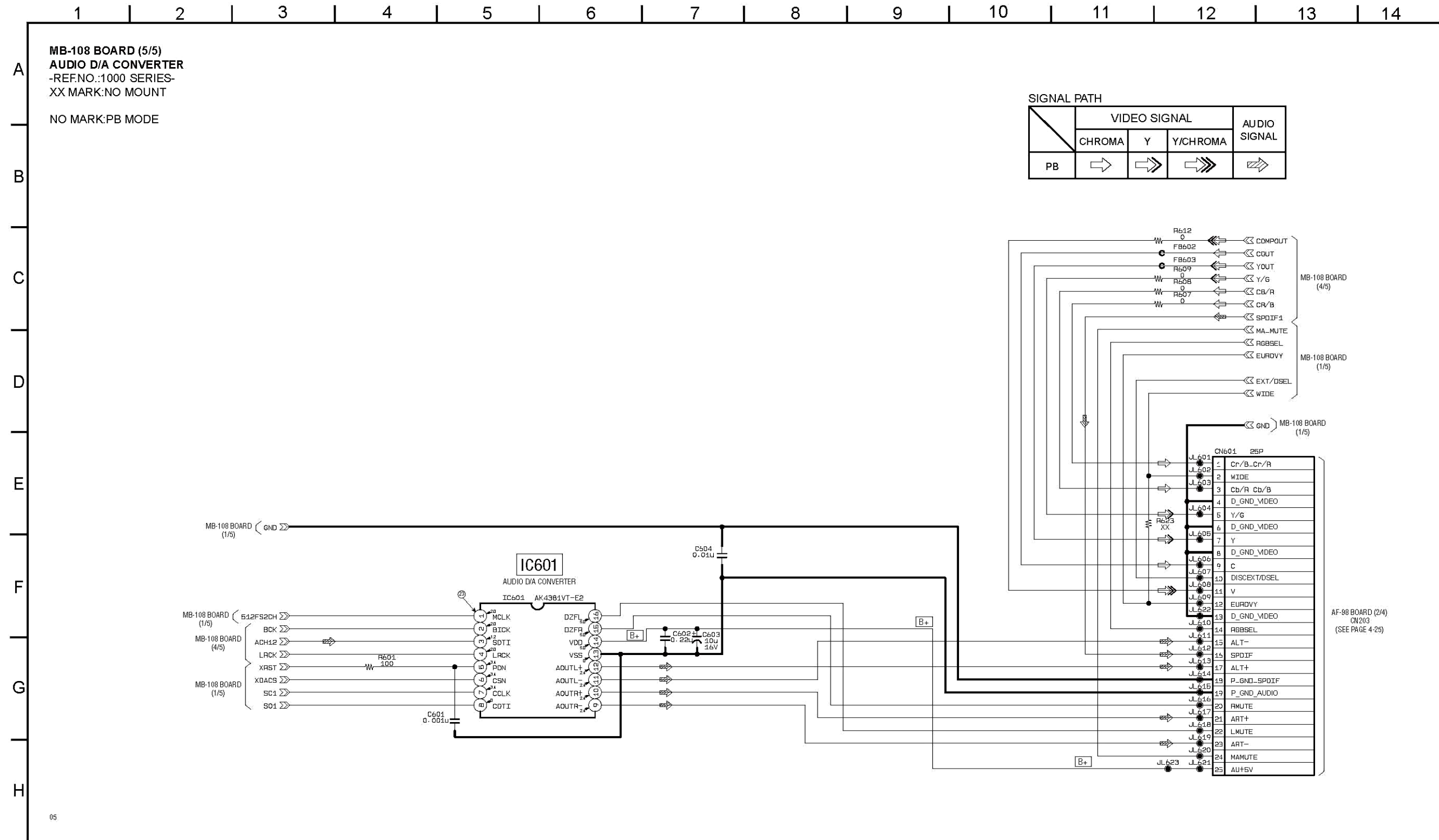
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	→	⇒	⇒⇒	⇒⇒⇒

**AV DECODER
MB-108 (4/5)**

MB-108 (AUDIO D/A CONVERTER) SCHEMATIC DIAGRAM • See page 4-5 for printed wiring board, and see page 4-49 for waveforms.

- Ref. No.: MB-108 board; 1,000 series -



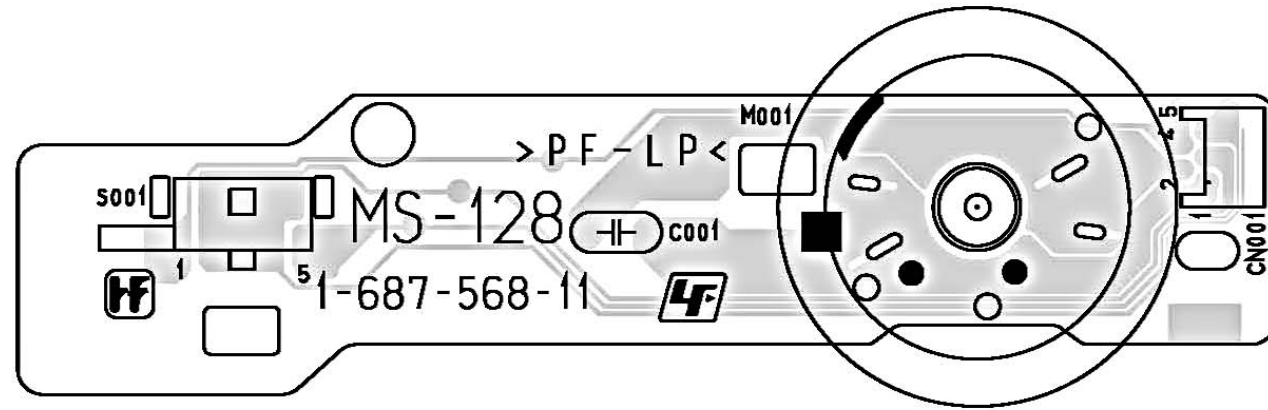
MS-128 (LOADING MOTOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

– Ref. No.: MS-128 board; 1,000 series –

: Uses unleaded solder.

There are a few cases that the part isn't mounted in this model is printed on this diagram.

