

**ORION™**  
**PA INTERFACE BOARDS**  
**CMH-1231LB**  
**CMH-1231UL/H**  
**CMH-1231E**

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**DESCRIPTION**

PA Interface Boards CMH-1231LB, CMH-1231UL/H and CMH-1231E interface power connections, speaker connections, PA module connections and most other connections of the **ORION** Mobile radio. Low band PA Board CMH-1231LB consists of one 40-pin RF Connector, P1001 and one 37-pin connector, J1003.

VHF/UHF/800/900 PA Interface boards consist of two, 24-pin RF connectors, P1001 and P1002, one thirty-seven pin connector J1003 and one, four-pin connector J1004. Signals interfaced are defined in Table 1.

The European PA Interface Boards consist of two 24-pin RF connectors, P1001 and P1002, one 37-pin connector J1003 and one, four-pin connector ZC1001.

Table 1 - Interface Lead Definition

CONNECTOR J1003 PIN NUMBER	LEAD LABEL	SOURCE	DEFINITION	NOTE
1	SUP GND	Radio	Supply GND for accessories	
2	XDATAIN	External	MDT Serial Data 9.6 kbd maximum RS-232C compatible Specs.	Used for Programming Only
3	XDATAOUT	Radio	MDT Serial Data 9.6 kbd maximum RS-232C compatible Specs.	Used for Programming Only
4	RS485+	Bidirectional	Data signal between Radio Unit and Control Unit	
5	RS485-	Bidirectional	Second line of Radio Unit-Control unit data bus	
6	CTS	Radio	Clear-To-Send signal for MTD RS-232C compatible Spec.	Usage Optional
7	GND	Radio	Ground return for DC (2 amp. Max)	
8	FPROG	Control Unit	Field Programming Input Active=+12V, Inactive=0V Sink 50 mA.	
9	OUT2	Radio	Accessory switch Active=0V, Inactive=O.C. Relay Driver Sink 500 mA.	(Must supply Reverse Kick Diode)
10	IGN SEN	Radio	Active=A+, Inactive= O.C.	
11	MIC HI	Control Unit	Microphone Audio (300-3000 Hz) 600 Ohm Load (AC) Carries 9 Vdc for Microphone Power (1360 ohm source impedance, DC)	55-110 mV for 60% Deviation
12	ALO	Radio	Ground return for MIC HI	
13	VOL HI	Radio	Low Power De-emphasized, volume controlled audio Drives 600 Ohms Load (AC coupled)	500 mVrms typical at rated audio output
14	CTL ON	Control Unit	On/Off Control Active (0V), Inactive (O.C.)	
15	XTONEENC	External	External tone input (non-pre-emphasized)	2.2 k load
16	XTONEDEC	Radio	External tone output (non de-emphasized)	500 mVrms typical
17	RQST	Bidirectional	REQUEST Signal for RS-485 Data Bus Active=0V, Inactive=O.C.	
18	SPKR1	Radio	Speaker Output Pins 18 and 19 are a balanced pair driving a 4 ohm speaker	<b>DO NOT</b> connect to ground.
19	SPKR2	Radio	Speaker Output Pins 18 and 19 are a balanced pair driving a 4 ohm speaker	<b>DO NOT</b> connect to ground.
20	RTS	External	Request-To-Send signal from MDT RS-232C compatible specs.	Usage optional

