SERVICE BULLETIN

SUBJECT: COMMUNICATIONS – ACARS & CPDLC – Modify unit software and update TSAP database.

1. PLANNING INFORMATION

A. Effectivity

This change applies to the Dlink+ w/CPDLC, hereinafter referred to as Dlink+, part numbers shown in the table below.

Part Number	Mod Level	Quantity
14114-1-01	1 or 2	All
14114-1-02	1 or 2	All
14114-1-05	1 or 2	All

B. Concurrent Requirements

The configuration file in the personality module on the aircraft must be updated to work with a Mod 3 unit. This Service Bulletin contains information about the appropriate time to load the new configuration file.

This is a cumulative software update. It is not necessary to perform any previous Service Bulletins affecting unit software before this Service Bulletin is performed and they must not be performed afterwards.

C. Reasons

(1) The conditions the Service Bulletin will correct or improve:

(a) ACARS

1) User defined messages – addition of capability to define message summary text displayed when user defined label uplink received.

2) Retention of HMI (Human Machine Interface) manual input when navigation from current HMI page and return.

3) ARINC 429 Block Data processing improvements to account for out of order block sequence labels.

4) ACARS uplink label RA Command / Response uplink support.

5) ARINC 739 interface configuration corrections.

(b) CPDLC

1) Correction of CM (Context Management) LOGON functions to disallow logon attempt if current station does not support ATN.

2) Improvement in CPDLC message handling under heavy load / background traffic conditions.

3) Correction of CPDLC downlink message encoding for DM27, DM32, DM81, DM82, and DM106 that occurs infrequently and causes CPDLC session termination.

4) Improvement in handling of ground station responses indicating no applications are available.

5) Correction to unlikely ground network behavior where GIHO (Ground Initiated Handoff) received from station that does not support ATN. LCR (Link Connection Refused) will now be sent.

6) Correction of Multi-Frequency support function. Frequency Support List not cleared when changing VDR frequencies.

7) The TSAP database provides addresses for the System Access Points of the CPDLC communication network for the Link 2000+ program in European airspace. The database will be updated to EUR NSAP Address Registry, Version 3.

(c) General

1) Improvement for readability of display while exposed to direct sunlight. Brightness range available for automated brightness correction has been increased.

2) Addition of Field Loadable capability for flight code application updates.

3) Improvement in VDL performance during frequency congestion.

4) Improvement in VSWR detection implementation.

(2) Service or industry experience:

Interoperability testing was performed successfully at both ARINC and SITA network provider interoperability test labs. Formal Verification and Validation testing was performed at Spectralux labs for this software mod November, 2013.

In addition, flight trials were performed against an in-service production ANSP (Air Navigation Service Provider) October, 2013.

TSAP database updates were tested at Spectralux.

(3) Consequences if the modification is not performed:

(a) Possibility of CPDLC session loss due to ground station response indicating inability to decode downlink.

(b) Inability to use Dlink+ interface to host an external ARINC 739 display (such as SATCOM / dialer display).

(c) CM Logon failures when attempting to logon to ground station that does not support ATN.

(d) Inability to log into facilities and perform CPDLC exchanges.

(4) Expected benefits:

This modification will result in improvement in message transmission success rates and robustness of VHF data link. In addition, overall usability has been enhanced through HMI data retention and sunlight readability.

This and future flight code updates allow for field loading without the need for the unit to be returned to Spectralux.

Updating the TSAP database and having addresses preloaded will reduce pilot workload.

D. Description

Software and data in the on-board flash memory is changed in-circuit by an external computer operating through a programming interface, which is available through the ethernet port on a Dlink+ rear panel connector and Dlink+ maintenance port on the aircraft.

This change to the Dlink+ may be performed on the aircraft or on a service bench. The configuration file in the personality module on the aircraft must be changed after a Mod 3 Dlink+ is first installed. Once changed, the personality module will work with any other Dlink+ that has been modified according to this service bulletin.

Also, the TSAP database in the Dlink+ is updated.

E. Compliance

No compliance time is given.

F. Approval

Not applicable. This modification is classified as Minor per 14 CFR Part 21, Subpart O.

G. Estimated Manpower for Field Loading

Task	Man-Hours
Program flash memory in SBC, IO, VDL MA, VDL M2, and DU.	0.20
Verify version.	0.05
Re-mark unit. Fill out report.	0.15
TOTAL FOR EACH UNIT	0.40

H. Weight and Balance

Not changed.

I. Electrical Load Data

Not changed.

J. References

INST-14114-1, Revision B	Installation Manual for Dlink+ w/CPDLC.
ATP-14114-1, Revision U	Acceptance Test Procedure, CPDLC. (Spectralux Repair Station only)

K. Other Publications Affected

None.

L. Interchangeability or Intermixability of Parts

Not applicable.

2. MATERIAL INFORMATION

A. Material – Price and Availability

No material purchases are necessary.

B. Industry Support Information

This software modification is supplied at no charge to the customer.

C. Material Necessary for Each Component

None.

D. Material Necessary for Each Spare

None.

E. Re-identified Parts / Existing Parts Accountability

Part No.	Old Mod	New Mod	Disposition
14114-1-01	1 or 2	3	RWK / R
14114-1-02	1 or 2	3	RWK / R
14114-1-05	1 or 2	3	RWK / R

RWK – Make the change given in this service bulletin

R – The Old Mod is the Mod level of the units on which the change is to be done and the New Mod is the Mod level of the units after the change is done.

F. Special Tooling and Software Necessary to do this Service Bulletin

Note: Equivalent alternatives may be used.

Note: One copy of each item is needed.

(1) Supplied by Spectralux for use in field.

