

MAINTENANCE MANUAL
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 forty pin RF Connector, P1001 and one thirty-seven pin connector, J1003.

VHF/UHF/800/900 PA Interface boards consist of two, twenty-four 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, twenty-four pin RF connectors, P1001 and P1002, one thirty-seven pin connector J1003 and one four pin connector ZC1001.

Table 1 - Interface Lead Definition

| CONNECTOR J1003 PIN NUMBER | LEAD LABEL | SOURCE | DEFINITION | |
|----------------------------------|------------|---------------|---|--|
| 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 mv RMS 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 mv RMS 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 | DO NOT connect to ground. |
| 19 | SPKR2 | Radio | Speaker Output Pins 18 and 19 are a balanced pair driving a 4 ohm speaker | DO NOT 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 | |
|----------------------------------|------------|------------|---|---|
| 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 IGN SEN 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 VOL HI source 600 Ohm load AC coupled, 10 Hz mimum 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 | DO NOT Connect for USA Models |
| 33 | A+/SPARE | 2 Function | EUROPEAN Models Power A+, USA Models - Not Used | DO NOT Connect for USA Models |
| 34 | A+/SPARE | 2 Function | EUROPEAN Models Power A-, USA Models - Not Used | DO NOT 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 | | |
| 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)**

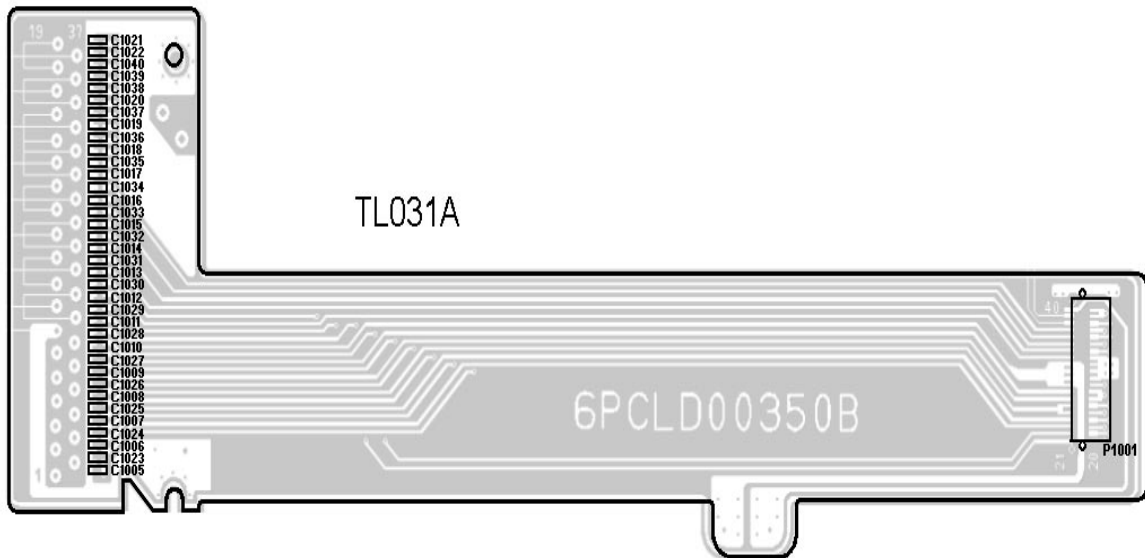
| SYMBOL | PART NO. | DESCRIPTION |
|------------------------|---|---|
| | | ----- CAPACITORS ----- |
| C1005 thru C1019 | NOTE: Parts listed are for reference only. Refer to Service Section for serviceable parts | Ceramic: 1000 pF ±10% 50 VDCW, temp coef ±15%. |
| C1020 | | Ceramic: 100 pF ±5% 50 VDCW,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

