_ FCO DS-650Q2-F001, Problem between Dispatcher cable & switched cable

DIGITAL	FCO	CATEGORY [F]	PAGE 1 OF 15

FIELD CHANGE ORDER NUMBER: DS-650Q2-F001

APPLICABILITY:
This FCO should be installed on all MIRA systems shipped before 03-July-1989
(Continued on Page 2)

PROBLEM & SYMPTOM: Cross-talk problem between Dispatcher cable and switched cable. Revision incompatibility problem between M7764-00 and M7763-00 module
(Continued on Page 3)

SOLUTION: See Page 3.

QUICK CHECK: See Page 3.

PRE/COREQUISITE FCO: None

MTTI HRS
3.5 Hrs

TOOL/TEST EQUIPMENT: None

FCO PARTS INFORMATION

FCO KIT NO.	DESCRIPTION OF CONTENTS	EQ KIT VARIATION APPLICABILITY
EQ-01568-02	2 M7763-00,4 M7764,2 cables 70-27118-03 2 cables 70-27118-06	N/A
FA-04886-01	FCO Document	

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	FSHQ LOGISTICS	FS PRODUCT SAFETY
J-Claude Chalumeau	Rick Orlando	Bob Brister

CSSE MANAGER Guy Caillaud	FS. MICROFICHE LIBRARIES	FCO RELEASE DATE 01 APR 1990
MICROMEDIA Diane MacDonald		FCO REVISION A
POPULATION		PARTS AVAILABILITY

Applicability: (Continued from Page 1)

MIRA MicroVAX 3000 (also called MIRA 3200) shipped before 03-JUL-1989, with the following part numbers require this FCO:

- DS-650Q2-A2/A3

System revisions are not significant for the application of FCO. They are built with M7763 or M7764 at Rev. D or below.

This FCO is also required for Special Customized MIRA systems (not always referred to with the part numbers listed above), that use the MIRA logic modules M7763 and M7764 at Revision D or below.

This FCO incorporates ECO’s M7763-AE006, M7764-AE004.

This FCO also provides all the functionality enhancements made in the following ECO’s:

- M7763-AE004 Implement DC LOW
- M7764-AE003 add LM339 to drive DCOK (DC LOW)
- M7763-AE005 etch re-layout to suppress extra wires

Implementation: Planned call, as the whole system must be shutdown, and the customer application must be stopped to install this FCO.

Problem/Symptoms: (Continued from Page 1)

Intermittent data corruptions happen when testing switched KMV1A with MDM Diagnostics in MIRA Systems. The data was corrupted by cross-talk between cables generated by the BC05L cable between the MIRA watch-dog Module (M7763-00) and the dispatcher module (M7764-00).

A re-layout of the two modules M7763-00 and M7764-00 has been necessary to adapt the impedances between these modules. Both M7764 and M7763 become Revision E with the new etch. A new cable 70-27118 has been designed to replace the BC05L cable.

The new modules M7763 and M7764 at Rev. E cannot be used with the previous Rev. D or below.

Solution: (Continued from Page 1)

Replace all modules M7763 and M7764 at Revision D or below by new modules at Rev. E and replace BC05L dispatcher cables at one time.

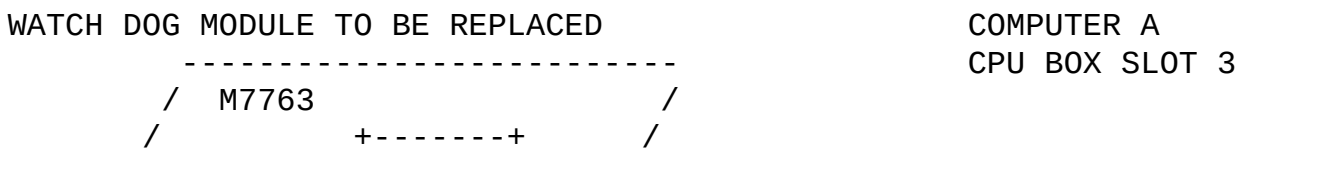
Quick Check: (Continued from Page 1)