Part No.	Description	Source
Customer specific part number with CCD prefix.	• Dlink_Configuration_Loader.exe • "Shortcut to Mod3 Dlink_Configuration_Loader" • Mod1_Config_ON_GROUND.dat (Generic Mod 1 configuration, forced ON GROUND) • Mod2_Config_ON_GROUND.dat (Generic Mod 2 configuration, forced ON GROUND) • Mod3_Config_ON_GROUND.dat (Generic Mod 3 configuration, forced ON GROUND) • Configuration(s) specific to each aircraft type of each customer (with .dat extension) • Unit software: o eSBCRom.bin o eIORom.bin o eDURom.bin o DSP_ModeA.bin o DSP_Mode2.bin	Spectralux
TF – 14519-1	• CUST_TSAP_DB_V3_0.bin (TSAP database) • Dlink_Configuration_Loader.exe	ICAO AFSG Planning Group
96263-3 96263-4 Cables are described in Section **6** of this document (not used for field loading in aircraft)	• 96263-3 Cable,11-pin, power and personality module • 96263-4 Cable, 61-pin, data	Spectralux
PE-3661-36 (not used for field loading in aircraft)	Cable, N male to TNC male, 50 Ohm, 3 ft (0.91 m)	Pasternack Enterprises
25-T-FN (not used for field loading in aircraft)	Termination, 50 Ohm, 25 W N female (dummy load)	Bird Electronic Corp
C501108004 (not used for field loading in aircraft)	Ethernet cable, Cat 5e, RJ45 male – RJ45 male, straight, 4 ft (1.2 m)	Belden

(2) Field loading equipment supplied by customer

Part No.	Description	Source
Any (not used for field loading in aircraft)	28V DC power supply, minimum 1.5 A	Any
Any	Laptop PC with Windows XP or Windows 7 and at least one ethernet port and USB port. A CD drive may be necessary, depending on the customer's distribution media handling protocol.	Any
R6K9	Acetone, 100%	Sherwin-Williams
50-700R	Legend Ink, Black	Enthone
Any	Permanent ink of contrasting color	Any

(3) Spectralux Repair Station equipment

Part No.	Description	Source
XDL35-5TP	28 VDC power supply, 3 A	Xantrex (now Sorensen)
25-T-MN	Termination, 50 Ohm, 25 W N male (dummy load)	Bird Electronic Corp
Any	Cable, N female – TNC male, 50 Ohm, 1.5 ft (0.46 m) (may adapt other connectors and adjust length as needed)	Any
ATP – 14114-1 Revision U	Dlink+ w/CPDLC Acceptance Test Procedure	Spectralux
96263-1	Cable,11-pin, power and personality module	Spectralux
96263-2	Cable, 61-pin, data	Spectralux
12854-4 BOM Revision A	Personality module	Spectralux
14114-1-xx	Dlink+ w/CPDLC with Mod 3 software	Spectralux
Latitude D820	PC with Windows XP or Windows 7, at least one ethernet port and one USB port	Dell
C501108004	Ethernet cable, Cat 5e, RJ45 male – RJ45 male, straight, 4 ft (1.2 m) (adjust length as needed)	Belden
R6K9	Acetone, 100%	Sherwin-Williams
50-700R	Legend Ink, Black	Enthone

Part No.	Description	Source
F-150, WHITE	Marking Ink, White	Organic Products Company

3. EQUIPMENT SETUP (ONE TIME)

Note: All sites perform this section.

Note: Windows administrator privileges are needed to configure and use the PC to perform this service bulletin.

(1) From the customer specific distribution with CCD prefix, copy the included Dlink_Configuration_Loader folder and its contents to C:\.
If C:\Dlink_Configuration_Loader already exists, copy only Dlink_Configuration_Loader\Mod3 and its contents into it.

Copy “Dlink_Configuration_Loader\Mod3\Shortcut to Mod3 Dlink_Configuration_Loader” to the Windows Desktop.

From the distribution of TF – 14519-1, copy only CUST_TSAP_DB_V3_0.bin to Dlink_Configuration_Loader\Mod3.

(2) If the folder C:\Dlink exists, remove or rename it.

(3) Configure the IP address of the PC as described in the following tables.

Windows XP	Windows 7
Follow this pathway: Control Panel Network Connections Local Area Connection (for your wired network connection)	Follow this pathway: Control Panel Network and Sharing Center Change Adapter Settings Local Area Connection
Highlight Internet Protocol in scrolling window (do not uncheck it)	Highlight Internet Protocol Version 4 in scrolling window (do not uncheck it)

Windows XP or Windows 7
Click Properties
Click radio button for “Use the following IP address” and enter IP address = 192.168.255.12 Subnet mask = 255.255.255.0 Default gateway = 192.168.1.0
Click radio button for “Use the following DNS address” and enter Preferred DNS server = blank Alternate DNS server = blank

4. SOFTWARE UPDATE INSTRUCTIONS (EACH UNIT)

Note: Perform either **4.A** or **4.B** according to your location.

Note: Fill out the Conversion Results worksheet in **5 WORKSHEET** during the programming process.

A. Field Loading in Aircraft

WARNING: This procedure must be performed only when the aircraft is on ground. The Dlink+ is inoperative during the procedure.

CAUTION: If the PC is being powered by its internal battery, make sure the battery has enough power for at least one hour of operation. Make sure aircraft power is stable. If the PC battery becomes depleted during programming or aircraft power is interrupted, the Dlink+ may be rendered inoperative, requiring that it be returned to the Spectralux Repair Station.

(1) Attach ethernet cable between PC and aircraft maintenance port of Dlink+.

(2) Double click on “Shortcut to Mod 3 Dlink_Configuration_Loader” on the Windows Desktop.

(3) Enable power to Dlink+. Wait until the status reported by the Configuration Loader changes from NOT CONNECTED to CONNECTED in both the server and client areas.

(4) Go to the Aircraft Address tab of the Configuration Loader.