*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

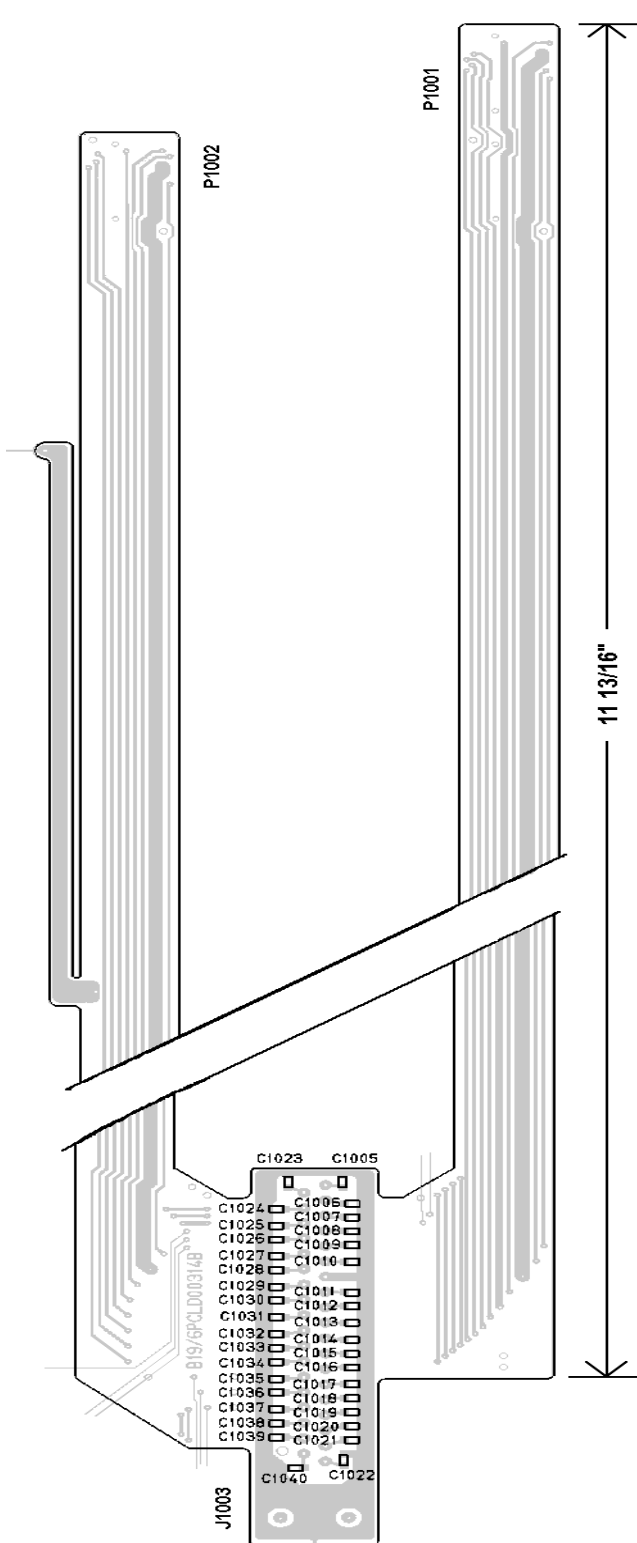
**ORION INTERFACE
CMH-1231E
(Used in 344A4572P1, P2) (VHF)
(Used in 344A4573P1, P2, P9) (UHF)**

| 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 | | |
| | | ---- 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

