_ FCO HSC70-I003, The CIXCD requires L0118 or L0100 Min Rev E.

DIGITAL	FCO	CATEGORY [I]	PAGE 1 OF 12

FIELD CHANGE ORDER NUMBER: HSC70-I003

APPLICABILITY: When installing a 9XXX or 65XX system with a CIXCD or when upgrading an existing cluster with a CIXCD, replace ALL L0100 Rev "D" modules with L0118-** or L0100 Rev "E" module (if available). This FCO affects all CI750, CI780, CIBCI and HSC50/70 nodes in VAXclusters containing a CIXCD. **NOTE** An L0100 Rev E can co-exist with L0118s except in a greater than 16 node environment or when used with HSC60/90s.

PROBLEM & SYMPTOM: The CIXCD option requires an L0118 or an L0100 Min. Rev E. The L0100 Rev E cannot be used when the cluster is over 16 nodes or contains an HSC60/90.

SOLUTION: Replace all L0100 Rev D modules when installing CIXCD.

QUICK CHECK: Check that link module is part number L0118-** or L0100 Min. Rev E.

PRE/CO-REQUISITE FCO: | MTTI HRS 1 Hr./Node

TOOL/TEST EQUIPMENT: See Page 2.

FCO PARTS INFORMATION

FCO KIT NO.	DESCRIPTION OF CONTENTS	EQ KIT VARIATION APPLICABILITY
EQ-01616-XX FA-04949-XX	See Page 2 for description of contents and ordering information.	

FCO CHARGING INFORMATION

WARRANTY/CONTRACT				NONWARRANTY/NONCONTRACT				
ON-SITE		OFF-SITE		ON-SITE		OFF-SITE		MATERIAL ONLY
TRAVEL/ INSTALL	EQ KIT	INSTALL	EQ KIT	TRAVEL/ INSTALL	EQ KIT	INSTALL	EQ KIT	ORDER-ADMIN,HANDLING PKG,SHIPPING & EQ KIT
DEC	DEC	DEC	DEC	CUS	CUS	CUS	CUS	CUS

APPROVALS

CSSE	CS LOGISTICS	FS PRODUCT SAFETY
Tom Swett	Ric Little	Robert Brister
CSSE MANAGER	This Document is published	FCO RELEASE DATE
Ric Grogan	on multiple media including	30 May 1991
	Hardcopy, Customer Services	
MICROMEDIA	Microfiche Libraries,	FCO REVISION

Tools/Test Equipment: (Continued from Page 1)

Field Service Tool Kit
VELOSTAT Electrostatic Field Service Kit (P/N 29-26246-00)

PARTS LIST (Continued from Page 1)

EQ-01616-01	1	L0118-**	Link Module
	1	FA-04949-06	Document Ordering Form
EQ-01616-02	5	FA Documents (listed below)	
		FA-04949-01	FCO Doc for CI750-I007
		FA-04949-02	FCO Doc for CI780-I007
		FA-04949-03	FCO Doc for CIBCI-I003
		FA-04949-04	FCO Doc for HSC50-I011
		FA-04949-05	FCO Doc for HSC70-I003

FOLLOWING KIT FOR SELF MAINTENANCE CUSTOMERS ONLY:

EQ-01616-03	1	L0118-**	Link Module
	5	FA Documents (listed below)	
		FA-04949-01	FCO Doc for CI750-I007
		FA-04949-02	FCO Doc for CI780-I007
		FA-04949-03	FCO Doc for CIBCI-I003
		FA-04949-04	FCO Doc for HSC50-I011
		FA-04949-05	FCO Doc for HSC70-I003

CI ADAPTER MODULE SWITCH and JUMPER SETTING MATRIX

ADAPTER TYPE(s)	HOST SYSTEM(s)	LINK MODULE	FUNCTION	SWITCH/ JUMPER
CI750	11/750	L0118 Rev B*	Slot = 7	S3-4 "OFF"
CI780	11/78x,86x0		Slot = 10	S3-4 "ON"
CIBCI	82x0, 83x0			
	87x0, 8800		Clu_size 16	S3-1 OFF
	HSCxx		Clu_size 32	S3-1 on
CIBCA-Ax	82x0, 83x0	T1025	Slot = 7	Jumper E11-41 out

CIBCA-Bx	85x0, 8700 88x0, 6000	T1046	Slot = 10	Jumper E11-41 in
			Clu_size 16	Jumper D30-60 out
			Clu_size 32	Jumper D30-60 in
CIXCD-xx	6000, 9000	T2080	Slot = 7	NOT SUPPORTED
			Slot = 10	Jumper E15-45 in
			Clu_size 16	Jumper D15-45 out
			Clu_size 32	Jumper D15-45 in

NOTES: On L0118 modules;

(1) All ON-MODULE jumpers MUST be left in their default positions.
(2) S3-2 & 3 MUST remain in the "OFF" position.

