

Ultra Electronics SERVICE BULLETIN

This Service Bulletin complies with British
Civil Airworthiness Requirements, Sect. A,
Chapter A5-3.

Signed . *A. Maybank*

CAA Approval No. DAI 1501/39
April 1, 1998

SERVICE BULLETIN No. 005LG-32-1

LANDING GEAR - EXTENSION AND RETRACTION - CONTROL AND INTERFACE

EQUIPMENT AMENDMENT NO. 1

DOWNLOCK INDICATOR LAMPS - IMPROVED POWER SUPPLY ISOLATION

1. Planning Information

A. Effectivity

- (1) Airbus Industrie A330 and A340, all models.
- (2) Landing Gear Control and Interface Units (LGCIUs), Part No. 005LG005B, all serial numbers up to, and including 1280.

B. Reason

The LGCIU is powered by two 28V d.c. supplies. One of these is dedicated to the normal functions of the LGCIU circuitry and the other supplies the independent downlock functions.

These supplies and circuits are intended to be electrically isolated from each other such that they can work independently of each other. Production experience indicates

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that this isolation can be degraded due to a build-up of circuit tolerances. In this event a small number of units may be unable to power the independent DOWNLOCK lamps when the normal supply is disconnected.

C. Description

This Service Bulletin introduces the precautionary addition of eight resistors on the Control PCB (Pt. No. 005LG00-0350). The extra resistance thus introduced restores sufficient isolation between the normal and the independent supplies and circuits.

As a precaution, to prevent the accidental installation of unmodified Control PCBs, the PCB connector polarity code is changed on both the motherboard and on the modified PCBs.

Accomplishment of this Service Bulletin prevents the fault.

A reworked Control PCB has the Part Number 005LG00-0430. New-build PCBs will have the Part Number 005LG00-0450. Reworked and new-build motherboards have the Part Number 005LG00-0440. The LGCIU amendment state is raised to 1.

D. Compliance

MANDATORY - for LGCIU serial numbers 1236 thru 1247 and 1251 thru 1280.

MANDATORY - for all other LGCIUs which are retrofitted with proximity interface PCBs having serial numbers of 1148 and up.

Compliance is got by either of the following methods :

- (1) Operators can carry out the accomplishment procedure themselves (see para. 2), using parts supplied by Ultra Electronics Controls Division.
- (2) Ultra Electronics Controls Division will accomplish this Service Bulletin on all LGCIUs returned for investigation/repair.

E. Approval

The technical data in this Service Bulletin is approved by the authority of CAA Approval No. DAI/1501/39.

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F. Manpower

The work necessary to accomplish this Service Bulletin requires 2.5 man-hours. Post-accomplishment testing will be covered by the normal acceptance test carried out at the end of the proximity interface PCB retrofit work for which the LGCIU was originally removed from the aircraft. You must make sure that you test the modified unit(s) in accordance with the latest issues of the CMM/ATEC instructions (see Para 2).

G. Material Cost and Availability

LGCIUs returned to the manufacturer will have the Control PCB and motherboard modified free of charge.

Alternatively, a Modification Kit will be supplied to Operators free of charge, on request.

H. Tooling - Price and Availability

No special tools are necessary but you must have the LGCIU Test Gear specified in CMM 32-31-82, Testing and Fault Isolation, Page 101.

J. Weight and Balance

Weight and balance are not changed.

K. Electrical Load Data

Accomplishment of this Service Bulletin does not change the aircraft electrical load.

L. References

Ultra Electronics Component Maintenance Manual Ref. No. 32-31-82, Rev. 2.

M. Interchangeability/Intermixability

Not affected.

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2. Accomplishment Instructions

CAUTION: YOU MUST WORK ON THE LGCIU ONLY IN A CLEAN ROOM WITH A CONTROLLED AND FILTERED ATMOSPHERE. DO ALL WORK AT AN APPROVED METAL-OXIDE SEMICONDUCTOR (MOS) WORKSTATION. USE APPROVED ANTI-STATIC PROCEDURES TO PREVENT STATIC DISCHARGE DAMAGE.

A. Disassemble the LGCIU

- (1) Refer to CMM 32-31-82, DISASSEMBLY, page 301 and to IPL Fig. 1.
- (2) Remove the OBRM and the Control PCB as detailed in DISASSEMBLY, paras. 2.A and 2.B. Do not remove any other PCBs until you are told to.
- (3) Store the LGCIU, front panel and OBRM in an anti-static bag until required for more disassembly.