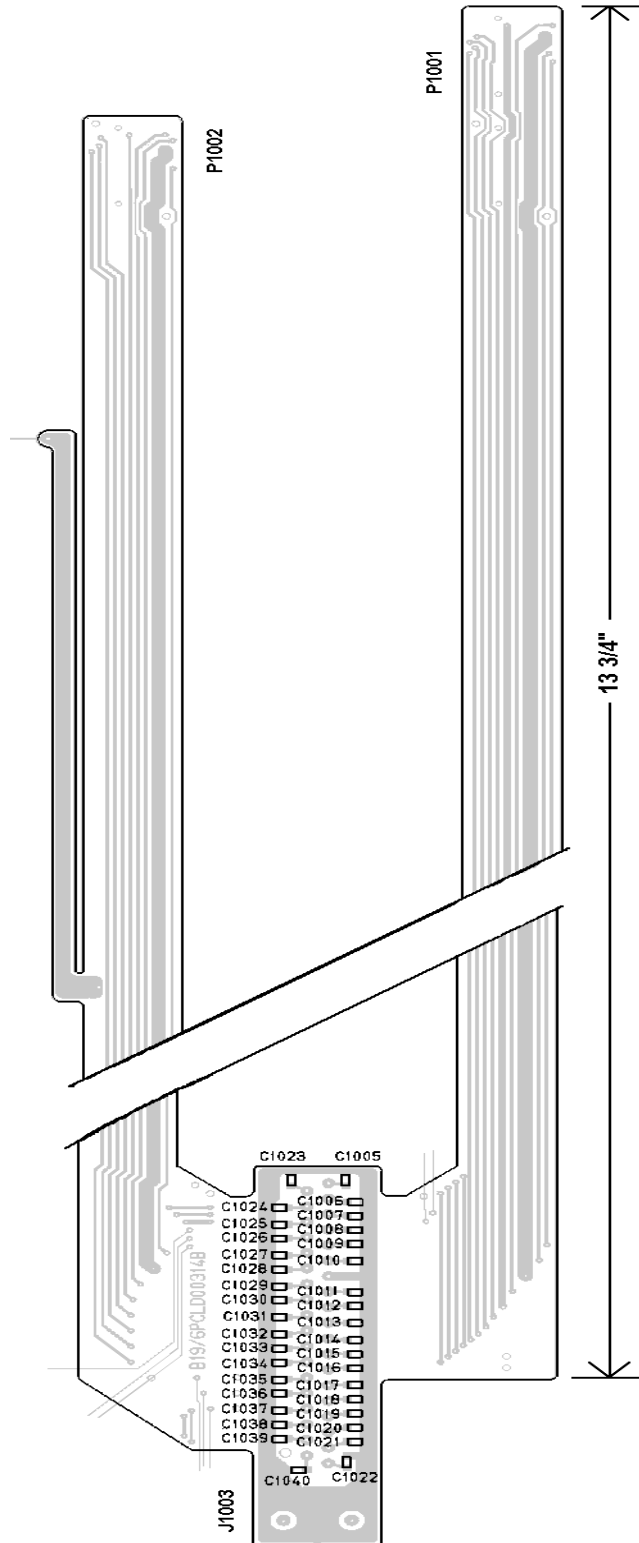


LOW BAND PA INTERFACE
CMH-1231LB



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

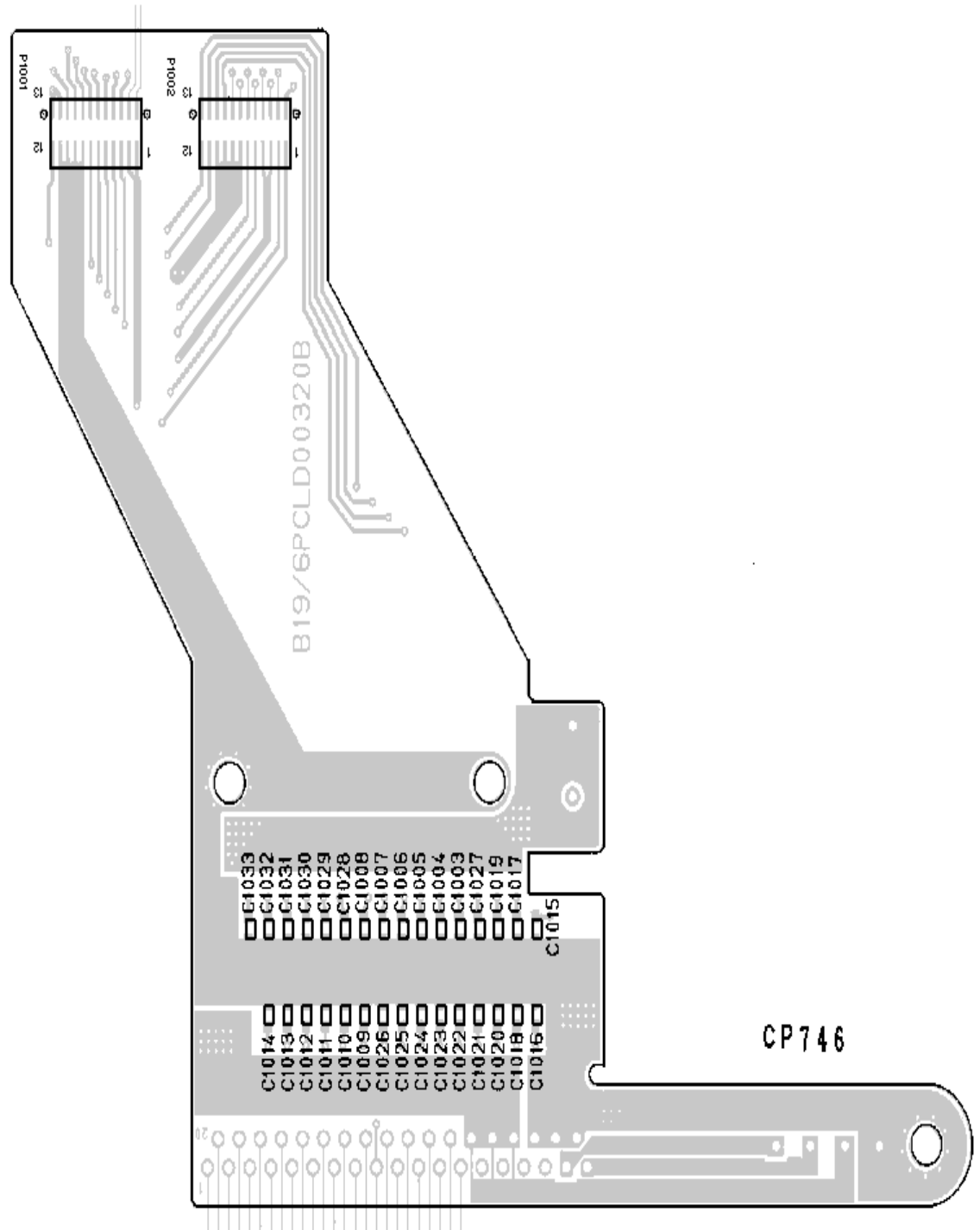
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**HIGH POWER PA INTERFACE
CMH-1231UH**