(5) Click Read and then record the four lines of data reported if real aircraft address information was loaded previously. A convenient way of recording the addresses is by copying and pasting each into a Windows Notepad document. The addresses will be needed later in this section.

(6) Go to the Utilities tab of the Configuration Loader. The field next to the Get Mod Version button should populate automatically. Note the number shown.

(7) Go to the Configuration tab of the Configuration Loader.

(8) Click Browse on the Write Configuration Line and navigate to C:\Dlink_Configuration_Loader\Mod3. Open the appropriate configuration file as follows:

Mod Version (from step 6)	Open file
20	Mod1_Config_ON_GROUND.dat
22	Mod2_Config_ON_GROUND.dat

Click Write Configuration. The Dlink+ display will count up while RECEIVING CFG and then while WRITING TO PM. Wait until the unit reboots and connection status becomes CONNECTED.

(9) Go to the Applications tab of the Configuration Loader.

(10) For each of the five Write lines, Click Browse and navigate to C:\Dlink_Configuration_Loader\Mod3 and open the files as indicated in the following table.

Action	File	CRC
Write DU	eDURom.bin	20-BC

Action	File	CRC
Write SBC	eSBCRom.bin	00-A4
Load Mod3_Config_ON_GROUND		
Write IO	eIORom.bin	93-29
Write VDL MA	DSP_ModeA.bin	37-8E
Write VDL M2	DSP_Mode2.bin	1E-1B

(11) Click on the Write DU button. Click Yes in the Confirm pop-up box if the CRC agrees with the value in the table above. (Click No if the CRC does not agree with the value in the table and do not proceed with programming until the discrepancy is resolved.) The Dlink+ will count up while PROGRAM LOADING and then after a short delay, will reboot. Wait until the unit reboots and connection status becomes CONNECTED.

(12) Click on the Write SBC button. Click Yes in the Confirm pop-up box if the CRC agrees with the value in the table above. (Click No if the CRC does not agree with the value in the table and do not proceed with programming until the discrepancy is resolved.) The Dlink+ will count up while PROGRAM LOADING and then after a short delay, will reboot. Wait until the unit reboots and connection status becomes CONNECTED. The Dlink+ will display CORRUPTED OR MISSING CONFIGURATION…

(13) Go to the Configuration tab of the Configuration Loader.

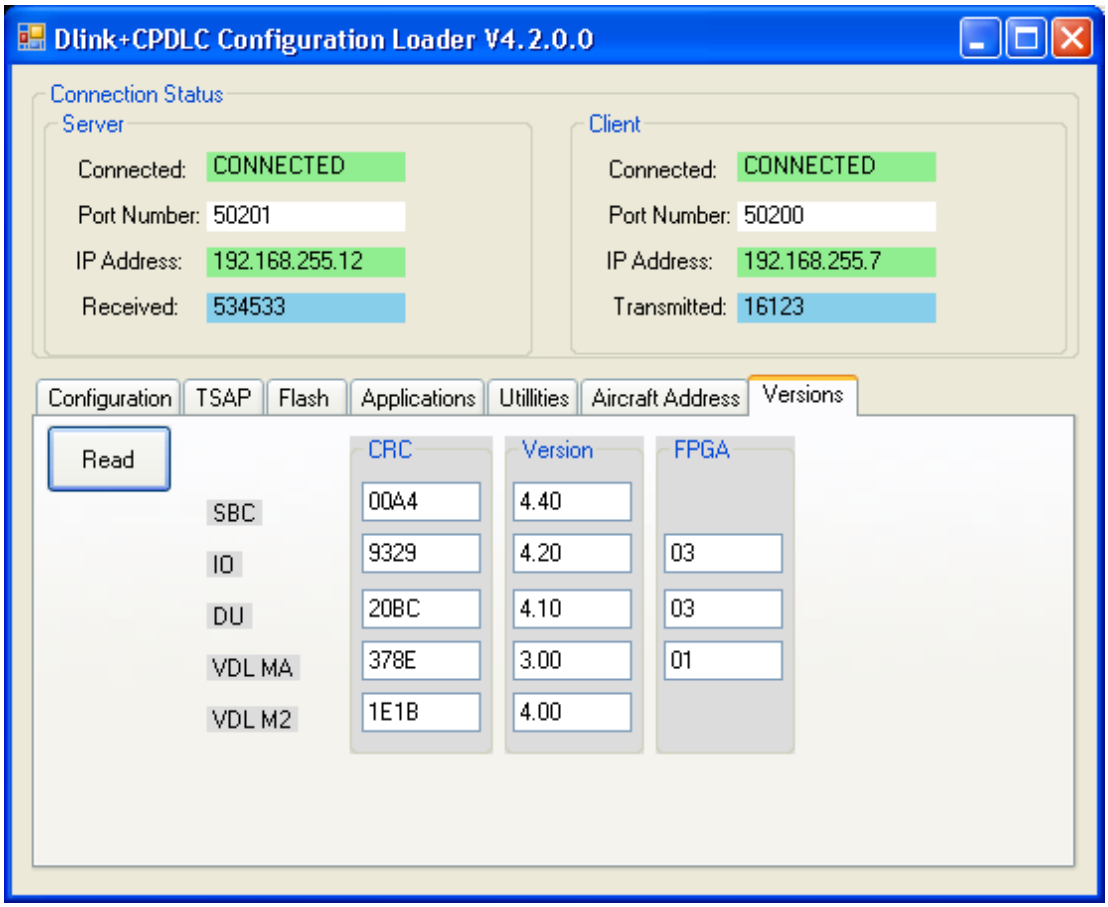
(14) Click Browse on the Write Configuration Line and navigate to C:\Dlink_Configuration_Loader\Mod3. Open Mod3_Config_ON_GROUND. Click Write Configuration. The Dlink+ display will count up while RECEIVING CFG and then while WRITING TO PM. Wait until the unit reboots and connection status becomes CONNECTED. The CORRUPTED OR MISSING CONFIGURATION message should not be present.