Continued

CONNECTOR J1003 PIN NUMBER	LEAD LABEL	SOURCE	DEFINITION	NOTE
21	INP1	External	Accessory Input Active=0V, Inactive=O.C. Source 10 mA maximum	22k pullup INTERNAL
22	OUT1	Radio	Same Spec as Pin 9	
23	INP2	External	Same Spec as Pin 21	
24	IGN A+	External	Input from Ignition Switch Connected to <b>IGN SEN</b> in Radio	
25	SW A+	Radio	Switched A+ Power 700 mA Maximum	
26	HKSW	External	External Hookswitch Input Active=0V, Inactive=O.C.	
27	EXTMIC	External	External Microphone Input 300-3000 Hz 2.2k Impedance AC coupled	55 - 110 mV for 60% Deviation
28	EXTRX	External	Input from receiver on 2nd radio Driven by <b>VOL HI</b> source 600 Ohm load AC coupled, 10 Hz minimum frequency	If used
29	FDISC	Radio	Filtered Discriminator Output Internal load 1k DC coupled	Not De-emphasized Used mainly for TEST
30	EXTALO	Radio	Analog GND For 2nd microphone	Optional
31	CUTST	2 Function	Signal Control Unit to self test	
32	A+/SPARE	2 Function	EUROPEAN Models Power A+, USA Models - Not Used	<b>DO NOT</b> Connect for USA Models
33	A+/SPARE	2 Function	EUROPEAN Models Power A+, USA Models - Not Used	<b>DO NOT</b> Connect for USA Models
34	A+/SPARE	2 Function	EUROPEAN Models Power A-, USA Models - Not Used	<b>DO NOT</b> Connect for USA Models
35	A-/SDATA	2 Function	EUROPEAN Models Power A+, USA Models Federal Signal Siren Interface	1200 Baud data for Siren/Light Control
36	A-/SONOFF	2 Function	EUROPEAN Models Power A-, USA Models Federal Signal Siren Interface	On/Off Signal for Siren/Light Control
37	HORNRING		Federal Signal Siren Interface (USA Models) EUROPEAN Models Power A-	Horn switch control - optional

**ORION LOW BAND PA INTERFACE  
CMH-1231LB  
(Used in 344A4576P1/P2) (60 Watt)  
(Used in 344A4576P3/P4) (110 Watt)**

SYMBOL	PART NO.	DESCRIPTION
		----- CAPACITORS -----
C1003 and C1004	NOTE: Parts listed are for reference only. Refer to Service Section for serviceable parts	Ceramic:1000 pF +200%,50 VDCW temp coef +20%,-55%
C1005 thru C1019		Ceramic: 1000 pF ±10% 50 VDCW, temp coef ±15%.
C1020		Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30PPM.
C1021 thru C1040		Ceramic: 1000 pF ±10% 50 VDCW, temp coef ±15%.
		----- CONNECTORS -----
J1003		Connector:D-SUB 37 PIN (FEMALE)
P1001		Connector: SMT 40 PIN (MALE)
		-----FLEXIBLE PCB-----
PC1001		H-6PCLD00350.
		-----WIRES-----
ZC1001		H-6ZCLD00169
ZC1002 and ZC1003		H-6ZCLD41060

\*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

**ORION PA INTERFACE  
CMH-1231UL  
(Used in 344A4572P3, P4) (VHF)  
(Used in 344A4573P3, P4, P5) (UHF)  
(Used in 344A4574P1, P2) (800)  
(Used in 344A4575P1, P2) (900)**

SYMBOL	PART NO.	DESCRIPTION
		----- CAPACITORS -----
C1005 thru C1019	NOTE: Parts listed are for reference only. Refer to Service Section for serviceable parts	Ceramic: 1000 pF ±10% 50 VDCW, temp coef ±15%.
C1020		Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±60PPM.
C1021 thru C1040		Ceramic: 1000 pF ±10% 50 VDCW, temp coef ±15%.
		----- CONNECTORS -----
J1003		Connector.
J1004		Connector.
P1001 and P1002		Connector: RF.
		--- PRINTED CIRCUIT BOARD ---
PC1001		H-6PCLD00327.