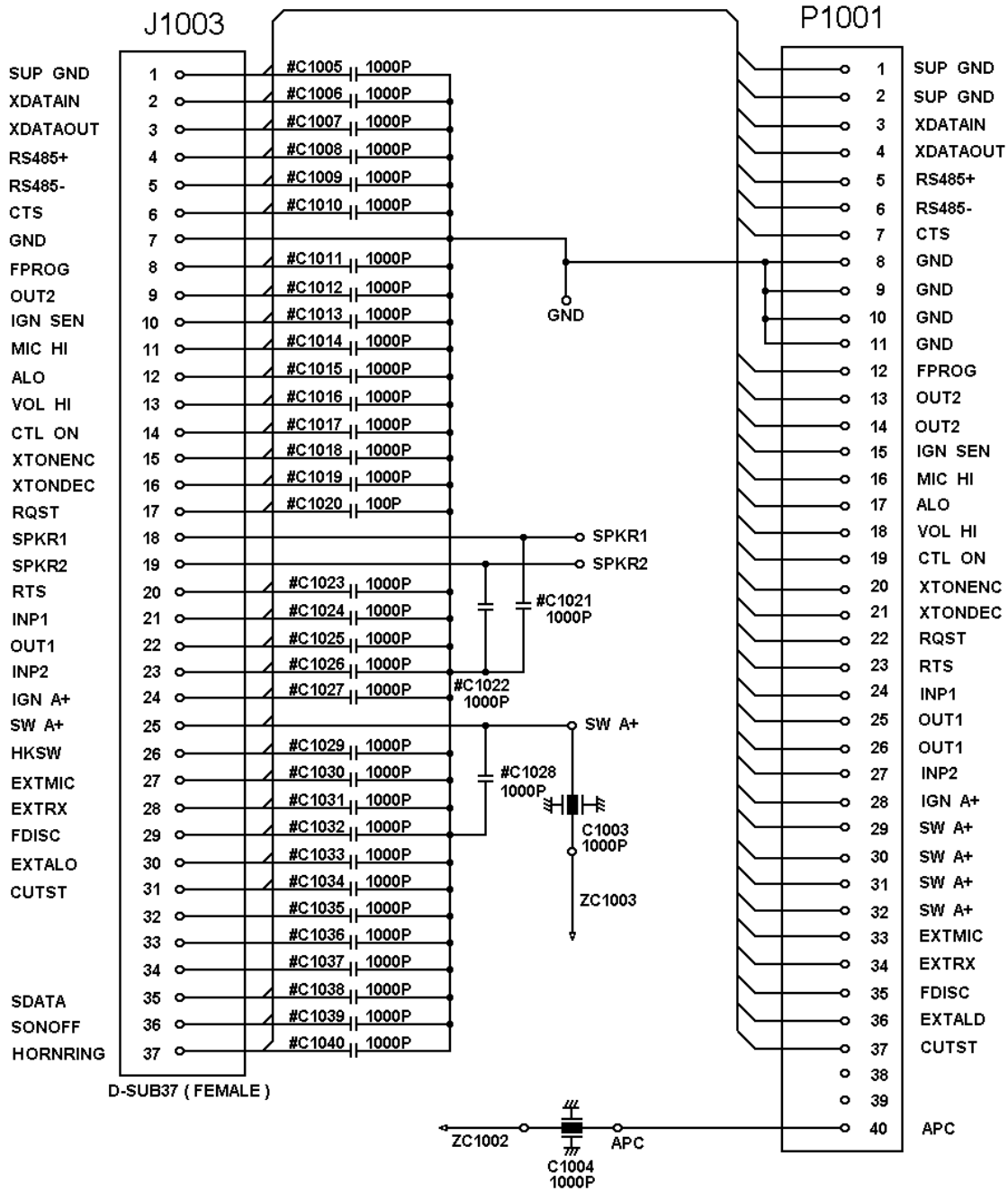
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COMPONENT SIDE