(15) Go to the Applications tab of the Configuration Loader.

(16) Click on the remaining three Write buttons starting with Write IO in the order shown in the table above. After confirming the CRC, wait until the unit has rebooted and Configuration Loader connection status is CONNECTED before proceeding to the next line.

Note: The FAIL annunciator may turn on after the IO has been programmed, but will be off after all five files have been programmed

(17) Go to the Versions tab of the Configuration loader and click Read. The programming has been successful if all numbers in the CRC, Version, and FPGA columns match **Picture 1**.



Picture 1

(18) Go to the Configuration tab of the Configuration Loader.

(19) Click Browse on the Write Configuration Line and navigate to C:\Dlink_Configuration_Loader\Mod3. Open the configuration file appropriate to the aircraft on which this modification is occurring. Click Write Configuration and wait until the unit has rebooted.

(20) Go to the Aircraft Address tab of the Configuration Loader.

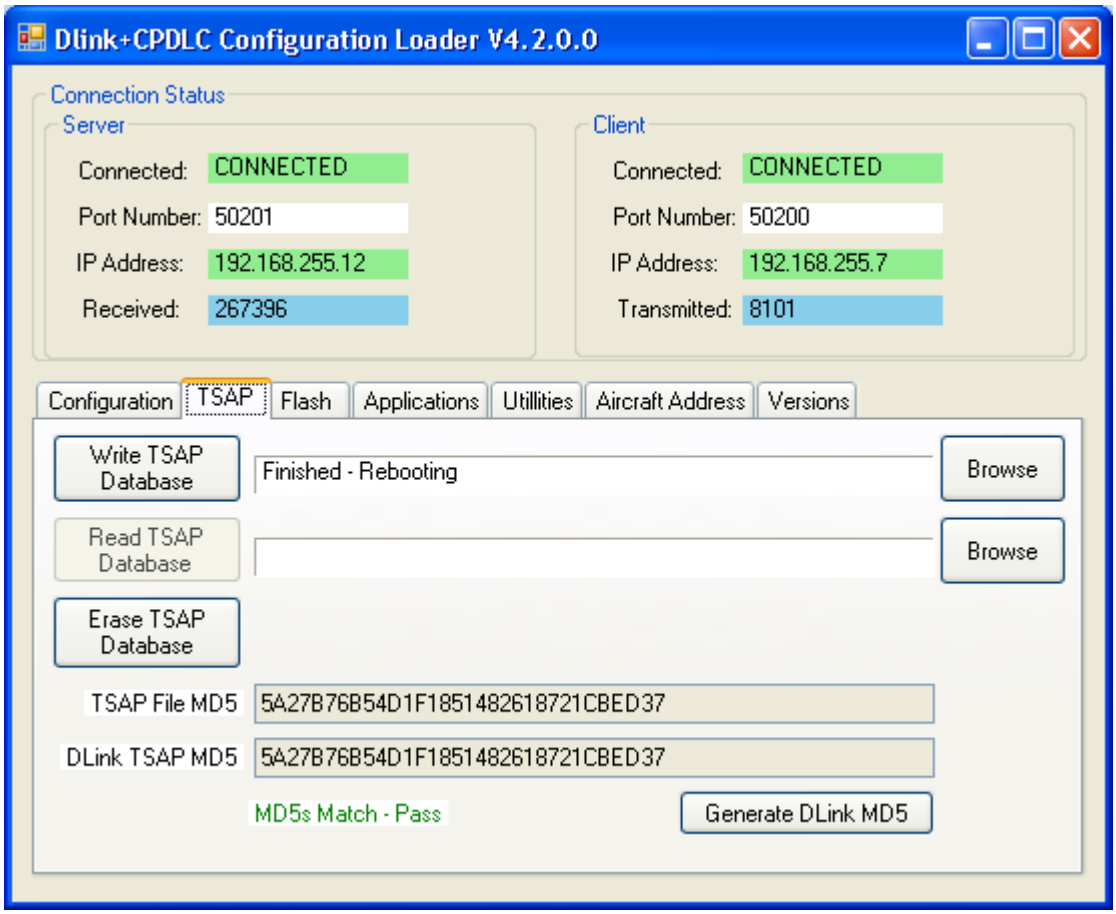
(21) Enter the information into the four fields. A convenient way of entering the information is by copying and pasting from a Windows Notepad document, if one was created in steps **4.A(4)**-**4.A(5)**. Otherwise, typing is acceptable; see Installation Manual for format information.

(22) Click Write and wait until the Dlink+ writes to the PM, reboots and is CONNECTED. Then click Read and confirm that the reported addresses are correct.

(23) Go to the TSAP tab of the Configuration Loader.

(24) Click Browse on the Write TSAP Database Line and navigate to C:\Dlink_Configuration_Loader\Mod3. Open the TSAP database file CUST_TSAP_DB_V3_0.bin. Click Write TSAP Database and wait until the unit has rebooted. The TSAP File MD5 field will be filled with a 32 digit number.

Click Generate Dlink MD5. That button will be disabled and the Received field will increase while the calculations are made. After the received field has increased by approx. 260,000, a 32 digit number will appear in the Dlink TSAP MD5 field. If the two MD5 fields match, a Pass message will appear beneath the two fields. A Fail message indicates the two fields do not match and must be corrected before proceeding. See **Picture 2**.



Picture 2

(25) Proceed to section **4.D Post-Programming Test.**

B. Spectralux Repair Station or Field Repair Shop

CAUTION: Make sure the power supply is set to 28 V ± 0.5 V with at least 1.5 A current limit. Do not enable power until instructed in the following steps.

(1) Attach the 50 Ohm dummy load to the TNC connector on the rear of the Dlink+ using the 50 Ohm cable.