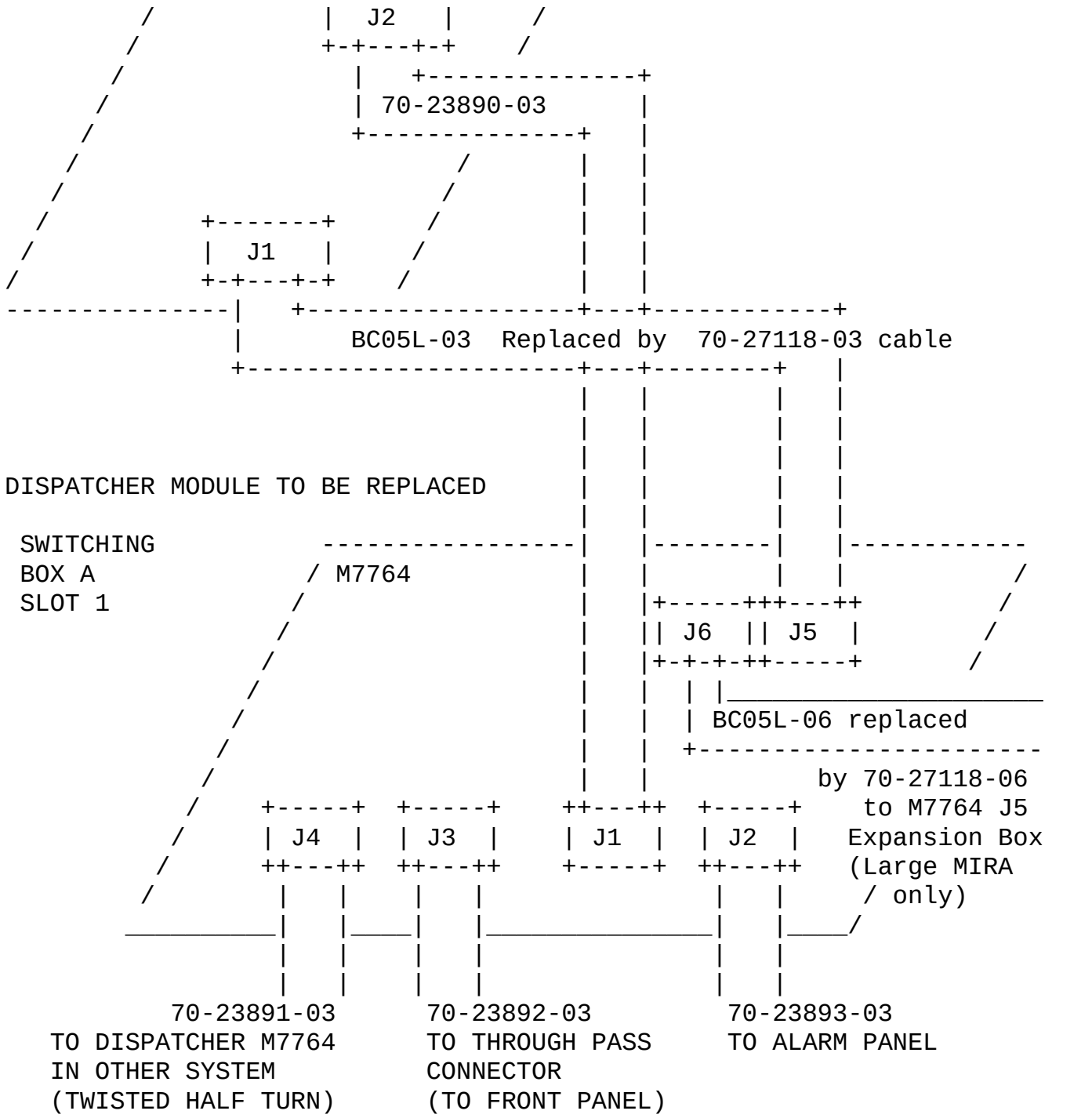
If all the cables on the watch-dog module M7763-00 are flat cables this FCO is required.