For CIBCA options, all reference jumpers are on the backplane slot for the PORT (T1015/T1045) module.

For CIBCA and CIXCD options, install ONLY those backplane jumpers listed above and those required to specify the node address.

NOTE: All nodes should be set to 10 tick mode regardless of the VAXcluster system size.

L0118 - Rev "B" - See step 8 for 7/10-TICK, Cluster-size Switch set-up, and Misc. Function Jumpers.

CIBCA-** - Add Jumper from E11 to E41 on VAXBI Backplane for "10-TICK INCOMPATIBLE" mode operation. Verify no jumpers D29-D59 and D30-D60 for cluster-size (NODE-COUNT) of 16 or less. Refer to CIBCA User Guide Pg. 2-10 to 2-13 for set-up.

CI-LINK MODULE FCO INSTALLATION SUMMARY

****
* INCOMPATIBILITY WARNING - L0118 *
* ---------- *
* Mixed "7 and 10-TICK-MODE" CI-LINK operation can have severe *
* impact on CI-arbitration performance and collision-rate (NO_RSP). *
* For this reason, DEC does not support "10-TICK-MODE" CI-LINK *
* ROLLING-UPGRADES, thus requiring a CLUSTER SHUTDOWN to "ENABLE" *
* 10-TICK-MODE ** ONLY ** after all CI/HSC-nodes have been FCO'd. *
*

```
*       NOTE: High-availability customer exceptions to CLUSTER-      *
*       SHUTDOWN "rule" should be referred to CSSE for advice on     *
*       minimizing risks; but DEC will not assume any liabilities    *
*       for lost data/time with such CLUSTER upgrade programs.       *
*********************************************************************
```

- Forecast and obtain sufficient CI/HSCxx FCO kits for all CI7x0, CIBCI, HSCxx Cluster Nodes, ensuring availability of 1 (one) spare for every 10 (ten) FCO kits. FCO kits should NOT BE "P1 ORDERED", but should be ordered according to the Corporate Implementation Plan. CIxxx Functional Diags (EVGAA/B) from VAX Diag. Rel #31 are also recommended for checkout.

- Study SWITCH/JUMPER SET-UP Procedures for L0118, and CIBCA T1025 modules for adjusting the following CI-LINK functions/modes:

  - "7/10-TICK" DELTA-TIME/QUIET-SLOT:
    - + L0118 Step 8
    - + T1025/CIBCA Step 8 and CIBCA USER'S GUIDE Pg. 2-12
    - + T1046 Step 8

  - CLUSTER-SIZE of 16/32 NODES:
    - + L0118 Step 8
    - + T1025/CIBCA Step 8 and CIBCA USER'S GUIDE Pg. 2-13
    - + T1046 Step 8

  - L0118 CI-LINK-MODE JUMPERS: Step 8.

- Install L0118 set to "10-TICK/INCOMPATIBLE-MODE" in all CI780, CI750, CIBCI, and HSCxx Cluster nodes. There are no prerequisite/co-requisite CIxxx or HSCxx FCOs (modules or microcode) required for L0118 upgrade in "10-TICK 16-NODE MODE", but CI780.BIN Version V8.0 and CIBCA.BIN Version V5.3 are recommended.

- Schedule and perform cluster shutdown after all non-CIBCA nodes are upgraded/FCO'd, and have been tested and verified to function in "10-TICK-MODE" operation under VMS. VMS system-testing is important to early detection and repair of any DOA FCO modules, prior to disrupting VAXcluster for CI-LINK 7-to-10-TICK mode-change.

```
*******************************************************
*       IMPORTANT  NOTE  ===  IMPORTANT NOTE          *
*  Customer should be involved or perform all CLUSTER- *
*  wide or node-specific VAX and HSC STARTUPS, BOOTS,  *
*  and SHUTDOWNS.                                      *
*******************************************************
```

- Switch all L0118, and T1025/CIBCA to "10-TICK-MODE"

"INCOMPATIBLE" operation. Ensure all CIs and HSCs are powered-off before changing switches/jumpers. Refer to appropriate FCO steps. Any planned CI-NODE-ADDRESS changes should also be made at this time, with consideration of VMS SYSGEN and DECNET parameter changes required on reboot.

o Reboot cluster, with customer consent, starting with HSCs.