\*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

**ORION INTERFACE  
CMH-1231UH  
(Used in 344A4572P5, P6) (VHF)  
(Used in 344A4573P6, P7, P8) (UHF)**

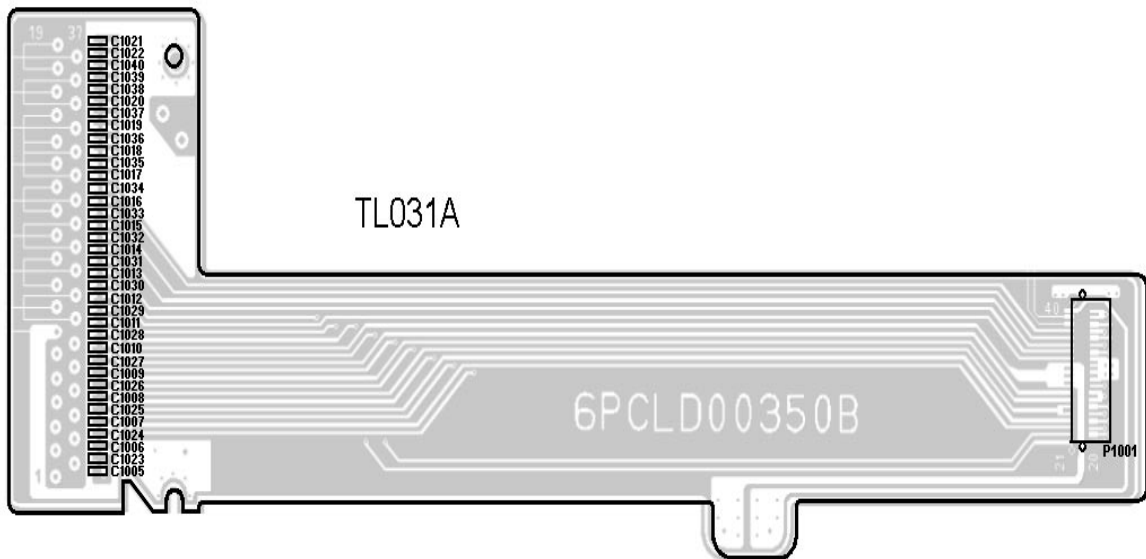
SYMBOL	PART NO.	DESCRIPTION
		----- CAPACITORS -----
C1005 thru C1019	NOTE: Parts listed are for reference only. Refer to Service Section for serviceable parts	Ceramic: 1000 pF ±10% 50 VDCW, temp coef ±15%.
C1020		Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±60PPM.
C1021 thru C1040		Ceramic: 1000 pF ±10% 50 VDCW, temp coef ±15%.
		----- CONNECTORS -----
J1003		Connector.
J1004		Connector.
P1001 and P1002		Connector: RF.
		--- PRINTED CIRCUIT BOARD ---
PC1001		H-6PCLD00314.

\*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

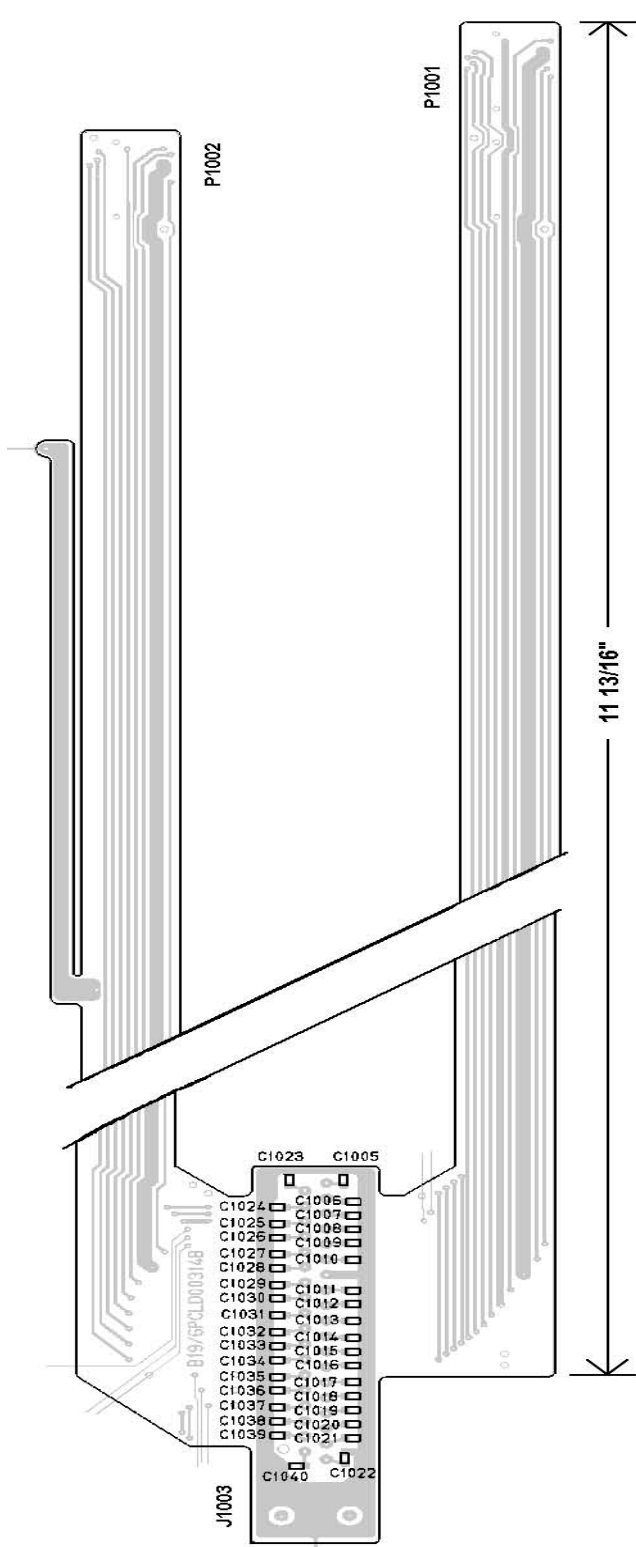
**ORION INTERFACE  
CMH-1231E  
(Used in 344A4572P1, P2) (VHF)  
(Used in 344A4573P1, P2, P9) (UHF)**