If you find a round cable (70-27118-03) connected to the M7763, the module is at the correct Revision (E), and the FCO is not required.

NOTE: This can be checked in both Systems A or B, as they must be identical in terms of revision levels of M7763.

INTERCONNECTION OF MIRA MODULES (SYSTEM A only is shown)





FIELD INSTALLATION AND TEST PROCEDURE FOR FCO DS-650Q2-F001

Preliminary Recommendations:

This FCO replaces all watch-dog, dispatchers modules and BC05L cables attached to these dispatchers. This replacement requires the complete MIRA to be powered down.

Before making any modifications to the system, insure both MIRA systems have no hidden fault in their hardware.

The best way to check complete MIRA system integrity is to ask the System Manager or User to run the MIRA TEST command and if the test is successful, to make a MIRA SWAP with his application.

If the system has a fault somewhere, do not attempt to implement this FCO, but fix the system first.

The interconnection of the modules and cables to be replaced is shown on Page 4.

The test procedures under VMS are separate and given on Page 11.

The watch-dog link cable (70-23891-03) between the A and B systems, connected on J4 of M7764 modules in switching boxes 0, is a half-turn between both systems. It is wise to mark the upper side on both ends of this cable before disconnecting.

There are some "traps" with in MIRA behavior for non-aware persons during use of diagnostics. See Test procedure on Page 10 for details.

==========
WARNING
==========

The customer might have modified the SYSTARTUP.COM to include the startup of MIRA software. Some processes require undetermined time to start, and could cause TIME-OUT when the software MIRA is started. To avoid this potential problem of MIRA time-out when you will reboot the Operating System, you must check the SYSTARTUP.COM on both System A and B before you stop the system. If MRA$STARTUP is included in the system startup command file, modify the SYSTARTUP file and put the MIRA start command (@SYS$MANAGER:MRA$STARTUP)as a comment line. You must do these checks and modifications on both Systems A and B. This will allow you to start MIRA software manually and check the system as described on Page 11 after you have installed the FCO.

Pre-test of system

1. Check the SYSTARTUP files on both systems as described in the **WARNING** on Page 5. Modify the files if necessary and ask the System Operator to stop the application. Installation of this FCO needs to stop both Systems A and B, as it will later require removing of BC05L-06 cable in the FCC pipe on large systems.

2. Run MIRA test on System A and System B (see test on Page 11).

3. If MIRA test is successful on both systems, issue a SWAP at operator console. If MIRA SWAP fails, do not attempt to install this FCO. Refer to MIRA Installation and Maintenance Guide, EK-MIRAI-MM.

4. Stop MIRA on both systems using MIRA STOP DCL command. (standby first, then Master)

5. Shut down the system by executing the Shutdown Command Procedure.

   $ @SYS$SYSTEM:SHUTDOWN on both systems.

FCO Hardware installation

6. Power-off Instructions

   After the system has been powered-down, switch off both CPU A and B with Front Panel CPU switches. Place the two Circuit Breakers for System A at the top of cabinet and System B at the bottom of cabinet, in the "OFF"(0) position. Wait five minutes to allow the capacitors to bleed down.

7. Use ALL ESD safety precautions to prevent DOA modules in upgrade kit.

8. Utilize static strap. Unpack FCO material.

9. On System A (Top system):

10. Open the Unswitched I/O panel door.

11. Remove the M7763-00 module from slot 3. Note switch settings.

12. Disconnect cable BC05L-03 from connector J1.

13. Mark orientation and disconnect cable 70-23890-03 (20 pins) from connector J2.

14. Take the new module M7763-00 at Rev. E and reconnect the cable 70-23890-03 (20 pins) into connector J2.

15. Connect the new round cable (3 feet) 70-27118-03 into J1 of the M7763 module (note mark on connector upper side).

16. Set CSR and Vector address switches as on the old M7763 module (See switch settings on Page 14, if necessary).

17. Plug the new M7763-00 into slot 3 of CPU box.

18. Route the new round cable 70-27118-03 to the switching box 0. (It will go to the dispatcher M7764 in slot 1 of this box).