CI-LINK MODULE FCO INSTALLATION PROCEDURE

1. Ensure the customer has suspended all traffic from all Hosts to the HSC70 node that is to be upgraded by ensuring that the customer has either dismounted all drives (disk and tape) connected to the HSC70, or by manually failing the units over to an alternate HSC.

Press the ONLINE switch to the OUT position.

```
**********************************************************************
*                              NOTE                                  *
*     The first step may be precluded by shutting down               *
*     all Host Systems that utilize the HSC70 node.                  *
**********************************************************************
```

2. Open the HSC70 front door.

3. Then set the Enable/Disable switch on the inside front door of the HSC70 to the Enable position.

4. Remove D.C. power to the HSC70 by pushing the D.C. power switch on the side of the RX33 Disk Drive to the 0 (OFF) position.

5. Open the HSC70 card cage cover by releasing the card cage cover locks.

```
**********************************************************************
*                        C A U T I O N                               *
*                                                                    *
*       The L0118 module, as all VAX modules do,                     *
*       contains electrostatic discharge sensitive                   *
*       devices (ESDS). The use of the VELOSTAT kit                  *
*       is essential to prevent damage which may not                 *
*       be noticed immediately.                                      *
*                                                                    *
**********************************************************************
```

6. Set up VELOSTAT KIT.

a. Unfold the VELOSTAT mat to full size (24" x 24").
b. Attach the 15 foot ground cord to the VELOSTAT snap fastener on the mat.
c. Attach the alligator clip end of the ground cord to a good ground on the system.
d. Attach the wrist strap to either wrist and the alligator clip to a convenient portion of the mat.

7. Remove the L0100 or L0118 module from its HSCxx module slot and place it on the mat. Check the revision and module type:

   - L0118 check "10-tick,cluster size,and mode settings, reinstall in same slot,and go to step 11 (no upgrade needed).

   - L0100 go to step 8 to continue with upgrade.

   Record old CI-NODE ADDRESS settings on SW1 and SW2 switches (8-switch DIP on module handle).

8. With L0118 on ESD Mat, configure and verify CI-LINK mode jumpers/switches for "10-TICK/INCOMPATIBLE" mode operation. The L0118 also contains CLUSTER-SIZE switch and 4 (four) jumpers for MISC-FUNCTIONAL-MODES which should be checked. Install the new L0118 in the HSCxx option slot.

```
**********************************************************
*                    IMPORTANT  -  NOTE                  *
*  Copy old CI-NODE ADDRESS to new L0118.                *
*  Ensure"10-TICK/INCOMPATIBLE"mode is ENABLED/SET to avoid *
*  CI-PATH errors. Default L0118 manufacturing switch sett- *
*  ing is now "10-TICK/INCOMPATIBLE"mode.                *
**********************************************************
```

SET L0118 SWITCH/JUMPER SETTINGS AS FOLLOWS:

```
------------------------------------------
    ************************************************
    *  NOTE: REFER TO L0118 FIGURES ON FCO PAGES 11 *
    *  AND 12 FOR SW3 AND JUMPERS W1-W4 LOCATIONS.  *
    ************************************************
```

o 7/10-TICK COMPAT. MODE SET BY DIP-SWITCH SW3-4 LOCATED AT TOP CENTER OF L0118 TO LEFT (BELOW IF VERTICAL) OF 2 CI-NODE-ADDRESS 8-SWITCH PACKS.
  - "10-TICK INCOMPAT.,ECO ON" : SW3-4 SWITCH "ON" .
  - SWITCHES SW3-2 AND SW3-3 MUST BE "OFF" (AFFECTS DELTA-TIME/QUIET-SLOT).

o CLUSTER-SIZE FOR 16/32-NODE ADDRESSING AND ARBITRATION IS CONTROLLED BY SWITCH SW3-1. DEFAULT = 16-NODE-MODE = "OFF".
- 16-NODE MODE (DEFAULT WITH NO CISCE): SW3-1 "OFF".
- 32-NODE MODE (CISCE 24-NODE CLUSTER): SW3-1 "ON" .