B. Examine the Control PCB before Modification

- (1) Refer to Fig. 1 at the end of this Service Bulletin and compare this illustration with the unmodified Control PCB.
- (2) Note that the eight resistors, R33 thru R40, and all the wire links, are fitted on the solder side of the PCB.
- (3) Locate the seven VIA holes (shown as ● on Fig. 1) and identify the corresponding locations on the PCB.
- (4) Locate the solder pad in position 2 of RN23 (shown as ● on Fig. 1) and identify the same pad on the PCB.
- (5) Locate the solder pads to which the wire links will be soldered (shown as ● on Fig. 1) and identify the same pads on the PCB.

C. Remove the Conformal Coating

- (1) Refer to CMM 32-31-82, Repair, Page 608, Para 6.A.
- (2) Remove the conformal coating from the PCB areas where desoldering and soldering operations are to be performed.

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D. Remove IC3 and RN23

You must remove these components because you have to drill out the through-plated holes underneath. Proceed as follows.

- (1) Refer to CMM 32-31-82, Repair, Page 603, Para. 4.
- (2) Remove and discard IC3.
- (3) Make sure that all unwanted solder is removed from the 20 plated-through holes.
- (4) Remove and discard RN23.
- (5) Make sure that all unwanted solder is removed from the nine plated-through holes.

E. Drill Out the Plated-through Holes

- (1) Select a sharp 1.5mm diameter PCB drill.
- (2) Drill out the seven VIA holes (shown as ● on Fig. 1).
- (3) Drill out the solder pad in position 2 of RN23 (shown as ● on Fig. 1).
- (4) Using a dry, clean air blast, remove all cutting swarf from the work areas.
- (5) Using an illuminated PCB-hole magnifier, make sure that all traces of the plated-through walls have been removed. Make sure that no dirt or swarf remains inside the drilled-out holes.

F. Fit New IC3 and RN23

- (1) Refer to CMM 32-31-82, Repair, Page 603, Para. 4.
- (2) Select the new IC3 from the Modification Kit and solder it in position on the PCB.
- (3) Select the new RN23 from the Modification Kit. Locate pin 2 of RN23 and fit the sleeve from the Modification Kit over pin 2.
- (4) Solder the new RN23 in position on the PCB, ensuring that the sleeve enters the pin 2 hole correctly. Make sure that the end of the sleeve is hard up against the body of RN23.

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G. Fit the Resistors and the Wire Links

- (1) Turn the PCB so that the solder side is uppermost.
- (2) Refer to Fig. 1 in this Service Bulletin. You will see that the routing of the wire links does not go over the solder pads. You must follow the same routing when you fit the links.
- (3) There are eight resistors to be added to the PCB and these are fitted on the solder side of the PCB in the positions shown in Fig. 1. The resistors and the wire links are bonded to the PCB using Loctite adhesive Tak Pak 382. Fit the resistors first and the wire links second.

NOTE: Solder the links to the metallised sides of the resistors as shown in Fig. 1. Use a surface-mount soldering iron with a controlled tip temperature between 240°C and 300 °C. The diameter of the tip must not exceed 1.5mm and the solder wire diameter must be 26SWG or less.

- (4) There are 17 links to be fitted, as follows :

FROM	TO	FROM	TO
PL1/147	R33A	R33B	RN22/4
PL1/153	R34A	R34B	RN22/5
PL1/150	R35A	R35B	RN23/2
PL1/156	R36A	R36B	RN23/3
PL1/148	R37A	R37B	RN23/6
PL1/154	R38A	R38B	RN23/7
PL1/151	R39A	R39B	RN3/4
PL1/157	R40A	R40B	RN3/5
IC14/7	RN23/2		

H. Repair the Conformal Coating

- (1) Refer to CMM 32-31-82, Repair, Page 608, Para. 6.B.
- (2) Re-coat those areas of the PCB where the conformal coating was removed.

J. Change the PCB Connector Orientation

Change the orientation of the Control PCB connector to D - c - 6.

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K. Re-identify the Modified Control PCB.

Remove the original PCB identification label and fit the new label, supplied as part of the Modification Kit. Write the following information on the label :

PCB Pt. No. 005LG00-0430

PCB Serial No. (as on the original label)

L. Store the Modified PCB

Store the modified Control PCB in an anti-static bag until it is needed for installation.