19. Remove the dispatcher module M7764-00 from slot 1 of switching box 0. Note the switch position E5 on the left of the board. (See switch settings on Page 14, if necessary).

20. Disconnect cables from connectors J5, J6, J2, J1, J3, J4.

21. Reconnect cables on the new M7764-00 rev E module on connectors J2, J1, J3, J4. Note cables orientation especially J4 (watch dog link).

22. Replace the BC05L-03 cable from the M7763-00 by the round cable (3 feet) 70-27118-03. Connect it to J5 (right hand side) of the M7764 module. Note that J5 and J6 locations can vary on previous revisions modules (A, B, C or D).

23. Remove the BC05L-03 flat cable from the system, store it/for return to logistics.

24. Connect the new second round cable (6 feet) 70-27118-06 in connector J6 of the M7764 module. Although this new cable is thicker than the flat one, it fits between the module and the top of the box.

25. Set up the E5 switches as they were on the old M7764 module.

26. Plug the M7764 Module in the backplane.

27. Open the expansion cabinet, open the Top I/O panel.

28. Extract the M7764 module from the slot 1 of the extension switch box 1.

29. Note the switch positions at location E5.

30. Disconnect the flat cable BC05L-06 from connector J5 or J6.

31. Remove this BC05L-06 cable from the FCC pipe between both cabinets. Store it for return to logistics. Be careful not to disconnect other cables when removing this cable from the FCC pipe.

32. Route the new round cable 70-27118-06 from the M7764 dispatcher J6 connector (the left hand one) in the CPU cabinet through the FCC pipe to the top extension switch box of the second cabinet. Be careful not to disconnect other cables.

33. Take the second M7764 Rev. E module from the EQ kit.

34. Connect the round cable 70-27118-06 to the J5 connector (on the right hand side of the M7764 module).

35. Set up E5 switches as they were on the old modules.

36. Plug the M7764 module into slot 0 of the switching box. Although this new cable is thicker than the flat one, it fits between the module and the top of the box.

37. Insure all the cables are properly set up in the box.

38. Close the I/O panel box of the expansion cabinet.

39. Go to the main CPU cabinet. Close I/O Panel.

40. Check if all cables are properly set up. Close the CPU panel.

41. You can now Power Up System A. Observe the CPU self test sequence. (It is possible to see a double boot during self tests, this is not a failure, the second pass must be OK, proceed to next step).

42. Start loading of diagnostics on the CPU A.

43. Once the diagnostics are loading, you can start the FCO installation on System B.

Upgrade System B

44. Repeat similar procedure for System B to replace M7763 and M7764 modules and cables, using the same recommendations as as mentioned in Step's 10 through 40.

45. Do not power-on System B immediately.

Testing MIRA with Diagnostics

46. Test System A with MDM Diagnostics. Once the diagnostics are loaded, you can power up System B and start loading diagnostics on System B.

47. Run of system exerciser tests in verify mode on both systems A and B is normally sufficient. During MIRA tests check warning messages, to insure switching boxes and switching modules are correctly seen by the MIRA diagnostic. See diagnostics for details on Page 10.

48. When Diagnostics have been run successfully, power-off both Systems A and B to reset the entire system.

Testing MIRA under VMS

49. Power-on both systems and Boot the Operating System on both CPU's.

    WARNING: After FCO installation, the MIRA Software will fail if only one CPU is booted with Operating system.