MS-128 BOARD



Power supply block
(HS8S2U) (Canadian)
(ETXNY410M0F) (E, Saudi Arabia, Hong Kong,
Singapore, Australian, Middle East)
(ETXNY410E0F) (AEP, UK, Russian)

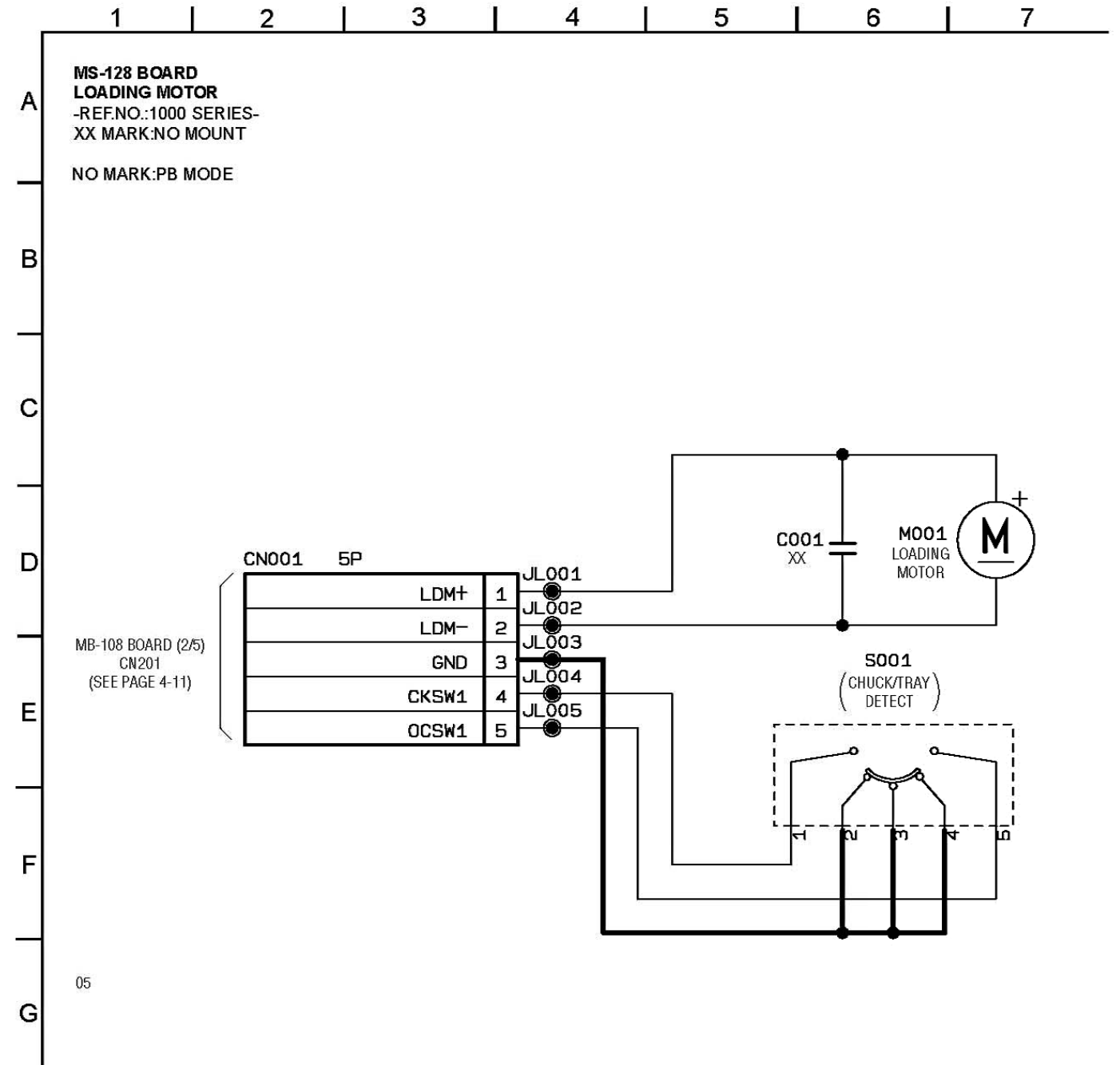
ER-21 board
(EURO AV) (AEP, UK, Russian)

AF-98 board
(INTERFACE CONTROL
AUDIO/VIDEO OUT)

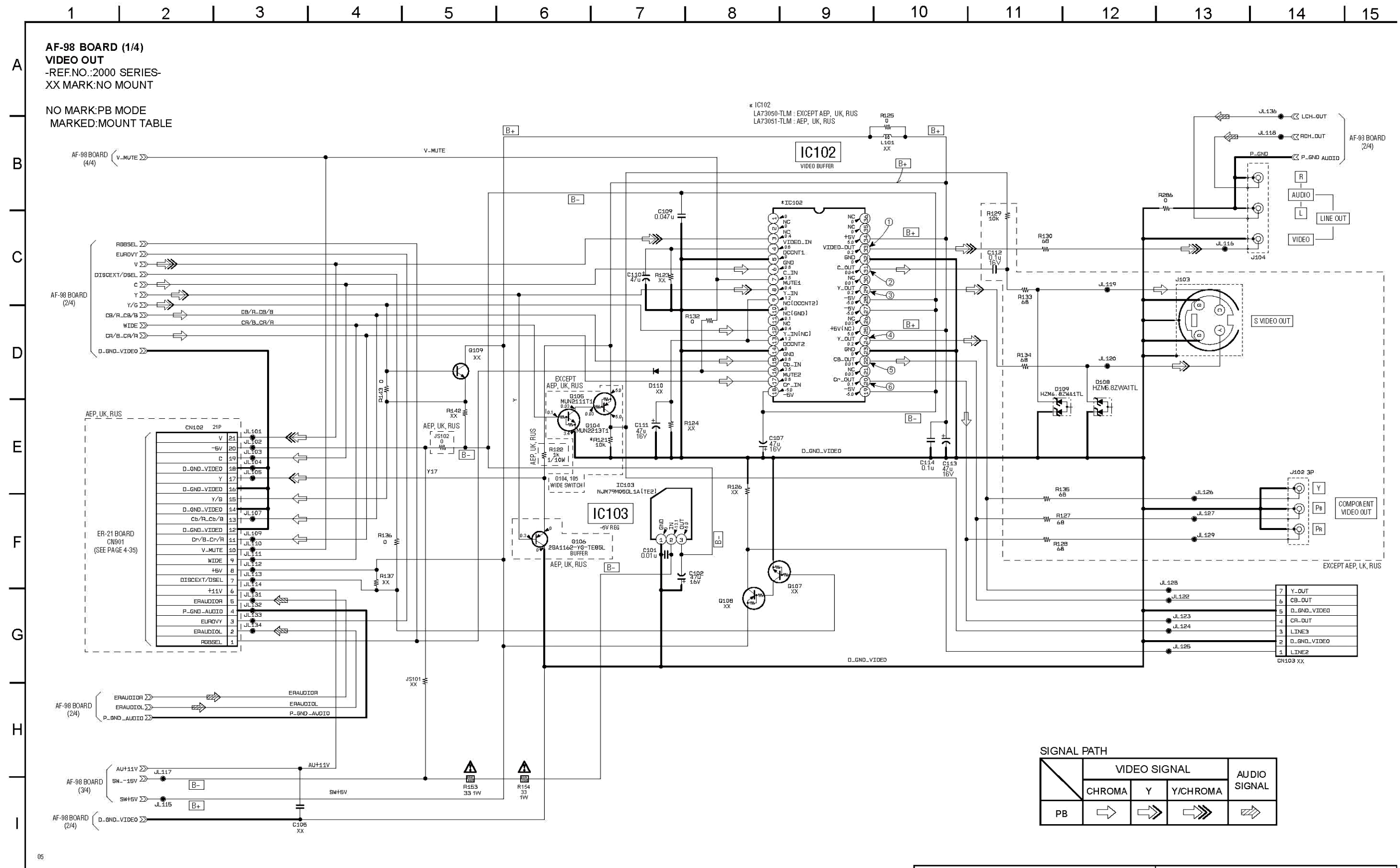
MS-128 board
(LOADING MOTOR)