M. More Disassembly of the LGCIU

Remove the LGCIU from the anti-static bag and proceed as follows.

- (1) Refer to CMM 32-31-82, DISASSEMBLY, page 301.
- (2) Remove the PCBs which remain and remove the power supply module as detailed in DISASSEMBLY, para. 2.B.
- (3) Remove the rear module as detailed in DISASSEMBLY, para. 2.C.
- (4) Remove the motherboard/filter module as detailed in DISASSEMBLY, para. 2.D.
- (5) Remove the motherboard as detailed in DISASSEMBLY, para. 4.A.

N. Change the Control PCB Motherboard Connector Orientation

- (1) Remove the three M2.5 nuts and washers securing the orientation sleeves of SK8 on the motherboard.
- (2) Set the sleeves to give an orientation of D - c - 6, refit the washers and nuts and tighten to a torque of $0.23\text{Nm} \pm 0.02\text{Nm}$ ($2.0\text{lbf.in.} \pm 0.2\text{lbf.in.}$).
- (3) Apply a thin coat of Loctite 221 (or its equivalent) to the threads.

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P. Re-identify the Modified Motherboard

Remove the original motherboard identification label and fit the new label, supplied as part of the Modification Kit. Write the following information on the label :

Motherboard Pt. No. 005LG00-0440

Motherboard Serial No. (as on the original label)

Q. Assemble the LGCIU

If you have finished the work for which the LGCIU was originally removed from the aircraft, assemble the motherboard, motherboard/filter module, rear module, PCBs, power supply module and the OBRM as detailed in CMM 32-31-82, ASSEMBLY, Page 703, Paras. 3.B and 5.A thru 5.F.

R. Test

After accomplishment of this Service Bulletin, do normal acceptance testing. Refer to CMM 32-31-82, TESTING AND FAULT ISOLATION. Make sure that you have Revision No 2 of the CMM as that contains specific tests, in para. 8, to ensure that the independent downlock circuits are correct.

If you are using ATE to test the LGCIU, ensure that the ATE software has these issue numbers :

For Smart Series 6 - L6PZ3Z8ATP0E00

For ATEC 5000 - L5PZ3Z8ATP0E00

S. Identify the Modification

On the equipment amendment plate, write the number 1.

T. Notification

After accomplishment of this Service Bulletin, the Operator must tell the manufacturer this data :

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- Service Bulletin Number.
- Serial Number(s) of the LGCIU(s) modified.
- Date of modification.

Send this data to :

Product Support Manager,
Ultra Electronics Controls Division,
Bridport Road, Greenford, Middlesex,
UB6 8UA
United Kingdom

3. Material Information

New Part Number	Qty.	Keyword	Old Part Number	Inst. - Disposition
005LG00-0430	1	PCB, CONTROL	005LG00-0350	Reworked part
005LG00-0450	1	PCB, CONTROL	005LG00-0350	New build only
005LG00-0440	1	Motherboard	005LG00-0210	Reworked part
24718-071-0-2	8	RESISTOR, R33 to R40 8k2, 1%, 0.25W	-	Additional parts
18274-431-0-3	5mm	SLEEVE	-	Additional part
29981-141-0-8	2	LABEL, IDENT	29981-141-0-8	Discard old parts
54HC573	1	IC, LATCH, IC3 to MIL-STD-883	54HC573	Discard old part
H09-1-47K	1	NETWORK, RESISTOR, 9-PIN, 47k, 2%, 1.6W, RN23	H09-1-47K	Discard old part

Note that the above new part numbers will be incorporated into the manufacturer's CMM (Ref. No. 32-31-82) at revision No 2.