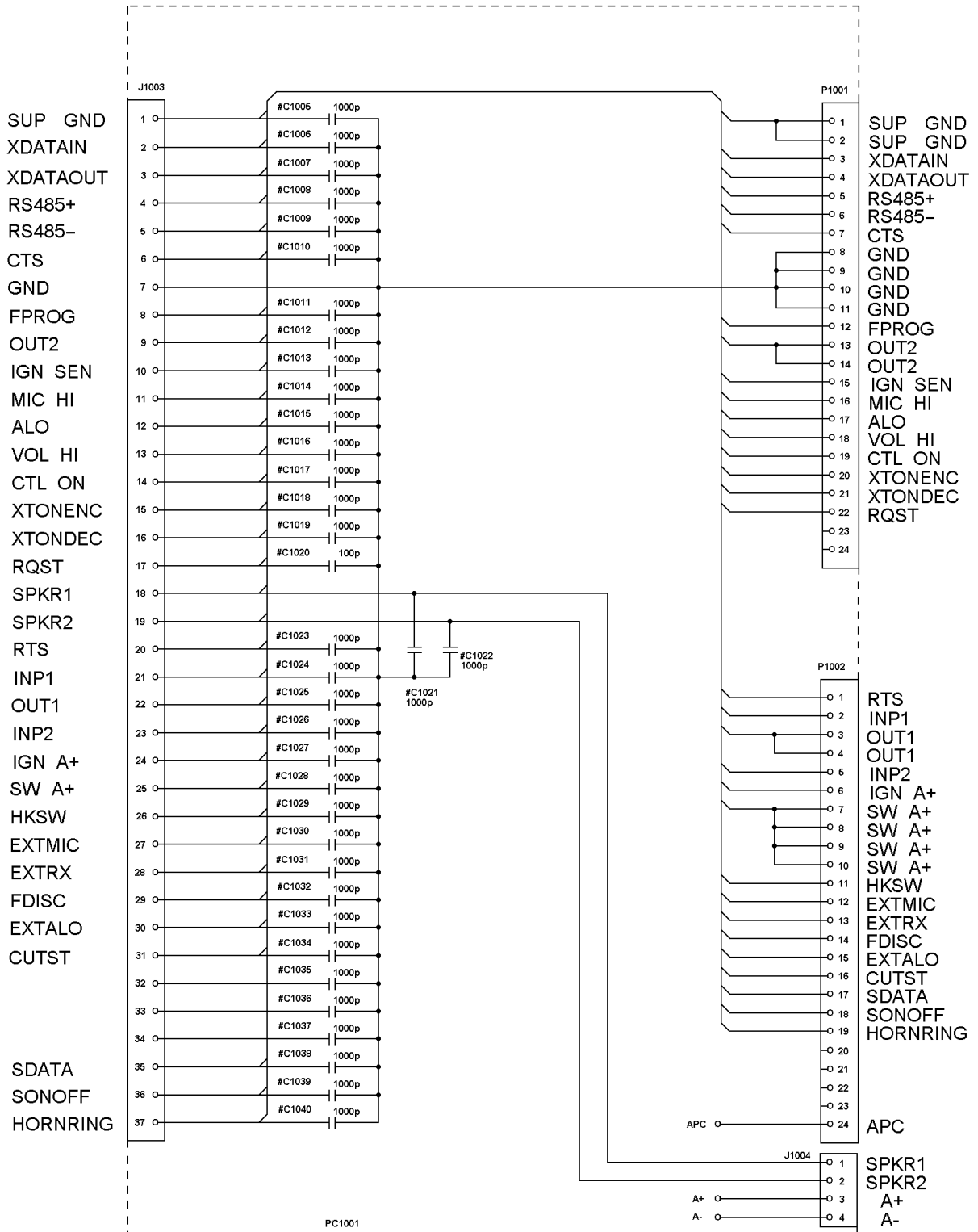
EUROPEAN PA INTERFACE
CMH-1231E

(B19/6PCLD00320B)