SW-384 board
(FUNCTION SWITCH)

MB-108 board
(SIGNAL PROCESS SERVO)



AF-98 (VIDEO OUT) SCHEMATIC DIAGRAM • See page 4-21 for printed wiring board, and see page 4-49 for waveforms.
 - Ref. No.: AF-98 board; 2,000 series -



SIGNAL PATH

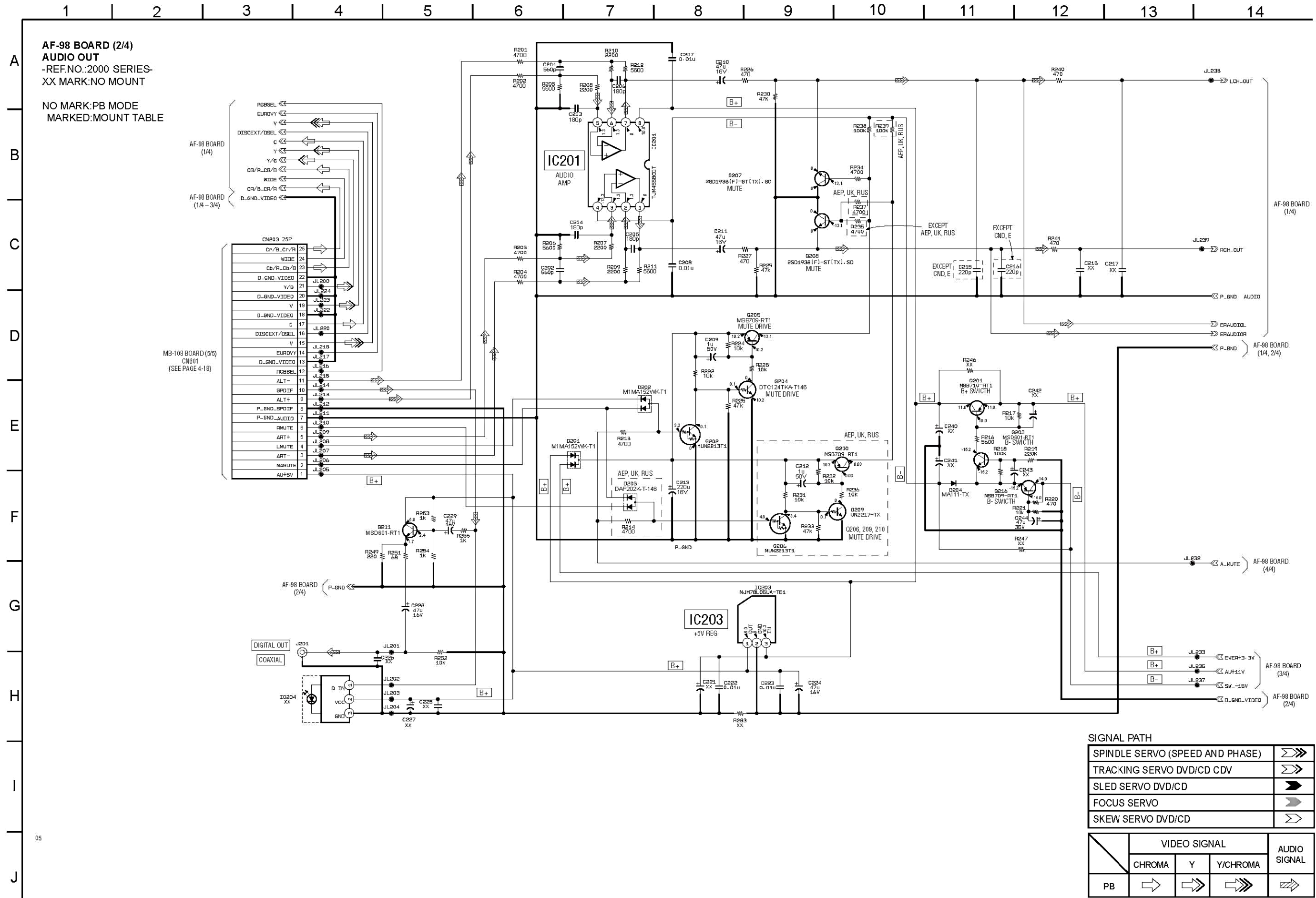
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	→	⇒	⇒⇒	⇒⇒⇒

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

AF-98 (AUDIO OUT) SCHEMATIC DIAGRAM • See page 4-21 for printed wiring board.