(2) Attach the 11-pin J1 connector and 61-pin J2 connector to the Dlink+. Attach the ethernet cable between the RJ-45 connector and the PC.

(3) Attach the disabled power supply to the 11-pin connector, positive to the red banana plug and negative to the black banana plug.

(4) Double click on the “Shortcut to Mod3 Dlink_Configuration_Loader” located on the Windows desktop.

(5) Enable power and wait until the connection status reported by the Configuration Loader changes from NOT CONNECTED to CONNECTED in both the server and client areas.

(6) Go to the Utilities tab of the Configuration Loader. The field next to the Get Mod Version button should populate automatically. Note the number shown.

(7) Go to the Configuration tab of the Configuration Loader.

(8) Click Browse on the Write Configuration Line and navigate to C:\Dlink_Configuration_Loader\Mod3. Open the appropriate configuration file as follows:

Mod Version (from step 6)	Open file
20	Mod1_Config_ON_GROUND.dat
22	Mod2_Config_ON_GROUND.dat

Click Write Configuration. The Dlink+ display will count up while RECEIVING CFG and then while WRITING TO PM. Wait until the unit reboots and connection status becomes CONNECTED.

(9) Go to the Applications tab of the Configuration Loader.

(10) For each of the five Write lines, click Browse and navigate to C:\Dlink_Configuration_Loader\Mod3. Open the files as indicated in the following table.

Action	File	CRC
Write DU	eDURom.bin	20-BC
Write SBC	eSBCRom.bin	00-A4
Load Mod3_Config_ON_GROUND		
Write IO	eIORom.bin	93-29
Write VDL MA	DSP_ModeA.bin	37-8E
Write VDL M2	DSP_Mode2.bin	1E-1B

(11) Click on the Write DU button. Click Yes in the Confirm pop-up box if the CRC agrees with the value in the table above. (Click No if the CRC does not agree with the value in the table and do not proceed with programming until the discrepancy is resolved.) The Dlink+ will count up while PROGRAM LOADING and then after a short delay, will reboot. Wait until the unit reboots and connection status becomes CONNECTED.

(12) Click on the Write SBC button. Click Yes in the Confirm pop-up box if the CRC agrees with the value in the table above. (Click No if the CRC does not agree with the value in the table and do not proceed with programming until the discrepancy is resolved.) The Dlink+ will count up while PROGRAM LOADING and then after a short delay, will reboot. Wait until the unit reboots and connection status becomes

CONNECTED. The Dlink+ will display CORRUPTED OR MISSING CONFIGURATION…

(13) Go to the Configuration tab of the Configuration Loader.

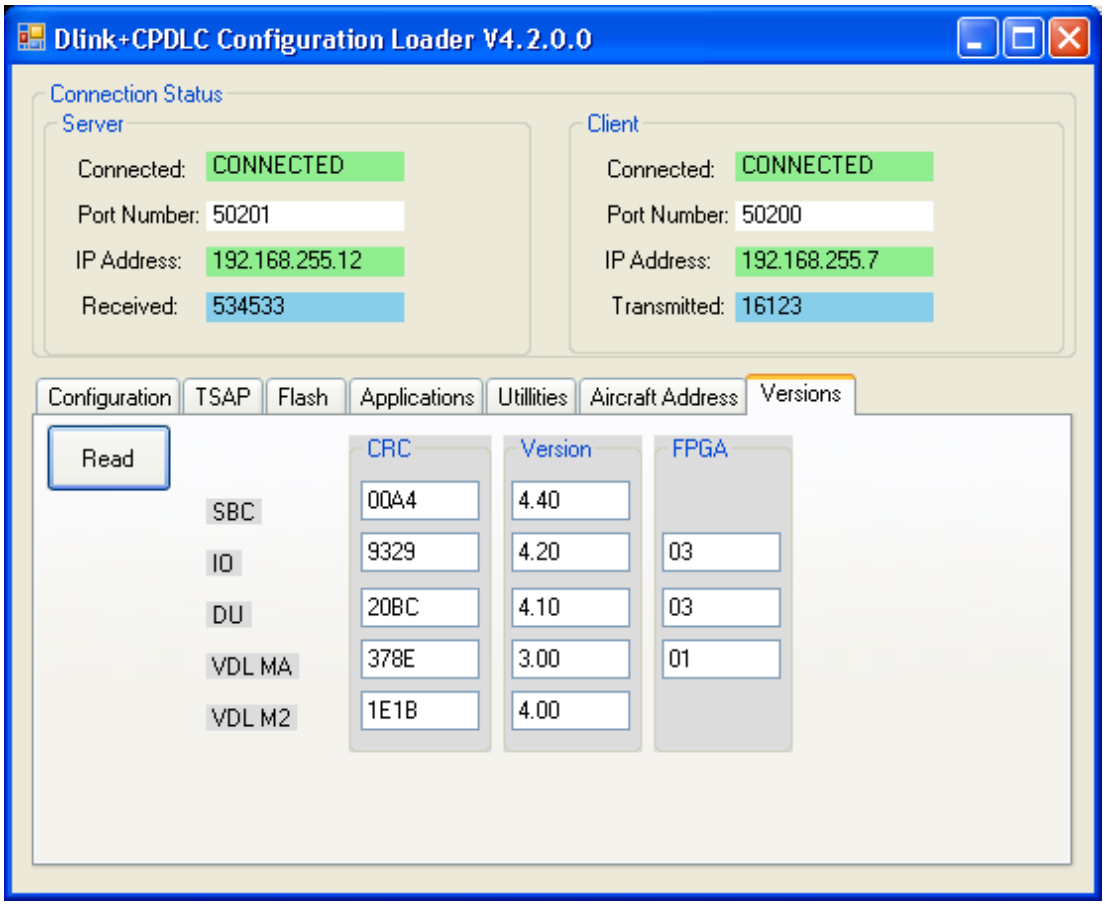
(14) Click Browse on the Write Configuration Line and navigate to C:\Dlink_Configuration_Loader\Mod3. Open Mod3_Config_ON_GROUND. Click Write Configuration. The Dlink+ display will count up while RECEIVING CFG and then while WRITING TO PM. Wait until the unit reboots and connection status becomes CONNECTED. The CORRUPTED OR MISSING CONFIGURATION message should not be present.