NOTE: The cluster_size parameter MUST be consistent throughout the cluster at a value of either 16 OR 32. If all nodes in your cluster are numbered in the range of 0 to 15, you may select a cluster_size of * either * 16 OR 32; if your cluster has any node numbered in the range of 16 to 31, you * MUST * select a cluster_size of 32.

o L0118 FUNCTION-MODE JUMPERS W1-W4 DEFAULT SETTINGS CHECK:
View module with HANDLE-UP and FINGERS-DOWN.
Refer to L0118 Figures on FCO pages 11 and 12.

- L0118-B1 HAS ECO-WIRES ON E83-3 and E150-1:
  = W1 located left of E2: plugged on left 2 stake-pins, marked with "box".
  = W3 located between E54 and E75: plugged on horizontal stake-pins, marked with "box".
  = W2 and W4 located as 4 stake pins below E24 and E62: W2 and W4 "OUT".
- L0118-B2 HAS NO ECO-WIRES TO E83-3 AND E150-1:
  = W1 located left of E2: W1 on left 2 stake-pins, marked with "box".
  = W3 located between E54 and E75: W3 on horizontal stake-pins, marked with "box".
  = W2 located below junction of E24 and E62: W2 on left 2 stake-pins marked with "box".
  = W4 located below E24: W4 plugged on left 2 stake-pins marked with "box".

SET CIBCA BACKPLANE JUMPER SETTINGS AS FOLLOWS:(FOR QUICK REFERENCE)

Refer to CIBCA Users Guide Pg. 2-10 to 2-13
All jumpers are located behind T1015 Module.
Jumper changes DO NOT take effect until SELF-TEST EXECUTED.

o "7/10-TICK ALTER-DELTA-TIME" CONTROLLED BY JUMPER ON T1015 BACKPLANE PINS E11-E41, E09-E39, and E10-E40:
- ENSURE E09-E39 and E10-E40 JUMPERS "OUT".
- "10-TICK INCOMPAT.,ECO-ON" : Jumper IN E11-E41.

o CLUSTER-SIZE FOR 16/32-NODE ADDRESSING and ARBITRATION IS

SET BY JUMPER ON T1015 PINS D30-D60 and D29-D59:
- Ensure E29-E59 out for both 16 or 32-NODE mode.
- 16-NODE mode (default no CISCE): D30-D60 "OUT".
- 32-NODE mode (CISCE 24-NODE): D30-D60 "IN" .

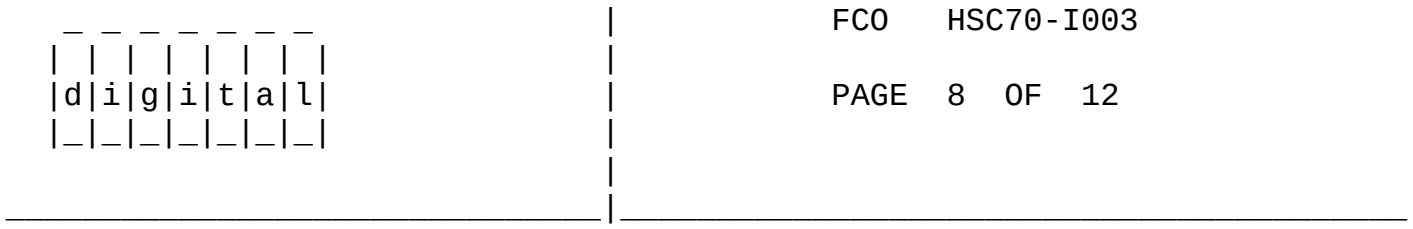
10. Close the HSC70 card cage cover and close the card cage locks.

11. Ensure that the HSC70 auxiliary terminal is powered on and is ON-LINE.

12. Locate the "HSC70 OFF-LINE DIAGS" Floppy. This is typically stored in the disk storage tray inside the HSC70 front door.

13. Ensure that the silver tab on the floppy is in place to write protect the "HSC70 OFF-LINE DIAGS" Floppy.

14. Locate the RX33 drive inside the front door.



15. Insert the "HSC70 OFF-LINE DIAGS" Floppy into drive 0 of the RX33.

16. Restore DC power to the HSC70 by pushing the DC power switch located on the RX33 Disk Drive, to the 1 (ON) position.

17. The HSC70 will automatically boot the "HSC70 OFF-LINE DIAGS" Floppy.

18. After two minutes of loading the "HSC70 OFF-LINE DIAGS" Floppy into the HSC70 memory, the HSC70 auxiliary terminal will print:

```
HSC70 OFL Diagnostic Loader, Version Vnnn-nnn
Radix - Octal, Data Length = Word, Reloc = 00000000
ODL>
```

19. At the ODL> prompt, type:

```
TEST K
```

This command loads and starts the off-line K test selector. The RX33 Drive 0 run indicator will light as the test is loaded.