- Ref. No.: AF-98 board; 2,000 series -



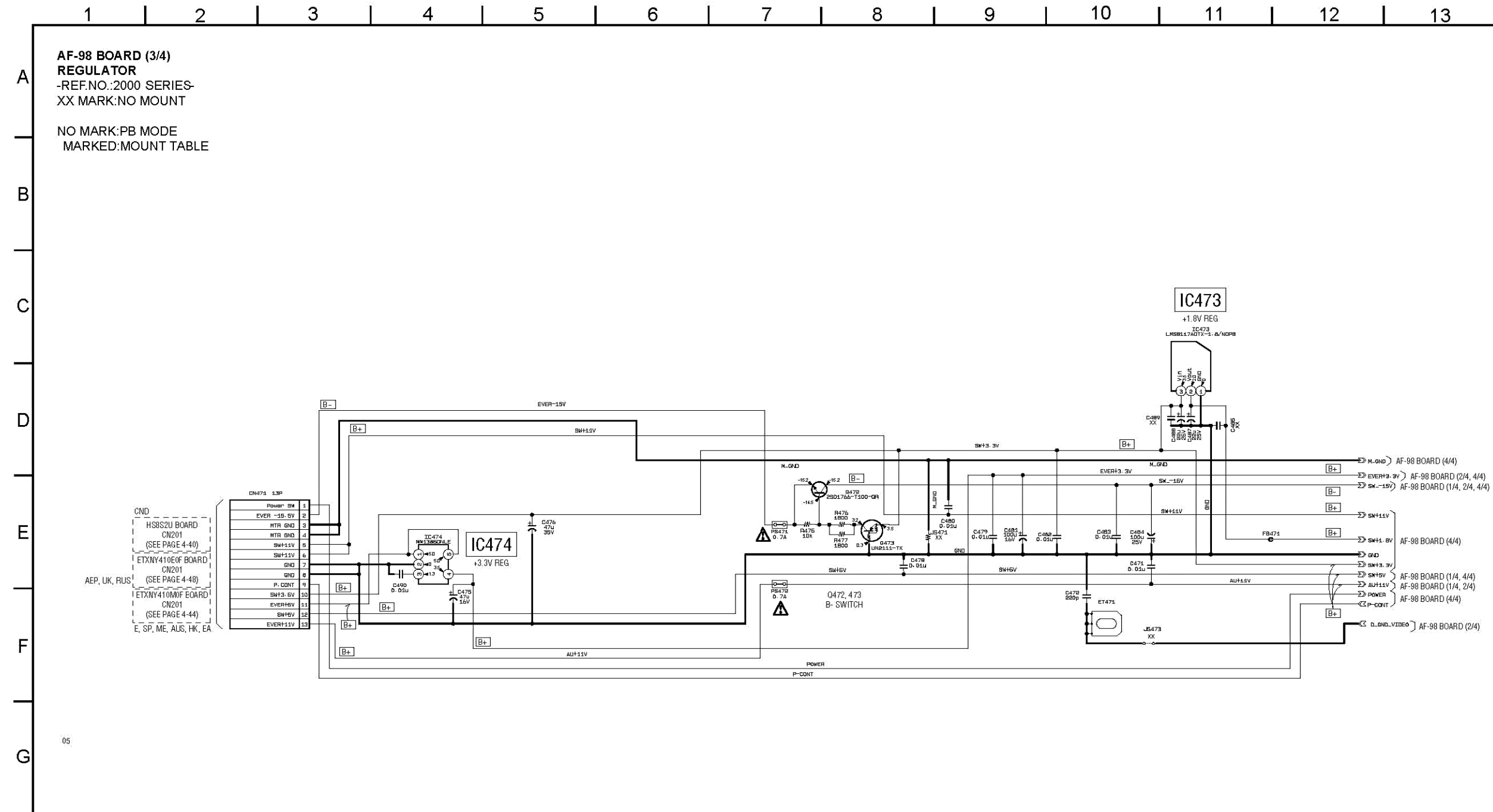
SIGNAL PATH

SPINDLE SERVO (SPEED AND PHASE)	➤➤➤➤
TRACKING SERVO DVD/CD CDV	➤➤➤
SLED SERVO DVD/CD	➤➤
FOCUS SERVO	➤
SKREW SERVO DVD/CD	➤

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
PB	➤	➤➤	➤➤➤	➤➤➤➤

AF-98 (REGULATOR) SCHEMATIC DIAGRAM • See page 4-21 for printed wiring board.