SYMBOL	PART NO.	DESCRIPTION
		----- CAPACITORS -----
C1003 thru C1016	NOTE: Parts listed are for reference only. Refer to Service Section for serviceable parts	Ceramic: 1000 pF ±10% 50 VDCW, temp coef ±15%.
C1017		Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±60PPM.
C1018 thru C1033		Ceramic: 1000 pF ±10% 50 VDCW, temp coef ±15%.
		----- FERRITE BEAD -----
FB1001 thru FB1008		Ferrite Bead: B-20F-28.
		---- FLEXIBLE PRINTED CIRCUIT BOARD
FPC1001		H-6PCLD00320.
		----- CONNECTORS -----
J1003		Connector.
P1001 and P1002		Connector: RF.
		----- COAXIAL CABLE -----
ZC1001		H-6ZCLD00128.

\*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

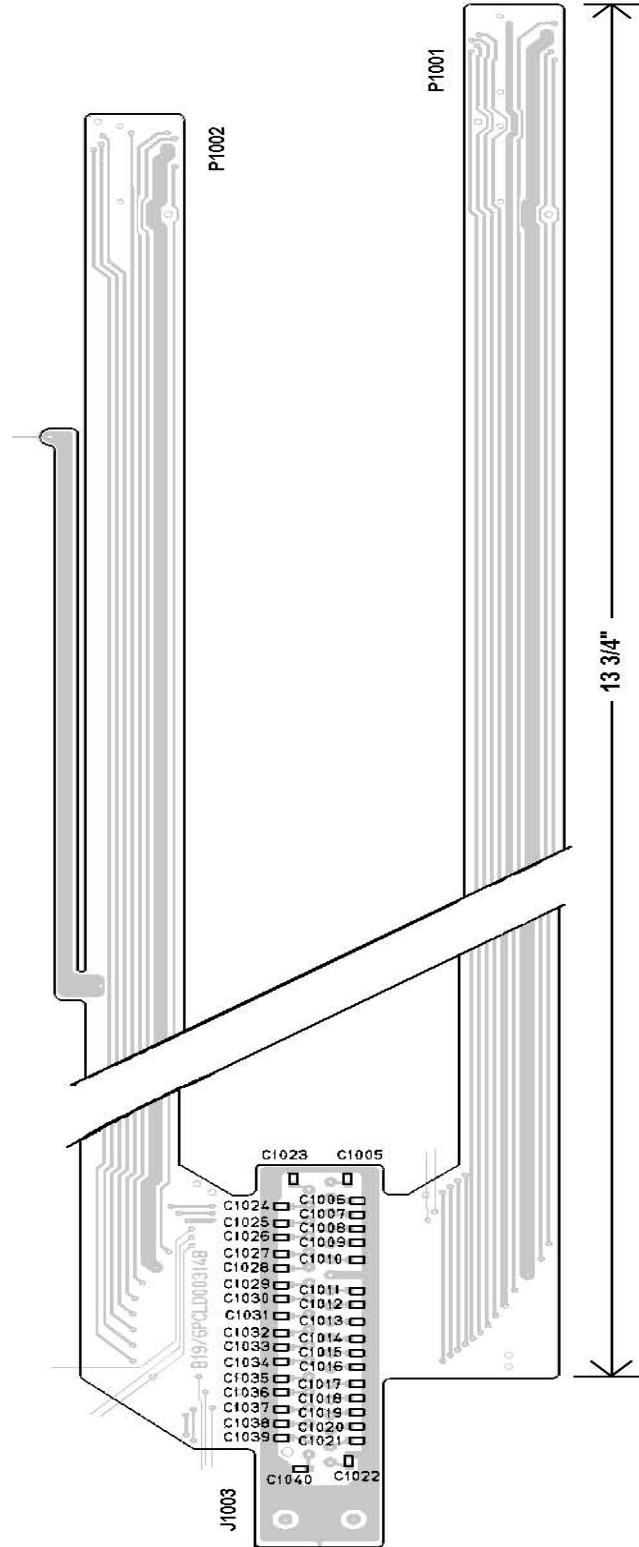


LOW BAND PA INTERFACE  
CMH-1231LB



**LOW POWER PA INTERFACE  
CMH-1231UL**

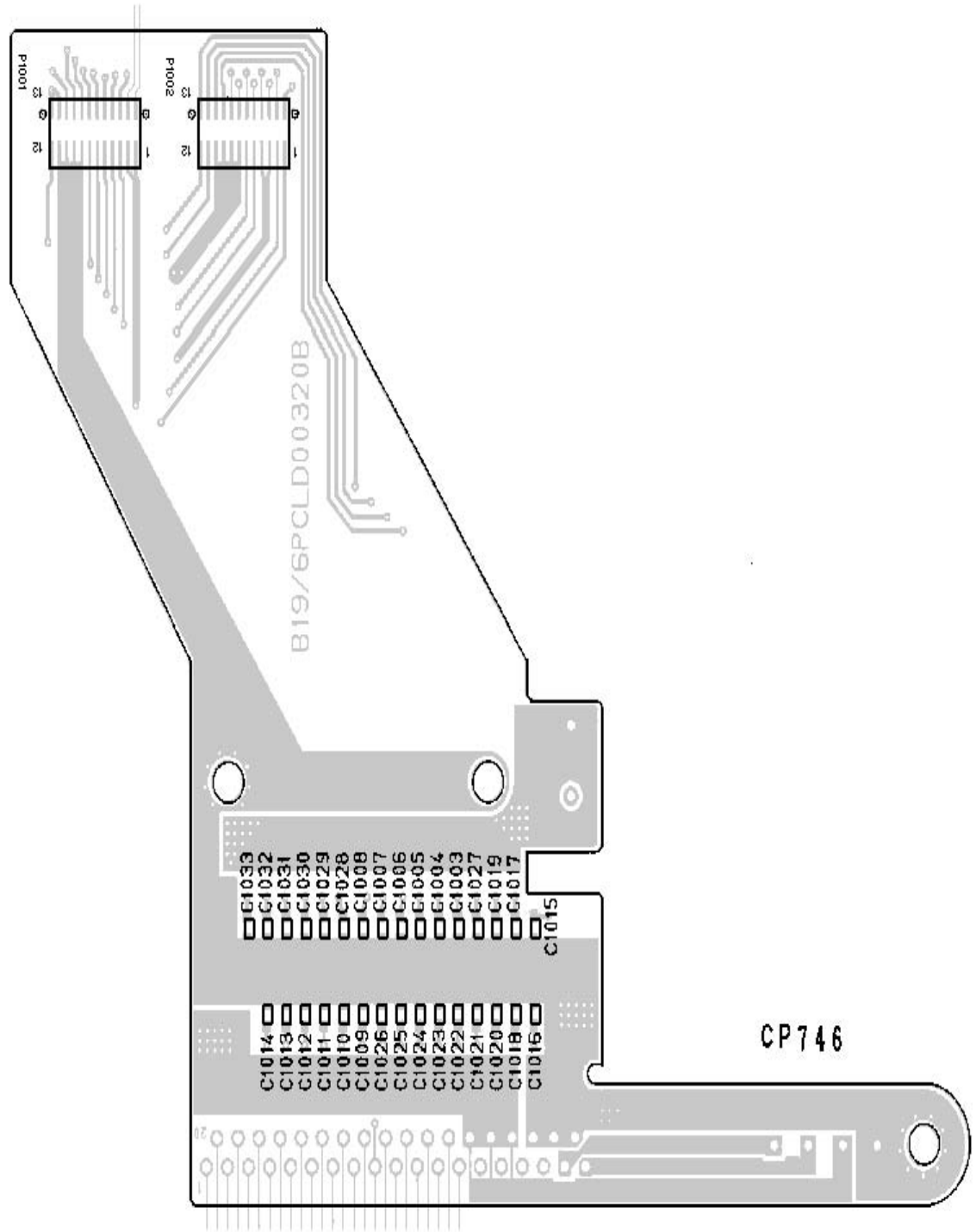
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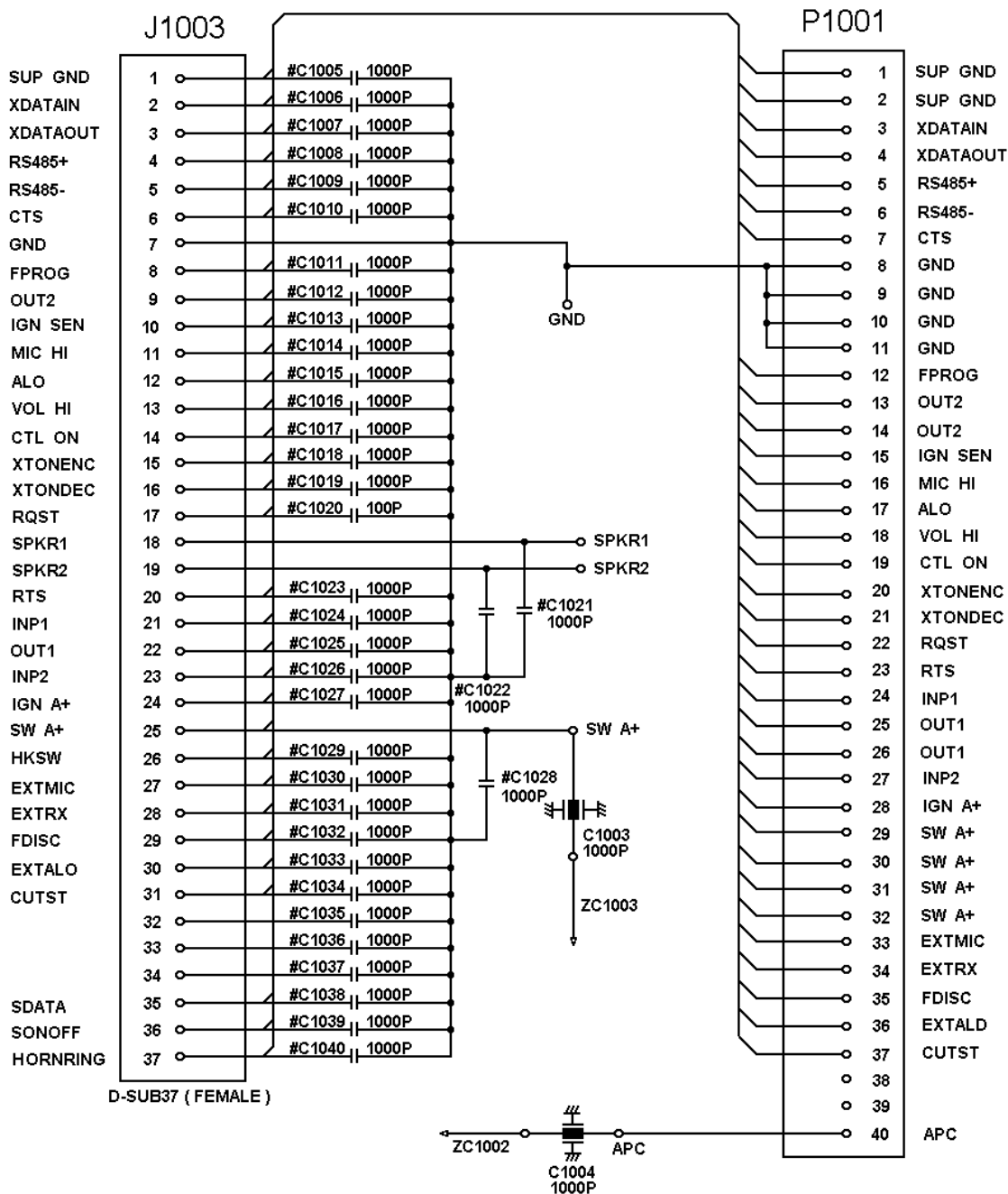
**HIGH POWER PA INTERFACE  
CMH-1231UH**