After the diagnostics is loaded, you will receive the following display:

```
HSC70 OFL K TEST SELECTOR, VERSION Vnn-nn
```

The off-line K test selector first prompts:

```
REQUESTER # (1 THRU 7) [ ]?
```

20. Respond with a number "1" for K.CI Test.

    Then hit a Carriage Return.

21. The test then prompts:

    TEST # (1 THRU 11) (0) [ ]?

    Run #1 first time through.

22. The port processor module is the selected requester, run octal test numbers 1 thru 4, 6, 7, 10 and 11 two times each.

    ```
    ************************************************************
    *                          NOTE                            *
    *                                                          *
    *      OCTAL TEST 11 REQUIRES THAT ONE CI CHANNEL BE       *
    *      LOOPED BACK WITH AN ATTENUATOR OR CONNECTED TO      *
    *      A STAR COUPLER.                                     *
    ************************************************************
    ```


23. The test then prompts:

    # OF PASSES TO PERFORM (D) [ ]?

    Answer with a 2 and a RETURN.

24. The I/O control processor now instructs the requester to perform the selected test. If the requester fails to complete the test within the allotted time, the I/O control processor will display a requester error message. Refer to Chapter 4 of the HSC Service Manual.

25. The following prompt will ask you if you want to repeat this diagnostic.

    RE-USE PARAMETERS (Y/N) [Y]?

    Reply N and repeat steps 20 through 26 for TWO passes of each recommended test.

26. Type a CTRL C to end this routine after all tests have been completed.

27. Install the HSC70 system Floppy into Drive 0.

    Now press and release the INIT switch.

```
**********************************************************************
*                                NOTE                                *
*      INSURE THE SYSTEM FLOPPY IS WRITE ENABLED BY THE              *
*      ABSENCE OF THE SILVER TAB ON THE RIGHT-HAND CORNER.           *
**********************************************************************
```

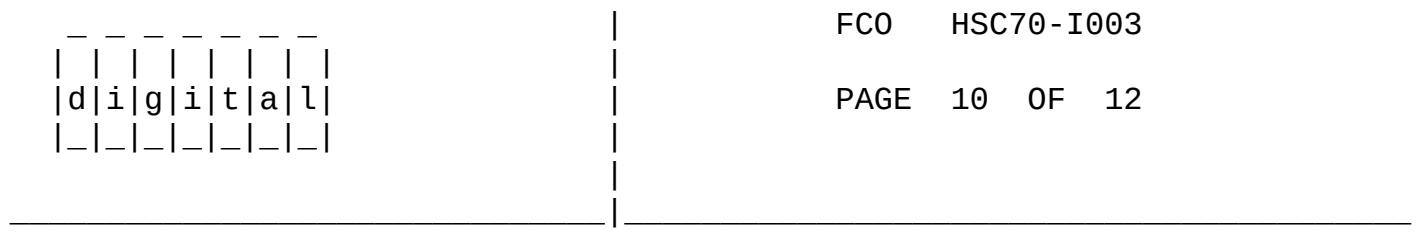
28. Wait approximately 1.5 minutes for the system disk to boot. After it has booted, the console will say:

    HSC70 Version V5nn 3-Nov-1987 00:00:00 System XXXXXX

29. Now push the on-line switch in, located on the HSC70 front door. This will allow Virtual Circuits to be established with any host CPU's that will be using the HSC70.

30. Resume normal disk-activity on HSCxx using disk/HSC-failover or VAX/VMS remount/reboot, if necessary, to ensure HSC receives system testing in 7-TICK mode. IT IS PREFERRED THAT THE CUSTOMER PERFORM THIS STEP!

    EVERY UPGRADED CI/HSC NODE WITH NEW L0118 SHOULD BE TESTED UNDER VMS IN "10-TICK ECO-ON MODE" TO SYSTEM-TEST NEW FCO PARTS PRIOR TO CLUSTER-WIDE CI-LINK-MODE TRANSITION.