- Ref. No.: AF-98 board; 2,000 series -



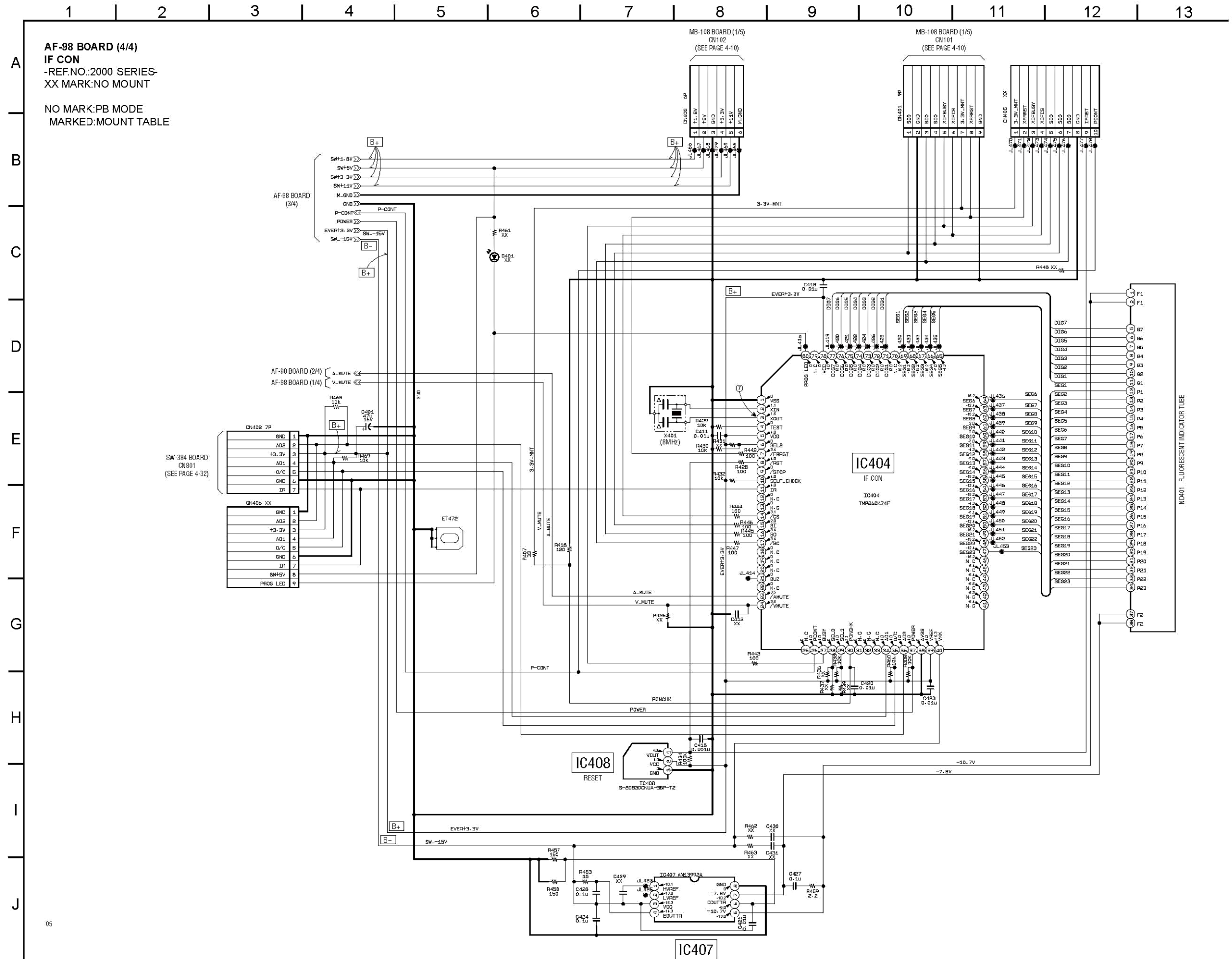
05

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

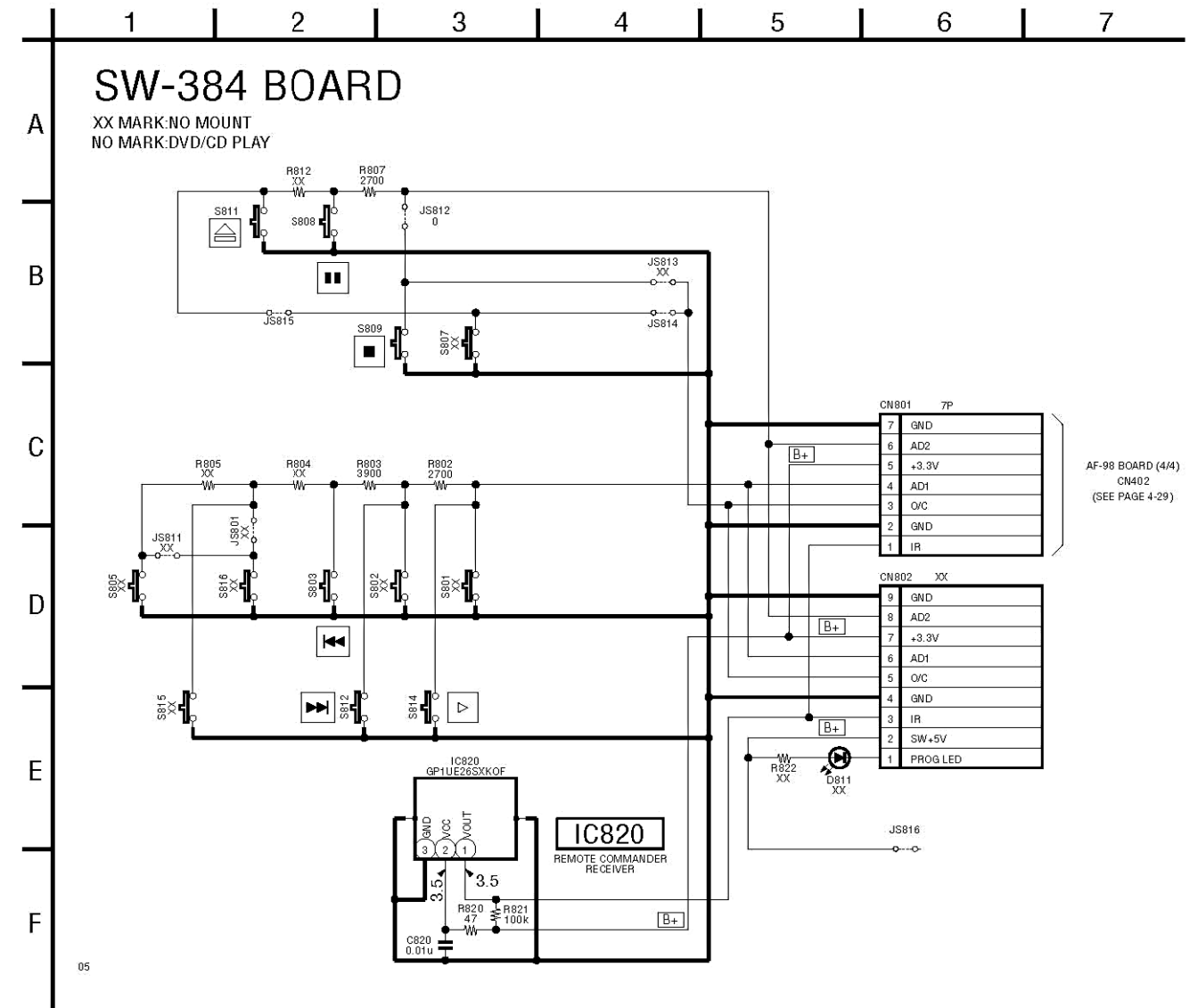
AF-98 (IF CON) SCHEMATIC DIAGRAM • See page 4-21 for printed wiring board, and see page 4-49 for waveforms.