(15) Go to the Applications tab of the Configuration Loader.

(16) Click on the remaining three Write buttons in the order shown in the above table. After confirming the CRC, wait until the unit has rebooted and Configuration Loader connection status is CONNECTED before proceeding to the next line.

Note: The FAIL annunciator may turn on after the IO has been programmed, but should be off after all five files have been programmed.

(17) Go to the Versions tab of the Configuration loader and click Read. The programming has been successful if all numbers in the CRC, Version, and FPGA columns match **Picture 3**.

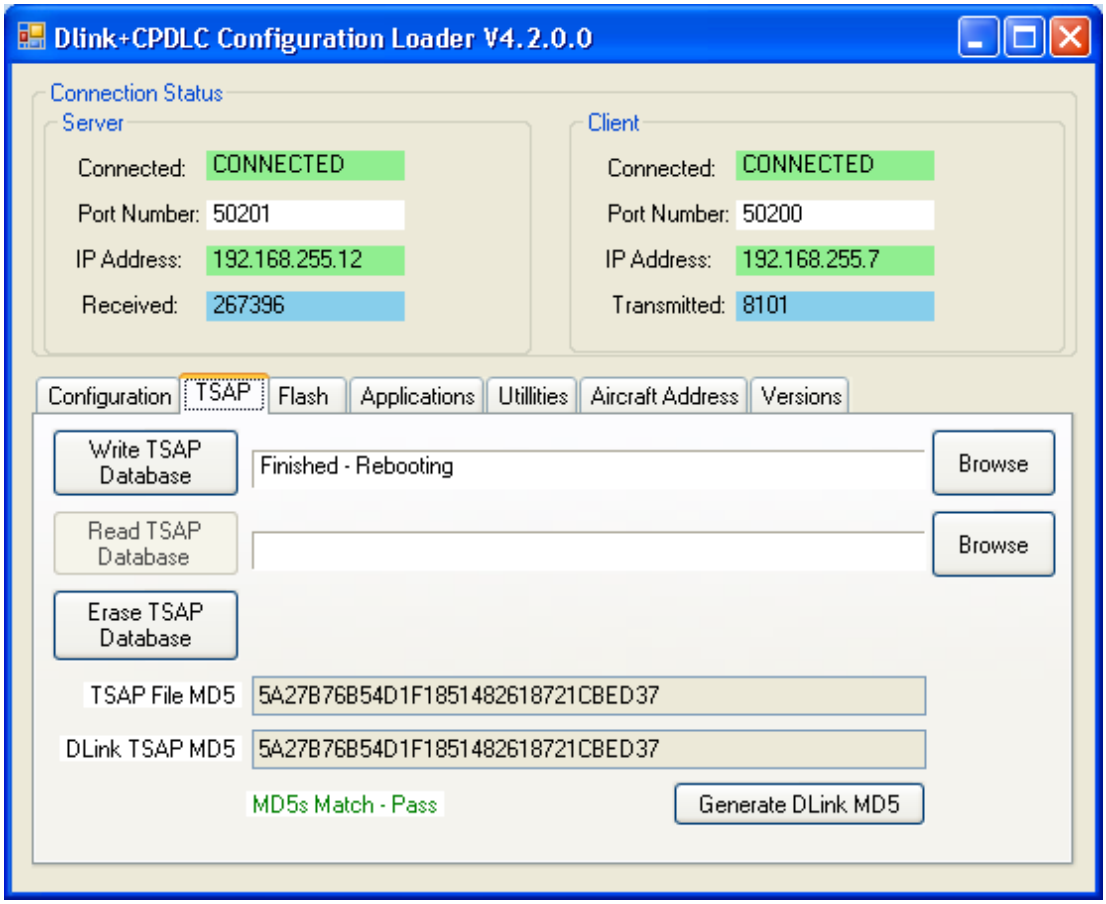


Picture 3

(18) Go to the TSAP tab of the Configuration Loader.

(19) Click Browse on the Write TSAP Database Line and navigate to C:\Dlink_Configuration_Loader\Mod3. Open the TSAP database file CUST_TSAP_DB_V3_0.bin. Click Write TSAP Database and wait until the unit has rebooted. The TSAP File MD5 field will be filled with a 32 digit number.

Click Generate Dlink MD5. That button will be disabled and the Received field will increase while the calculations are made. After the received field has increased by approx. 260,000, a 32 digit number will appear in the Dlink TSAP MD5 field. If the two MD5 fields match, a Pass message will appear beneath the two fields. If they do not match, a Fail message will appear. See **Picture 4**.



Picture 4

(20) See section **4.C** concerning future installation of the unit in an aircraft.

(21) Proceed to section **4.D Post-Programming Test.**

C. Future Installation in Aircraft of Dlink+ Updated at Spectralux Repair Station or Field Repair Shop

When the Dlink+ is installed in an aircraft, the configuration stored in the personality module on the aircraft must be upgraded to the Mod 3 version, if not done previously. If the unit displays a CORRUPTED OR MISSING CONFIGURATION message when powered, the

personality module must be changed to agree with the unit software.

If aircraft address information was previously entered into the personality module during installation, see instructions in sections **4.A(4)-4.A(5)** and **4.A(18)-4.A(22)**.

If real aircraft address information was not previously entered into the personality module, see instructions in sections **4.A(18)-4.A(22).** Aircraft address information must be entered by typing into the Configuration Loader. It will not be possible to copy and paste the addresses from the previous version configuration.