50. Log in as system operator.

51. Test MIRA as described in MIRA Testing procedure on Page 11.

52. Modify the SYSTARTUP files if necessary and ask the System Operator to restart his application.

Complete Site Administration

53. Update the module revisions to E1 and system revision level to A3 on the MIRA configuration sheet in the cabinet.

54. Package the material in the same ESD boxes and close boxes.

55. Update the Site Management Guide to reflect this FCO.

56. Report this FCO activity on the LARS in the "Fail Area/ Module/FCO/Comments" column as per example on Page 15.

57. Return the old material ASAP to Logistics Center

MIRA STANDALONE DIAGNOSTICS (using MDM)

For the FCO installation test purpose it is sufficient to run Exerciser Test in Verify Mode.

As non-switched options and switched options cabling is not modified, there is no need to test the system with external loopbacks.

The MIRA functional tests provide information that must be carefully checked after installation of this FCO. They are given by warnings and information messages:

- The switch boxes not present or recognized by the test are noticed by warning messages. As you have a large MIRA with two boxes you must not have any warning for switching boxes.

- The switching modules present in the system must all be listed with messages like:
  "switching module address 1 present in Box 0 "

Additional information on Alarm is given too.

WARNING only if you need to run in SERVICE MODE

DO NOT ATTEMPT TO RUN TEST IN SERVICE MODE UNLESS YOU SUSPECT CABLING PROBLEM on Alarm Panel, MIRA Control Panel, or switched option.

MIRA MDM diagnostics when they are use in SERVICE MODE differs considerably from usual Diagnostics Test. In practice all the tests need the use of the MIRA utilities to close or open switches. MDM releases below release 128 need the use of MDM in command line mode or special set up for Menu mode described in MIRA release notes, EK-MIRAI-RN-001.

System Exerciser Test

Do not attempt to use it with loopback at I/O panel level, if
you are not familiar with MIRA tests with switched options.
This test needs to close the MIRA switches using MIRA utilities,
before you start exerciser. MIRA tests are organized into groups
of subtests (See Maintenance Manual EK-MIRAI-MM chapter 3.7.6).
Two major modes are available :

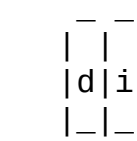
INSTALLATION MODE : when both systems are not booted with Operating
System. Use preferably this mode to check the system for FCO
if necessary.

MAINTENANCE MODE : one system is running application, stand alone
diagnostics on the other. In this mode the MIRA diagnostics
communicates with MIRA Driver of the Master system to check
availability of the switches.

MIRA TESTING PROCEDURE UNDER VMS
(Typical check when starting a MIRA system, useless messages have been deleted)

```
Username: SYSTEM
Password:
            Welcome to VAX/VMS V4.7A

$ @MRA$STARTUP
*-* MIRA Driver loaded *-*
$ MIRA
MIRA> SHO VERSION
MicroVAX MIRA Switch Control Software Version 2.1-B
MIRA> SHOW
        Local System State    :     MASTER  Remote System State   :  UNKNOWN
        Swap State            :     ENABLED
        Dc Low State          :     DISABLED
        Local Timer Value     :     .3 s
        Clock Synchronization :     DISABLED

        Module   Module State      Switch Map
         0      DISC/NOSWITCH      UNASSIGNED
         1          CONNECTED      SAME
         2          CONNECTED      SAME
         3          CONNECTED      SAME
         4          CONNECTED      SAME
         5      DISC/NOSWITCH      UNASSIGNED
         6      DISC/NOSWITCH      UNASSIGNED
         7      DISC/NOSWITCH      UNASSIGNED
         8      DISC/NOSWITCH      UNASSIGNED
         9      DISC/NOSWITCH      UNASSIGNED
```

```
       10      DISC/NOSWITCH      UNASSIGNED
       11      DISC/NOSWITCH      UNASSIGNED

         Total Connected:  4      Total Assigned:  4
MIRA> TEST
       Local loop test   : OK
       Remote loop test  : OK
       Watchdog link connected
       Switching box 0 connected
       Switching box 1 not connected
       Front panel connected
       Alarm I/O panel connected

       Module      Test            Status
        0      FAIL/NOSWITCH       DISC/NOSWITCH
        1                 OK       CONNECTED
        2                 OK       CONNECTED
        3                 OK       CONNECTED
        4                 OK       CONNECTED
        5      FAIL/NOSWITCH       DISC/NOSWITCH
        6      FAIL/NOSWITCH       DISC/NOSWITCH
        7      FAIL/NOSWITCH       DISC/NOSWITCH
        8      FAIL/NOSWITCH       DISC/NOSWITCH
        9      FAIL/NOSWITCH       DISC/NOSWITCH
       10      FAIL/NOSWITCH       DISC/NOSWITCH
       11      FAIL/NOSWITCH       DISC/NOSWITCH
```