31. Upgrade remaining CI750, CI780, CIBCI,and HSCxx nodes that do not contain L0118 CI-LINK modules.

    *** REPEAT STEP 1 UNTIL ALL NODES ARE COMPLETED. ***

32. Set all CI/HSC nodes to "10-TICK, INCOMPATIBLE, ECO-ENABLED MODE" operation. *** THIS REQUIRES ENTIRE CLUSTER-SHUTDOWN TO AVOID CI-PATH FAILURES, CLUSTER-MEMBER LOSS, AND RISKS TO DATA-INTEGRITY !! *** Ensure each CI is powered off when changing jumpers.

33. Set the Secure/Enable switch on the HSC70 inside the front door, to the Secure position.

34. Close the HSC70 front door and secure it by locking the front door key lock.

35. Boot all systems back into VAXcluster, starting with HSCs, using customer's "standard operating procedures". IT IS PREFERRED THAT THE CUSTOMER PERFORM THIS STEP!

    Have the customer resume normal activity on the HSC70. This could mean either restarting the host system, or just logically connecting the HSC70 to each system it is attached to and mounting all drives

connected to this HSC70.

36. Verify proper operation of the HSC70 subsystems with the customer. (Normal system activity is acceptable.) Also ensure that all tape drives connected to this HSC70 will function properly with a host system.

37. Report the FCO activity on the LARS form in the "module/fail/area/ FCO" column as "FCO HSC70-I003" as indicated.

LARS	USA & GIA	EUR
Activity -		
Contract and Warranty	W or	Y or
Non Contract/Non Warranty	F	F
DEC Option	HSC70	HSC70
Type of Call	M	M
Action Taken	D	I
Fail Area-Module-FCO-Comments	HSC70-I003	HSC70-I003
Material Used	EQ-01616-01	EQ-01616-01
	EQ-01616-02	EQ-01616-02

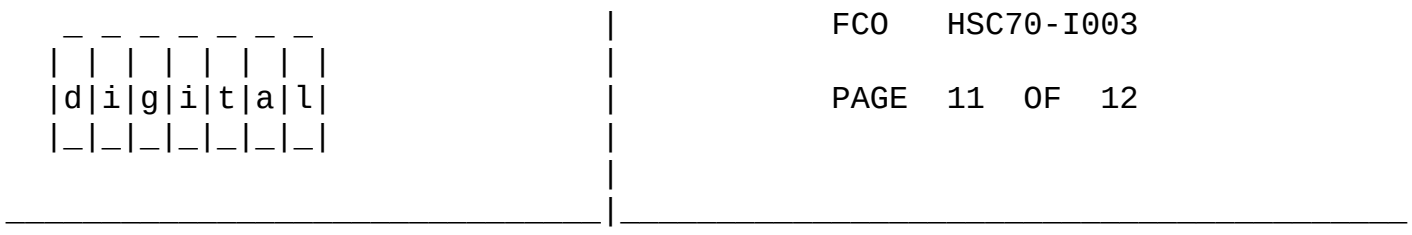


FIGURE 1 - L0118 LINK MODULE SWITCHES

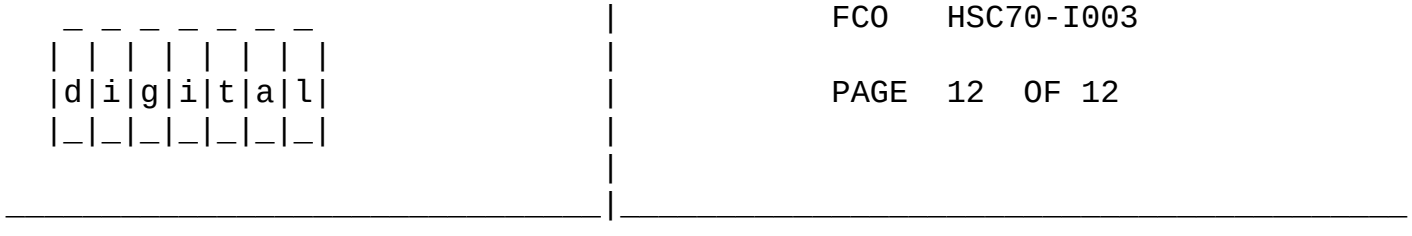


FIGURE 2 - L0118 LINK MODULE SETTINGS

\^ HSC70
\\FCO_DOCS
\\HSC70
\\CIXCD
\\1991
\\MAY
\\65XX
\\9XXX