(B19/6PCLD00314, Rev. 0)

COMPONENT SIDE



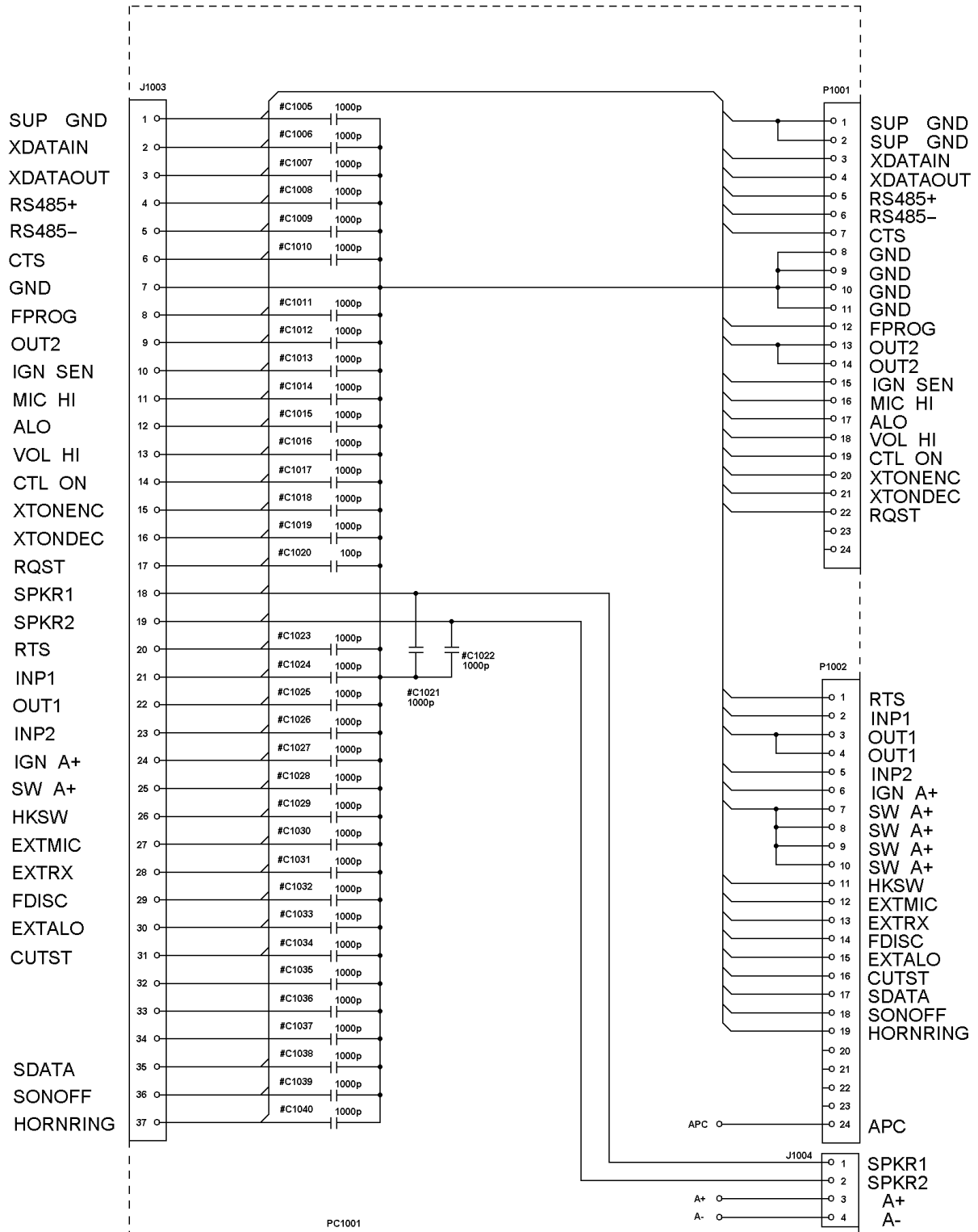
EUROPEAN PA INTERFACE  
CMH-1231E  
(B19/6PCLD00320B)