D. Post-Programming Test

(1) **All sites**

Note: All confirmations in this section are by visual inspection.

(a) Disable power to the Dlink+.

(b) Remove ethernet cable connecting PC to unit being programmed.

(c) Enable power to the Dlink+ and wait until bootup is complete.

(d) Press USER key, then MAINT soft key, then CONFIG soft key, then VERSIONS soft key.

(e) Confirm that the display shows
HW: 14494-1-XX BOM REV – and that CRC and FPGA values agree with **Picture 3**.

Note: VDL MA on the picture is equivalent to M0 on the unit.

(f) Press down arrow soft key (right of display).

(g) Confirm that CFG PART NO agrees with part number included in filename of correct configuration file for aircraft.

(h) Press down arrow soft key (right of display).

(i) Confirm that Version values agree with **Picture 3**.

(j) Press USER key, MAINT soft key, CONFIG soft key, USER EDIT soft key. Enter using Dlink+ keyboard, “USER00”. Press ENTER key (not return).

(k) Confirm AC TYPE is the expected model, CUSTOMER is correct, and VERSION matches the v number included in the filename of the correct configuration file for the aircraft.

(2) **Additional Tests for Spectralux Repair Station Only**

Perform the following sections of ATP-14114-1.

(a) Section 3.4.2 for software version verification logging.

(b) Section 3.6.1 for test of ARINC429 and discrete IO.

(c) Section 3.7 with ALL selected as Test Sequence # and Test Selection switches adjusted as shown in the following table.

Section	YES	NO
Tx Tests	RF Output Power	All others
Rx Tests	Sensitivity	All others
Phys Layer Tests	None	All

(3) Proceed to **4.E Return to Service**.

E. Return to Service

(1) If all Conversion Results are PASS or NA , mark the unit label according to **Figure 1. Label Marking**.

(2) Complete and archive automated test results (Spectralux Repair Station only) and Conversion Results worksheet from **5 WORKSHEET**.

(3) Unit may be placed in service if all results on the Conversion Results worksheet are PASS, YES, or NA.

(4) END Return to Service.

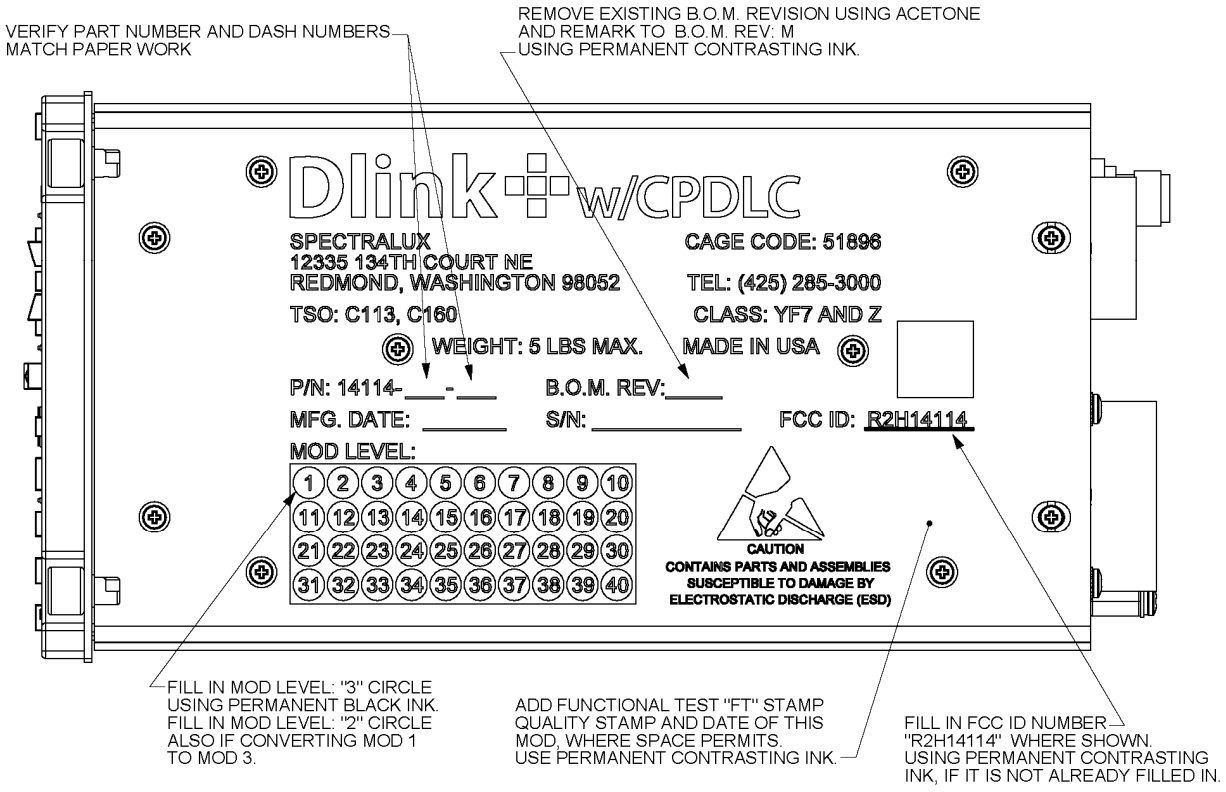


Figure 1. Label Marking

5. WORKSHEET

The Conversion Results worksheet is on the next page.