- Ref. No.: AF-98 board; 2,000 series -



SW-384 (FUNCTION SWITCH) SCHEMATIC DIAGRAM

– Ref. No.: SW-384 board; 1,000 series –

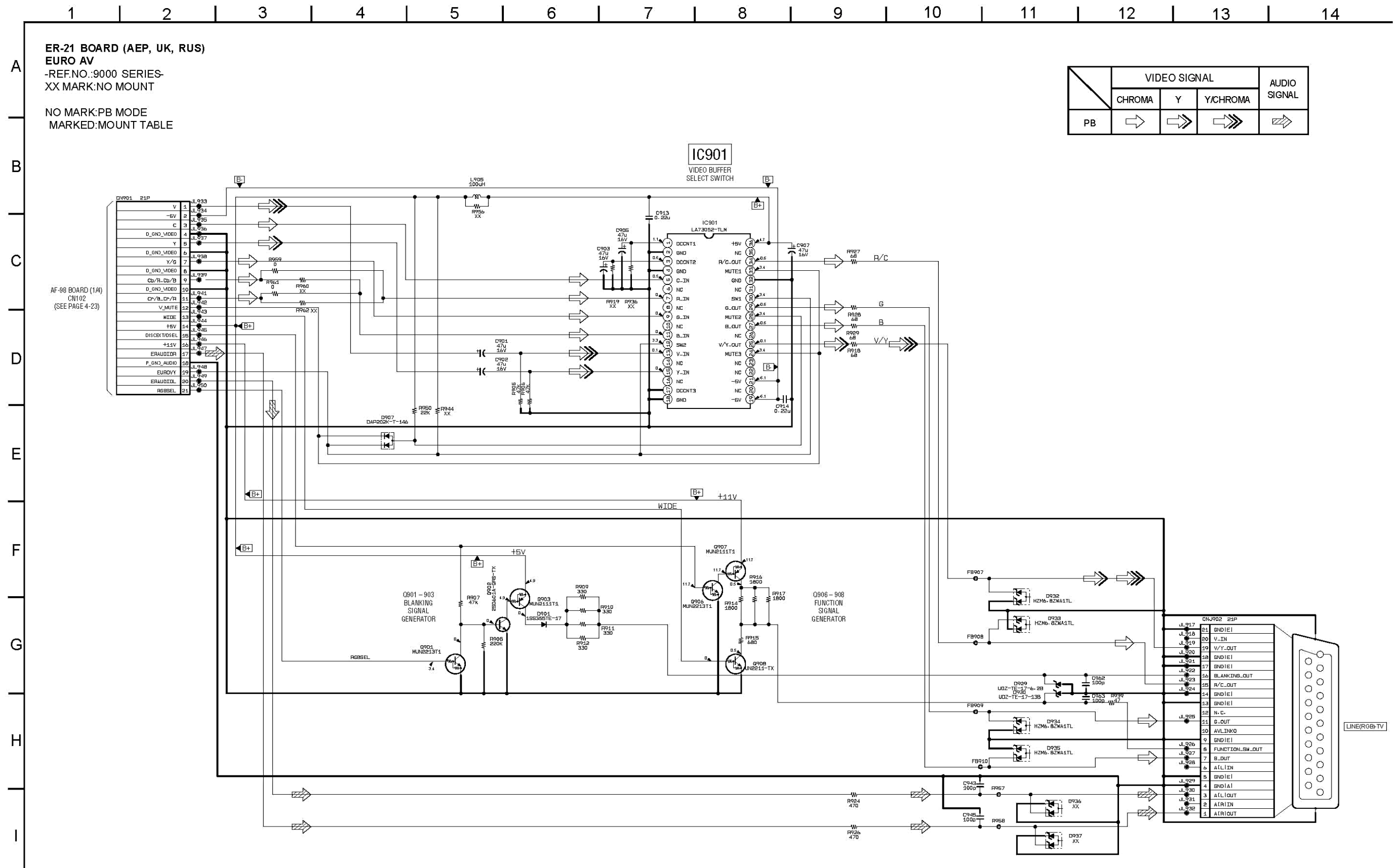


Note: Printed wiring board of the SW-384 board is not shown.

ER-21 (EURO AV) SCHEMATIC DIAGRAM

- Ref. No.: ER-21 board; 9,000 series -

- AEP, UK, RUS -



POWER SUPPLY BLOCK (HS8S2U) PRINTED WIRING BOARD

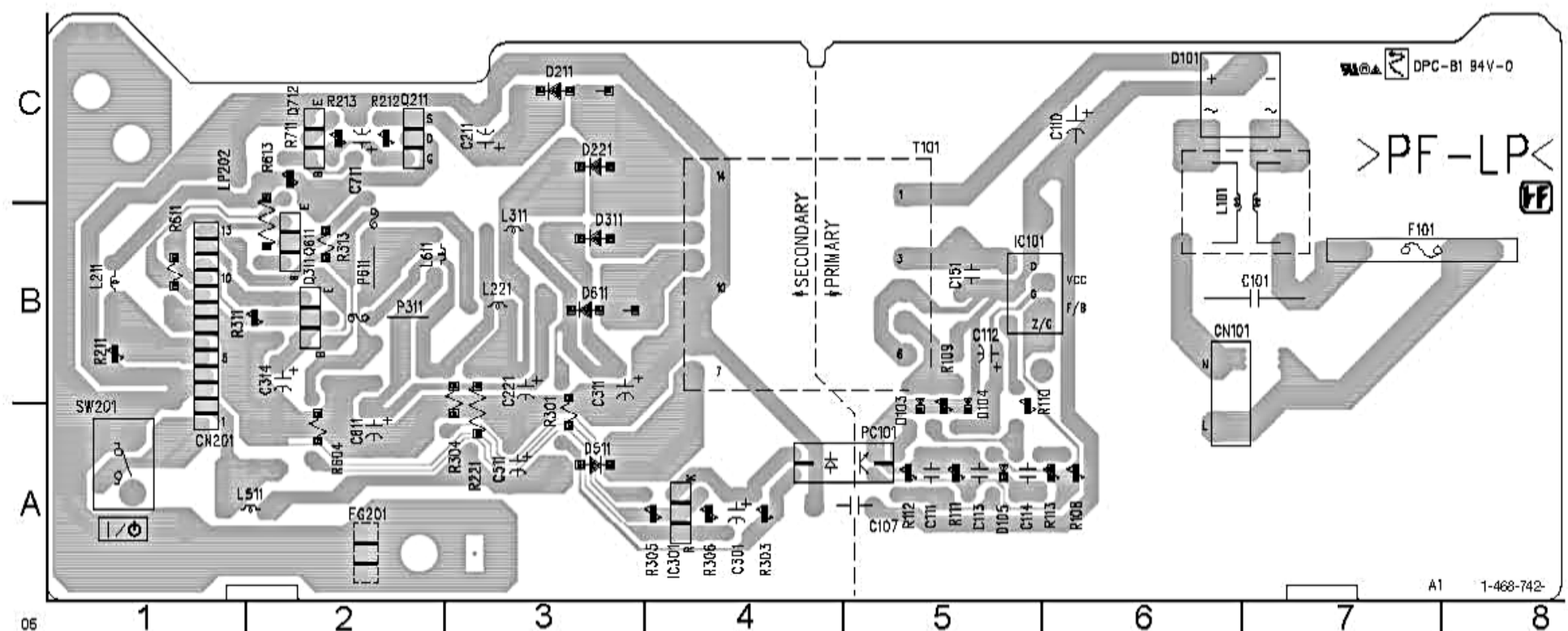
- Ref. No.: HS8S2U board; 1,000 series -

- CND -

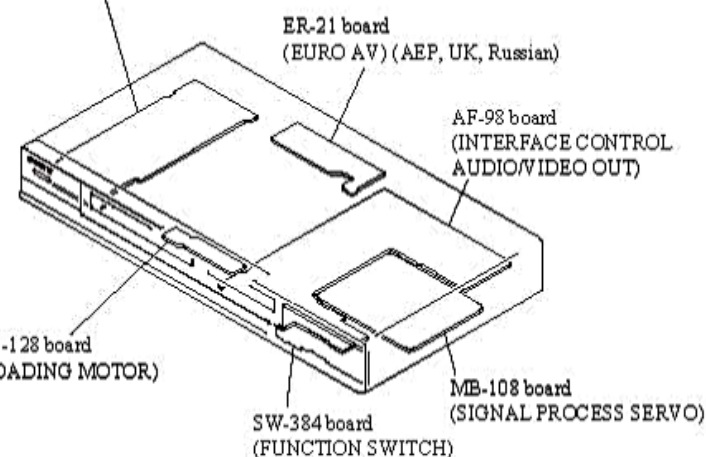
 Uses unleaded solder.

There are a few cases that the part isn't mounted in this model is printed on this diagram.