MIRA TESTING PROCEDURE UNDER VMS (continued)

```
MIRA> SHO

       Local System State    :      MASTER  Remote System State   :  STANDBY
       Swap State            :      ENABLED
       Dc Low State          :     DISABLED
       Local Timer Value     :     .3 s
       Clock Synchronization :     DISABLED

       Module   Module State      Switch Map
        0      DISC/NOSWITCH      UNASSIGNED
        1          CONNECTED      SAME
        2          CONNECTED      SAME
        3          CONNECTED      SAME
        4          CONNECTED      SAME
        5      DISC/NOSWITCH      UNASSIGNED
        6      DISC/NOSWITCH      UNASSIGNED
        7      DISC/NOSWITCH      UNASSIGNED
```

```
         8      DISC/NOSWITCH      UNASSIGNED
         9      DISC/NOSWITCH      UNASSIGNED
        10      DISC/NOSWITCH      UNASSIGNED
        11      DISC/NOSWITCH      UNASSIGNED
          Total Connected:  4      Total Assigned:  4
MIRA> TEST
        Local loop test   : OK
        Remote loop test  : OK
        Watchdog link connected
        Switching box 0 connected
        Switching box 1 not connected
        Front panel connected
        Alarm I/O panel connected

        Module      Test           Status
         0      FAIL/NOSWITCH      DISC/NOSWITCH
         1                 OK      CONNECTED
         2                 OK      CONNECTED
         3                 OK      CONNECTED
         4                 OK      CONNECTED
         5      FAIL/NOSWITCH      DISC/NOSWITCH
         6      FAIL/NOSWITCH      DISC/NOSWITCH
         7      FAIL/NOSWITCH      DISC/NOSWITCH
         8      FAIL/NOSWITCH      DISC/NOSWITCH
         9      FAIL/NOSWITCH      DISC/NOSWITCH
        10      FAIL/NOSWITCH      DISC/NOSWITCH
        11      FAIL/NOSWITCH      DISC/NOSWITCH
```


MIRA TESTING PROCEDURE UNDER VMS (continued)

```
MIRA> SWAP
MIRA> SHO
        Local System State    :     STANDBY  Remote System State   :   MASTER
        Dc Low State          :     DISABLED
        Local Timer Value     :     .3 s

        Module   Module State      Switch Map
         0      DISC/NOSWITCH      UNASSIGNED
         1       DISCONNECTED      SAME
         2       DISCONNECTED      SAME
         3       DISCONNECTED      SAME
         4       DISCONNECTED      SAME
         5      DISC/NOSWITCH      UNASSIGNED
         6      DISC/NOSWITCH      UNASSIGNED
         7      DISC/NOSWITCH      UNASSIGNED
```

```
        8      DISC/NOSWITCH      UNASSIGNED
        9      DISC/NOSWITCH      UNASSIGNED
       10      DISC/NOSWITCH      UNASSIGNED
       11      DISC/NOSWITCH      UNASSIGNED
         Total Connected:  0      Total Assigned:  4
MIRA> TEST

       Local loop test   : OK
       Remote loop test  : OK
       Watchdog link connected
       Switching box 0 connected
       Switching box 1 not connected
       Front panel connected
       Alarm I/O panel connected

       Module      Test            Status
        0      FAIL/NOSWITCH       DISC/NOSWITCH
        1                 OK       DISCONNECTED
        2                 OK       DISCONNECTED
        3                 OK       DISCONNECTED
        4                 OK       DISCONNECTED
        5      FAIL/NOSWITCH       DISC/NOSWITCH
        6      FAIL/NOSWITCH       DISC/NOSWITCH
        7      FAIL/NOSWITCH       DISC/NOSWITCH
        8      FAIL/NOSWITCH       DISC/NOSWITCH
        9      FAIL/NOSWITCH       DISC/NOSWITCH
       10      FAIL/NOSWITCH       DISC/NOSWITCH
       11      FAIL/NOSWITCH       DISC/NOSWITCH

MIRA> EXIT
       Do not forget to reactivate the MIRA start into the SYSTARTUP files
       if you have modified these files.
   ******  END OF TEST  SYSTEM  IS READY FOR APPLICATION USE ******
```