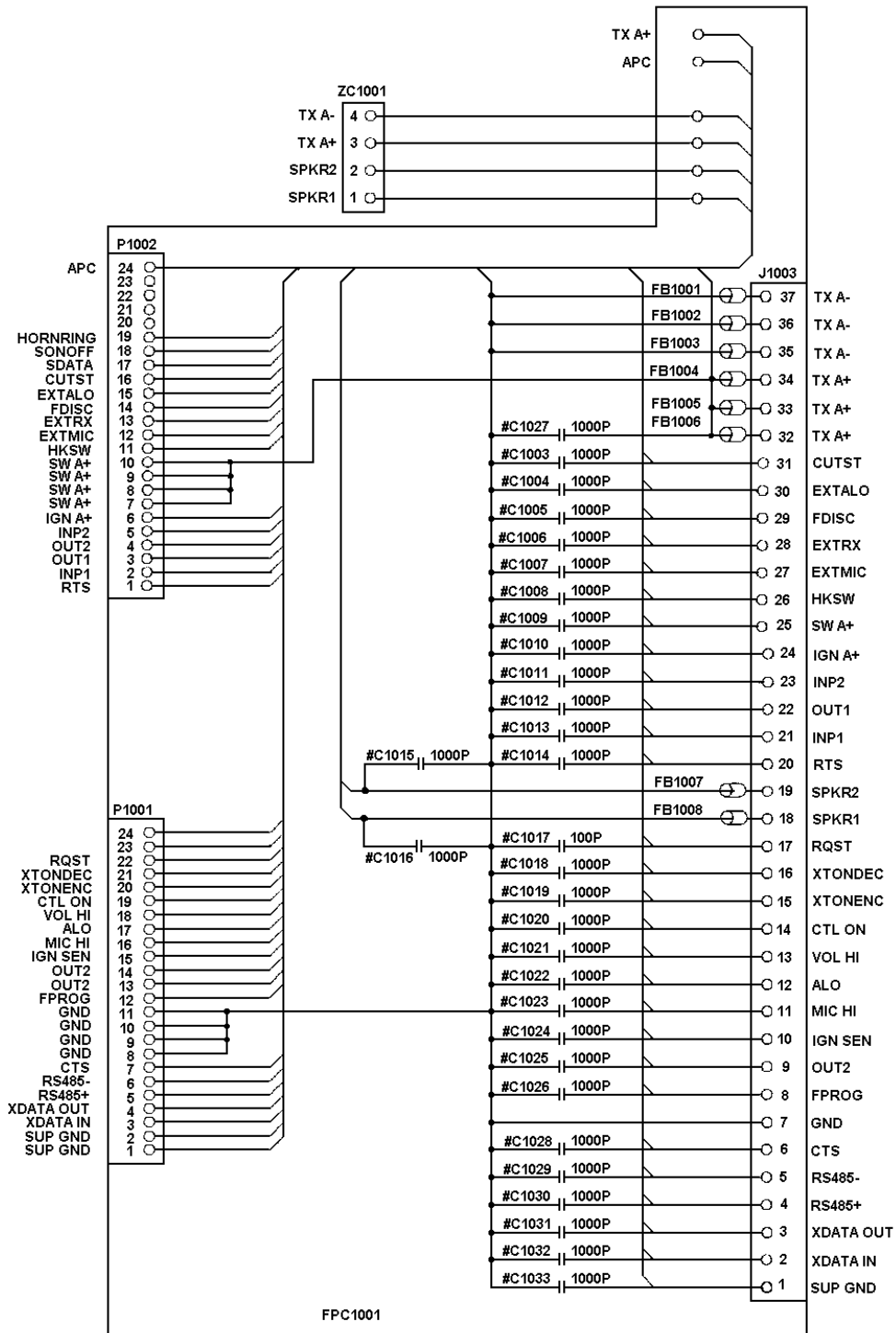
LOW BAND PA INTERFACE  
CMH-1231LB

(DD00-CMH-1231LB)





**PA INTERFACE  
CMH-1231 UL/UH**  
(DD01-CMH-1231UL/H)



**EUROPEAN PA INTERFACE  
CMH-1231E**

(DD00-CMH-1231E)

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