POWER SUPPLY BLOCK (HS8S2U) (CND)



Power supply block (HS8S2U) (Canadian) (ETXNY410MDF) (E, Saudi Arabia, Hong Kong, Singapore, Australian, Middle East) (ETXNY410E0F) (AEP, UK, Russian)



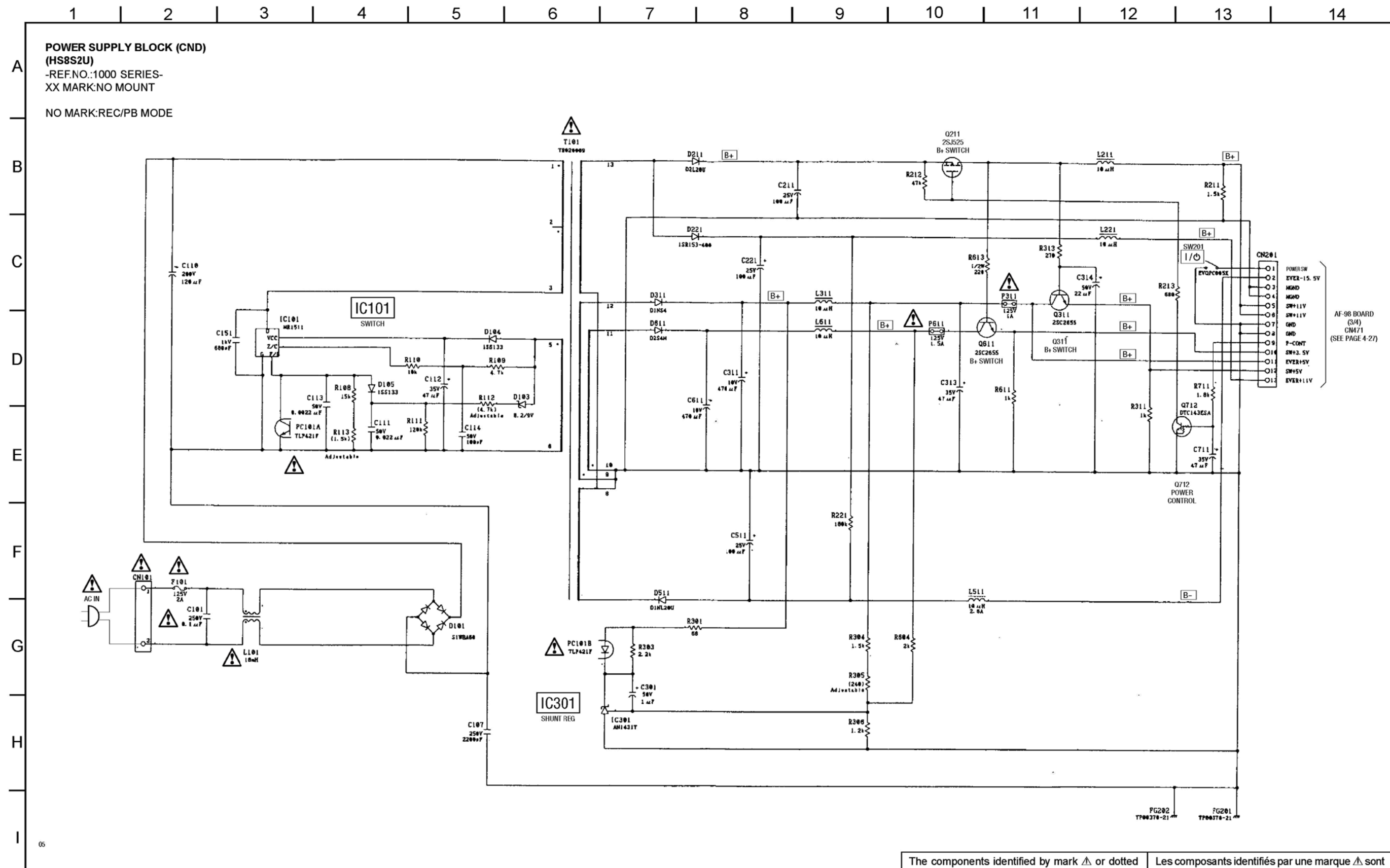
POWER SUPPLY BLOK (HS8S2U)

CN201	A-1
D101	C-6
D109	A-6
D104	A-6
D108	A-6
D211	C-3
D221	C-3
D311	B-3
D511	A-3
D611	B-3
IC101	B-5
IC301	A-4
Q211	C-2
Q311	B-2
Q611	B-2
Q712	C-2

POWER SUPPLY BLOCK (HS8S2U) SCHEMATIC DIAGRAM

- Ref. No.: HS8S2U board; 1,000 series -

- CND -



AF-98 BOARD (3/4) CM471 (SEE PAGE 4-27)

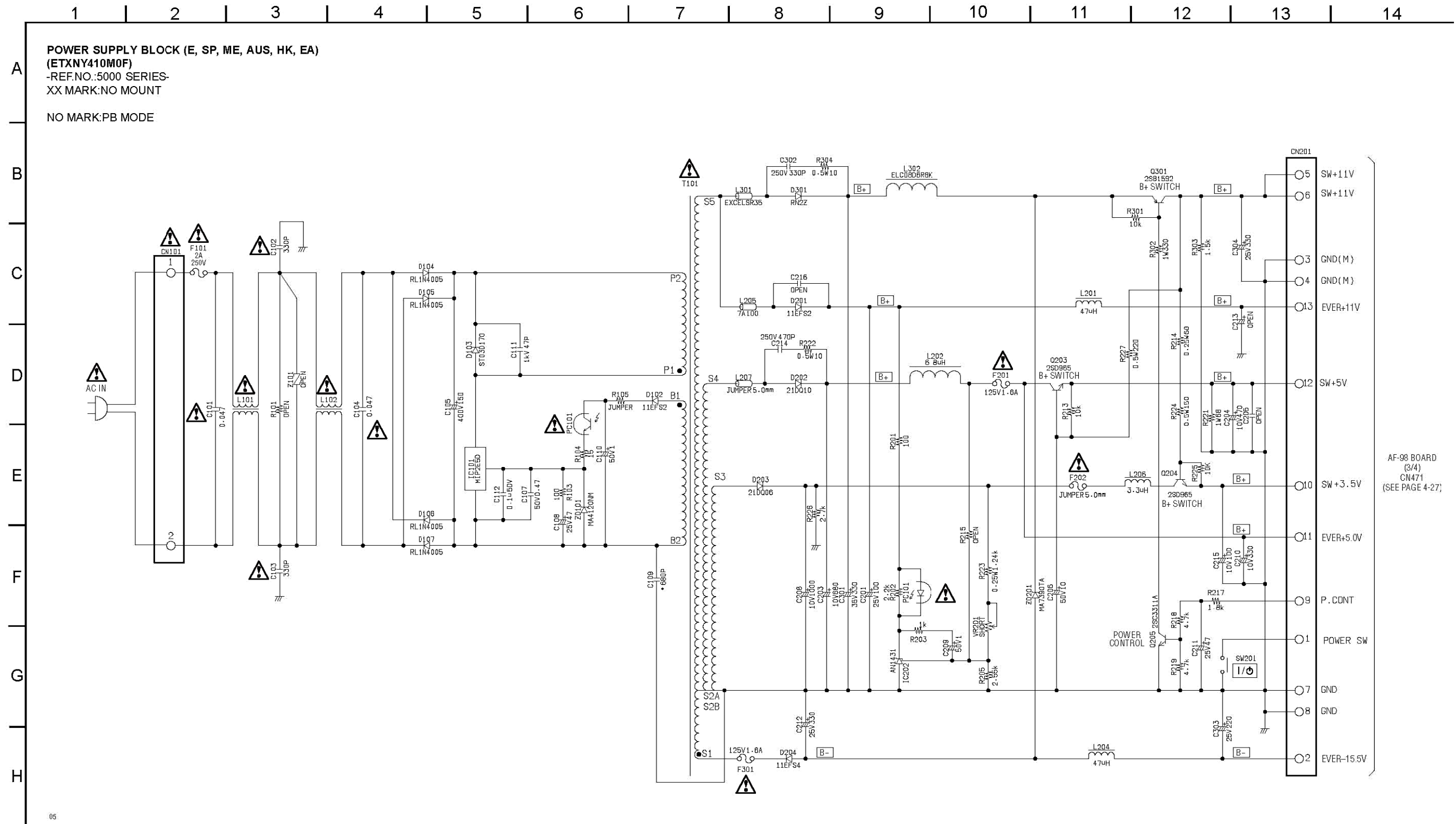
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER SUPPLY BLOCK (ETXNY410M0F) SCHEMATIC DIAGRAM