MIRA SWITCH SETTINGS

M7764-00   DISPATCHER MODULE (SWITCH LOCATION E5)

Main Cabinet (Switching Box 0)

| 3 | 2 | 1 | 0 | Bit

```
                 -------------------------
                 |  ON | OFF | OFF | OFF |    Switch Setting Main Cabinet
                 -------------------------
                    E5    E5    E5    E5
                     1     2     3     4      Switch Number
```

Expansion Cabinet (Switching Box 1)

```
                 _______________________
                 |  3  |  2  |  1  |  0  |     Bit
                  -----------------------
                 | OFF |  ON | OFF | OFF |    Switch Setting Main Cabinet
                  -----------------------
                    E5    E5    E5    E5
                     1     2     3     4      Switch Number
```

M7763-00 WATCHDOG MODULE

Vector Address location E24 example (400)

```
MSB                                                                   LSB
Bit  15  14  13   12   11   10   9    8    7    6    5    4   3   2   1   0

Switch                          E24  E24  E24  E24  E24  E24  E24
                                 1    2    3    4    5    6    7

                                OFF   ON  OFF  OFF  OFF  OFF  OFF
```

CSR Address location E33 example (767000)

```
MSB                                                                   LSB
Bit  15  14  13  12   11   10    9    8    7    6    5    4   3   2   1   0

Switch          E33  E33  E33  E33  E33  E33  E33  E33  E33  E33
                 1    2    3    4    5    6    7    8    9    10

                OFF   ON   ON   ON  OFF  OFF  OFF  OFF  OFF  OFF
```

```
   _ _ _ _ _ _ _                |          FCO  DS-650Q2-F001
  | | | | | | | |               |
  |d|i|g|i|t|a|l|               |          PAGE 15 OF 15
  |_|_|_|_|_|_|_|               |
                                |
 ______________________________|_____________________________________
```

CATEGORY F	USA	GIA	EUROPE
Activity -			
(a)Contract and Warranty	W	U	Y
(b)IN-DEC Contract & Warranty	K		
Hardware Segment Code	111		
Non Contract/Non Warranty	F	F	F
(c)RTD/Off-site Agreement	F		
Product Line	16		
DEC Option	DS-650Q2-XX	DS-650Q2-XX	DS-650Q2-XX
Type of Call	M	M	M
Action Taken	D	D	I
Fail Area-Module-FCO-Comments	MIRA-F001	MIRA-F001	MIRA-F001
Material Used	EQ-01568-02	EQ-01568-02	EQ-01568-02

(a) Warranty Optimum, Warranty Standard and Warranty Basic (on-site) Agreements.
(b) Applies to INDEC AREA ONLY - Warranty Optimum, Warranty Standard and Warranty Basic (on-site) Agreements.
(c) RTD=Return to Digital or Off-site Agreements; If Field Engineer On-site, use Activity Code "F"

\^ 650Q2
\\650Q2
\\DS-650Q2
\\CHALUMEAU
\\1990
\\APR
\\FCO_DOCS