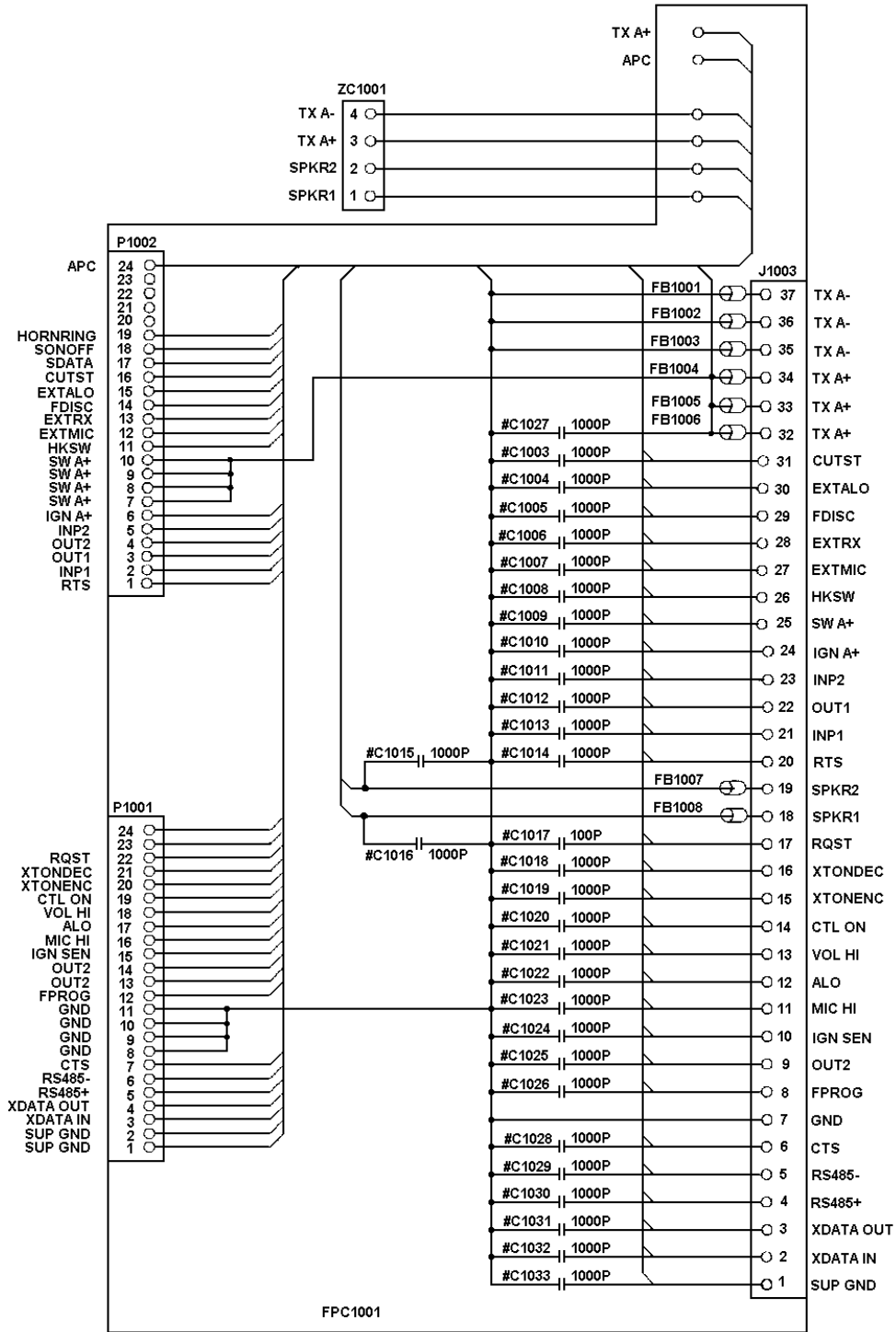


LOW BAND PA INTERFACE
CMH-1231LB

(DD00-CMH-1231LB)



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



**EUROPEAN PA INTERFACE
CMH-1231E**

(DD00-CMH-1231E)

Ericsson Inc.
Private Radio Systems
Mountain View Road
Lynchburg, Virginia
1-800-592-7711 (Outside USA, 804-592-7711)