SERVICE BULLETIN

14114-1-xx to 14114-1-xx Mod 3 Conversion Results

Unit Part No. 14114-1-_____ Unit serial number: _____

Task	Result
Program DU	PASS / FAIL
Program SBC	PASS / FAIL
Program IO	PASS / FAIL
Program VDL MA	PASS / FAIL
Program VDL M2	PASS / FAIL
Visual inspection of Versions tab of Configuration Loader	PASS / FAIL
Update TSAP database and check installation	PASS / FAIL
Post-programming inspection of: HW: 14494-1-XX BOM REV –, CRC, and FPGA values CFG PART NO Version values	 PASS / FAIL PASS / FAIL PASS / FAIL
Post programming inspection of (NA if not in aircraft): AC TYPE CUSTOMER VERSION	 PASS / FAIL / NA PASS / FAIL / NA PASS / FAIL / NA
Post-programming ATP-14114-1 tests. Spectralux Repair Station only. Others mark NA.	PASS / FAIL / NA
Unit label marking completed	YES / NO

Repairman (signature) _____ Date _____
mm/dd/yyyy

Inspector (signature) _____ Date _____
mm/dd/yyyy

Return copy of completed form to:

Spectralux

Attn: Customer Return Goods

6. CABLES

A. Crimping Tool

Note: Equivalent substitutes may be used.

Tool	Manufacturer and Part Number
Crimping tool	Daniels Manufacturing Corp. M22520/1-01 + M22520/1-02 (#16) M22520/2-01 + M22520/2-02 (#20)

B. 11-Pin Cable

Spectralux part number 96263-3.

(1) Materials

Note: Equivalent substitutes may be used.

Component	Manufacturer and Part Number
Connector at Dlink+ w/ CPDLC	Amphenol Matrix 1 x MS3476L18-11S
Strain relief	1 x M85049/52-1-18N
16 awg red stranded wire	Alpha Wire 3057 RD005
20 awg black stranded wire	Alpha Wire 3053 BK005
Banana plug	Pomona Electronics 1 x red (1825-2) 1 x black (1825-0)
Personality module	Spectralux 1 x 12854-4
Cable assy, personality module	Spectralux 1 x 14315-1
Silicone sponge	Saint-Gobain R-01460, 1/16” thick
RTV	Dow Corning 3145

(2) Signals

Pin	Signal	Description	Length
A	28VDC_IN	16 awg red to a red banana plug	36 in ± 3 in (91 cm ± 7.6 cm)
B J	28V_RTN CGND	20 awg black to a common black banana plug	36 in ± 3 in (91 cm ± 7.6 cm)
C	PERSONALITY_CLK	14315-1 To personality module pin 3	6 in ± 1 in (15 cm ± 2.5 cm)
D	PERSONALITY_DATA	14315-1 To personality module pin 1	6 in ± 1 in (15 cm ± 2.5 cm)
E	+3.3V	14315-1 To personality module pin 2	6 in ± 1 in (15 cm ± 2.5 cm)
F	GND	14315-1 To personality module pin 4	6 in ± 1 in (15 cm ± 2.5 cm)

(3) Construction

Fold the 24 awg wire of 14315-1 or use additional wire to fill the oversize MIL contacts.

Twist the black and red wires together for most of their length.

Apply RTV over where the wires enter the Molex housing for strain relief.

Cut the silicone sponge sheet into approx. 5/8” wide strips. Wrap sufficient amount of a strip around the wires where they pass through the strain relief to ensure immobilization in the strain relief.

C. 61-Pin Cable

Spectralux part number 96263-4.

(1) Materials

Note: Equivalent substitutes may be used.

Component	Manufacturer and Part Number
Connector at Dlink+ w/ CPDLC	Amphenol Matrix 1 x MS3476L24-61S
Strain relief	1 x M85049/52-1-24N
Heat shrink tubing, 0.125 in (0.32 cm)	Alpha Wire FIT-221
RJ-45 female connector/cable assembly	L-com 1 x ECJ504-8

Component	Manufacturer and Part Number
Silicone sponge	Saint-Gobain R-01460, 1/16” thick
RTV	Dow Corning 3145

(2) Signals

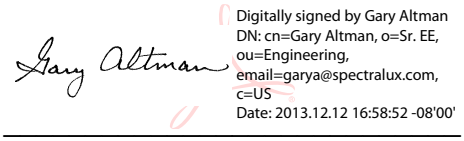
61-Pin	RJ-45	Signal	Length
B	3	Ethernet Transmit +	6 in ± 2 in (15 cm ± 5 cm)
C	6	Ethernet Transmit -	6 in ± 2 in (15 cm ± 5 cm)
D	1	Ethernet Receive +	6 in ± 2 in (15 cm ± 5 cm)
E	2	Ethernet Receive -	6 in ± 2 in (15 cm ± 5 cm)

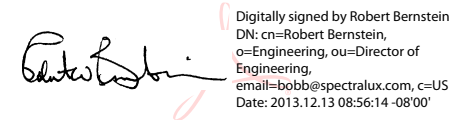
(3) Construction

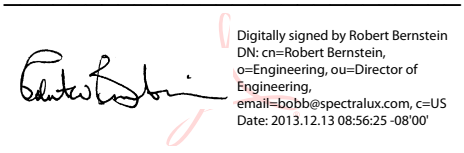
Cut off the four unused ethernet wires at the RJ-45 connector and seal the cut ends using RTV. Pass the four ethernet wires through heat shrink tubing to keep them in small bundle.

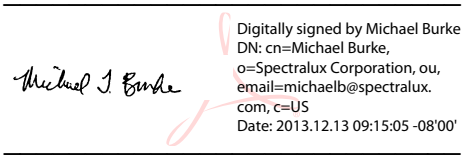
Cut the silicone sponge sheet into approx. 3/4” wide strips. Wrap sufficient amount of a strip around the wires where they pass through the strain relief to ensure immobilization in the strain relief.

7. APPROVAL

Prepared by: 

Program Manager: 

Director of Engineering: 

Director of Quality: 

Spectralux Corporation
12335 134th Court NE
Redmond, WA 98052
USA

Telephone: +1 425.285.3000