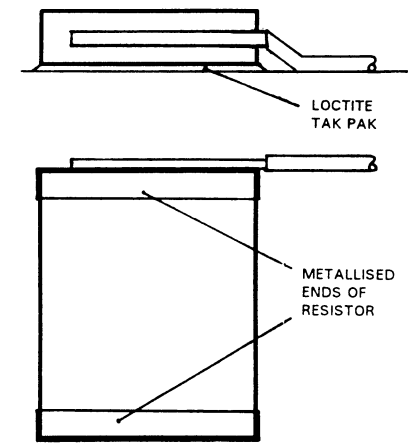
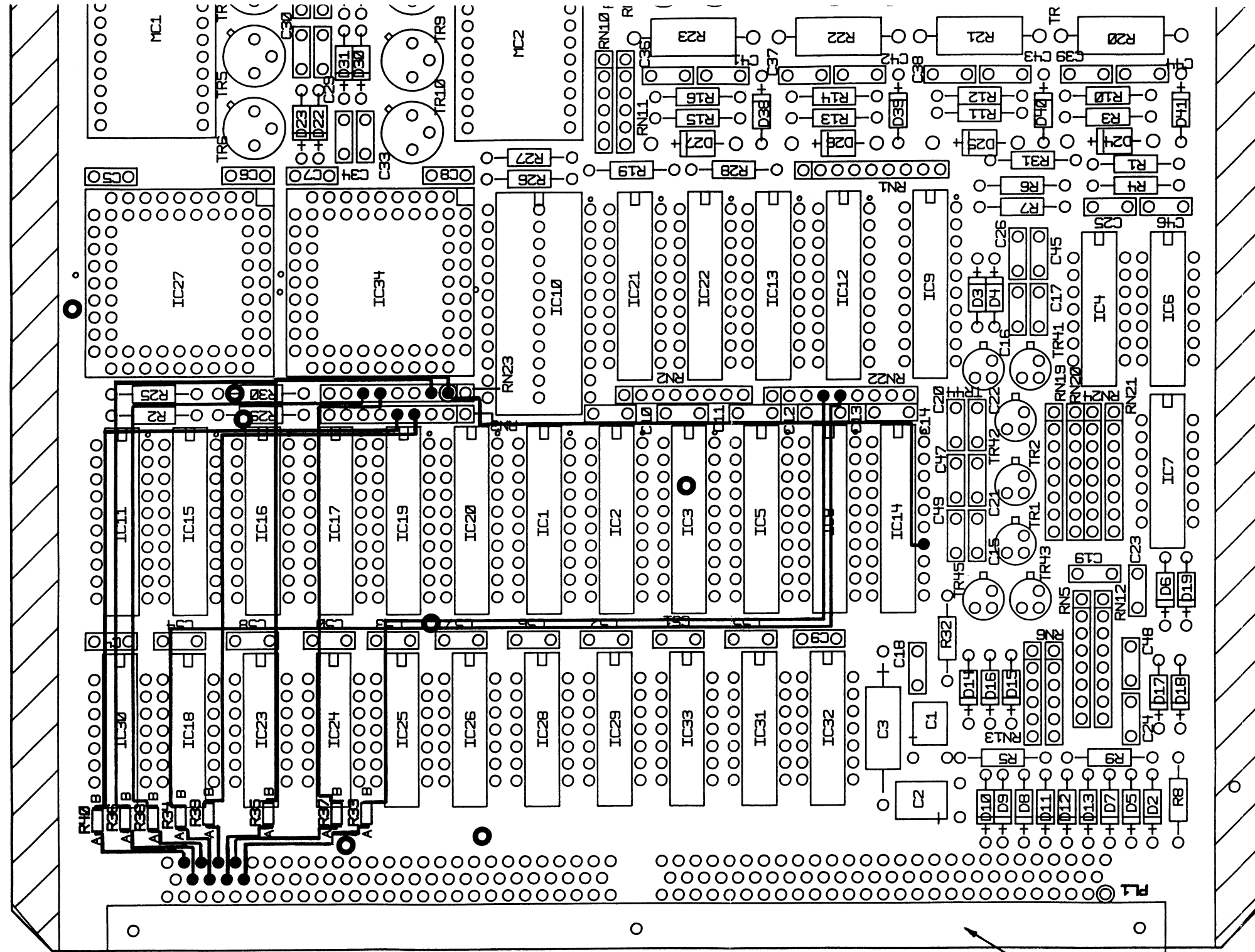
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The items which follow must be provided by Operators from consumable stores :

- (1) Wire, single-strand, 30AWG, Raychem Pt. No. 77C0112-30-2.
- (2) Adhesive, Loctite Tak Pak 382.
- (3) Conformal coating (Dow Corning 1-2577).
- (4) Primer (Dow Corning 1204).
- (5) Toluene, purified to BS6376 Pt. 2.
- (6) Iso-propyl alcohol to BS1595.
- (7) Adhesive, Loctite 221.

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TYPICAL SOLDERING OF LINK TO RESISTOR

THIS VIEW IS THE SOLDER SIDE OF THE PCB

Figure 1 Control PCB - Additional Resistors and Links