- Ref. No.: ETXNY410M0F board; 5,000 series -

- E, SP, ME, AUS, HK, EA -



AF-98 BOARD (3/4)
CN471
(SEE PAGE 4-27)

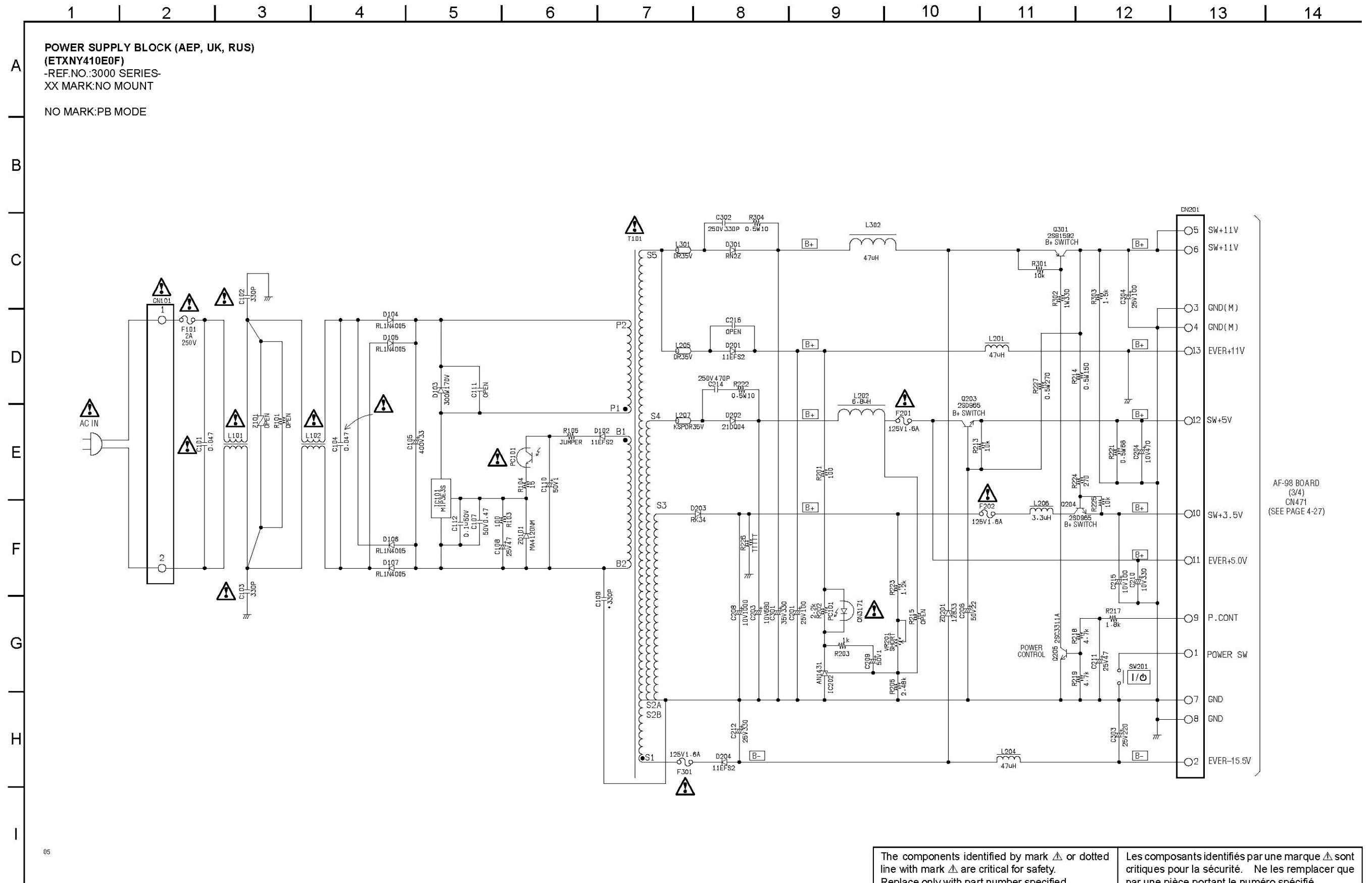
The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

POWER SUPPLY BLOCK (ETXNY410E0F) SCHEMATIC DIAGRAM

- Ref. No.: ETXNY410E0F board; 3,000 series -

- AEP, UK, RUS -

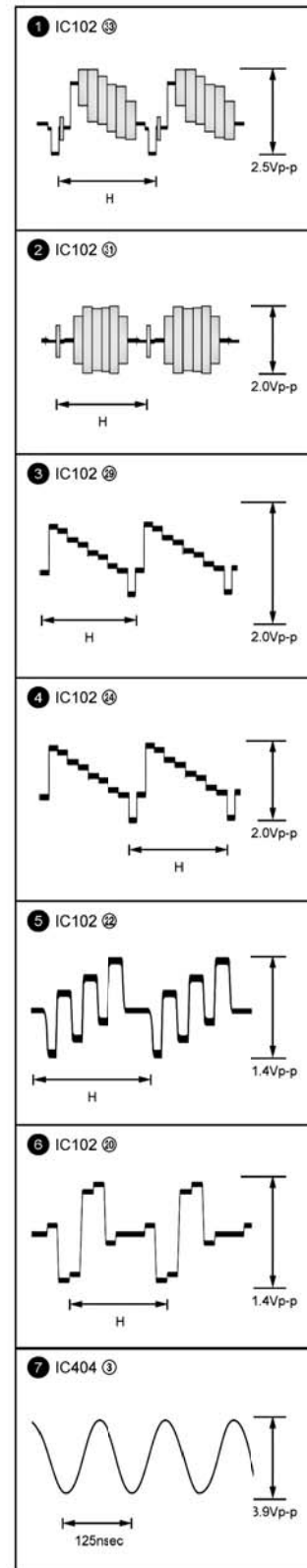


The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• Waveforms

AF-98 BOARD



MB-108 BOARD

