

RACAL INSTRUMENTS™

1260-51

400 MHz RF Matrix Switching Card

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ASTRONICS TEST SYSTEMS PRODUCT**

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2. Product model number
3. Your company and contact information

You may contact Customer Support by:

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Telephone:	+1 800 722 3262	(USA)
Fax:	+1 949 859 7139	(USA)

RETURN OF PRODUCT

Authorization is required from Astronics Test Systems before you send us your product or sub-assembly for service or calibration. Visit <http://astronictestsystems.com/support> and select **RMA Request** to complete an RMA form. You may also call or contact Customer Support at 1-800-722-3262 or 1-949-859-8999 or via fax at 1-949-859-7139. We can also be reached at: atshelpdesk@astronics.com.

If the original packing material is unavailable, ship the product or sub-assembly in an ESD shielding bag and use appropriate packing materials to surround and protect the product.

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FOR YOUR SAFETY

Before undertaking any troubleshooting, maintenance or exploratory procedure, read carefully the **WARNINGS** and **CAUTION** notices.



This equipment contains voltage hazardous to human life and safety, and is capable of inflicting personal injury.



If this instrument is to be powered from the AC line (mains) through an autotransformer, ensure the common connector is connected to the neutral (earth pole) of the power supply.



Before operating the unit, ensure the conductor (green wire) is connected to the ground (earth) conductor of the power outlet. Do not use a two-conductor extension cord or a three-prong/two-prong adapter. This will defeat the protective feature of the third conductor in the power cord.



Maintenance and calibration procedures sometimes call for operation of the unit with power applied and protective covers removed. Read the procedures and heed warnings to avoid “live” circuit points.

Before operating this instrument:

1. Ensure the proper fuse is in place for the power source to operate.
2. Ensure all other devices connected to or in proximity to this instrument are properly grounded or connected to the protective third-wire earth ground.

If the instrument:

- fails to operate satisfactorily
- shows visible damage
- has been stored under unfavorable conditions
- has sustained stress

Do not operate until performance is checked by qualified personnel.

EC Declaration of Conformity

We

Astronics Test Systems
4 Goodyear Street
Irvine, CA 92718

declare under sole responsibility that the

1260-51 400 MHz RF Matrix Module, P/N 407612

conform to the following Product Specifications:

Safety: EN 61010-1

EMC: CISPR 11:1990/EN 55011 (1991): Group 1 Class A
IEC 801-2:1991/EN 50082-1 (1992): 4 kV CD, 8 kV AD
IEC 801-3:1984/EN 50082-1 (1992): 3 V/m, 27-500 MHz
IEC 801-4:1988/EN 50082-1 (1992): 1 kV

Supplementary Information:

The above specifications are met when the product is installed in an Astronics Test Systems certified mainframe with faceplates installed over all unused slots, as applicable.

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Irvine, CA, July 16, 1997



Quality Manager

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DOCUMENT CHANGE HISTORY

Revision	Date	Description of Change
	3/5/1999	Publication
A	8/13/2015	Initial Release

Chapter 1

MODULE SPECIFICATION

General

The 1260-51 is a 400 MHz RF Matrix designed to be software configurable. The 1260-51 can be configured as either six 2 X 6 matrices, or three 2 X 12 matrices, or one 2 X 36 matrix.

Module Specification

Maximum Switch Power	62.5 VA, 30 W
Maximum Switch Voltage	125 VAC, 110 VDC
Maximum Switch Current	0.5 A AC, 0.5 A DC
Characteristic Impedance	50 Ohms
Bandwidth (-3dB)	400 MHz Typ. (2 X 6 Mode)
Insertion Loss	1 dB @ 100 MHz
Crosstalk	< -40 dB @ 100 MHz
Isolation	> 60 dB @ 100 MHz
Path Resistance	< 1.5 Ohm
Thermal EMF	< 20 uV
Capacitance (any port to gnd)	< 200 pF
Temperature	
Operating	0° C to +55° C
Non-operating	-40° C to +75° C
Relative Humidity	95 +/-5% RH Non-Condensing 30° C 75+/-5%RH >30° C 45+/-5%RH >40° C

Altitude	10,000 ft (operating) 15,000 ft (non- operating)
Vibration	0.013" double amplitude, 5-55 Hz
Shock, functional	30g, 11 msec, 1/2 sine wave
Bench Handling	4 inch drop
Cooling:	
With Option 01S/T	
Airflow	2.0 liters/sec
Backpressure	0.2mm H ₂ O
Without Option 01	
Airflow	1.0 liters/sec
Backpressure	0.05 mm H ₂ O
Power Requirement	
Without Option 01 installed	
+5V Static Current	0.4 A
+5V Dynamic Current	0.075 A
With Option 01 installed	
+5V Static Current	2.5 A
+5V Dynamic Current	0.225 A
+24V Static Current	6 mA per energized relay, 72 mA max
+24V Dynamic Current	0 A
MTBF	>55,000 Hours (per MIL-HBK-217, ground benign, +30° C)

Chapter 2

INSTALLATION INSTRUCTIONS

Unpacking and Inspection

1. Before unpacking the switching module, check the exterior of the shipping carton for any signs of damage. All irregularities should be noted on the shipping bill and reported.
2. Remove the instrument from its carton, preserving the factory packaging as much as possible.
3. Inspect the switching module for any defect or damage. Immediately notify the carrier if any damage is apparent.
4. Have a qualified person check the instrument for safety before use.



CAUTION

ALWAYS PERFORM DISASSEMBLY, REPAIR AND CLEANING AT A STATIC SAFE WORKSTATION.

Reshipment Instructions

1. Contact Astronics Test Systems Customer Support for an RMA number.
2. Use the original packing when returning the switching module to Customer Support for calibration or servicing. The original shipping carton and the instrument's plastic foam will provide the necessary support for safe reshipment.
3. If the original packing is unavailable, wrap the switching module in an ESD Shielding bag and use sufficient foam to surround and protect the instrument.
4. Reship in either the original or a new shipping carton.

Option 01 Installation

Installation of the Option 01 to the 1260-51 is described in the Installation Section of the 1260 Series VXIbus Switching Cards Manual, under the Option 01 Installation section.

Module Installation

Installation of the 1260-51 Switching Module into a VXIbus mainframe, including the setting of switches SW1-1 through SW1-4, SW2 and SW3, is described in the Installation section of the 1260 Series VXI Switching Cards Manual. Switches SW1-5 and SW1-6 must be configured in the OFF state.

Chapter 3

MODULE SPECIFIC SYNTAX

Module Configuration

The 1260-51 consists of a 2X36 coaxial matrix that may be broken-up into 3-2X12 or 6-2X6 matrices

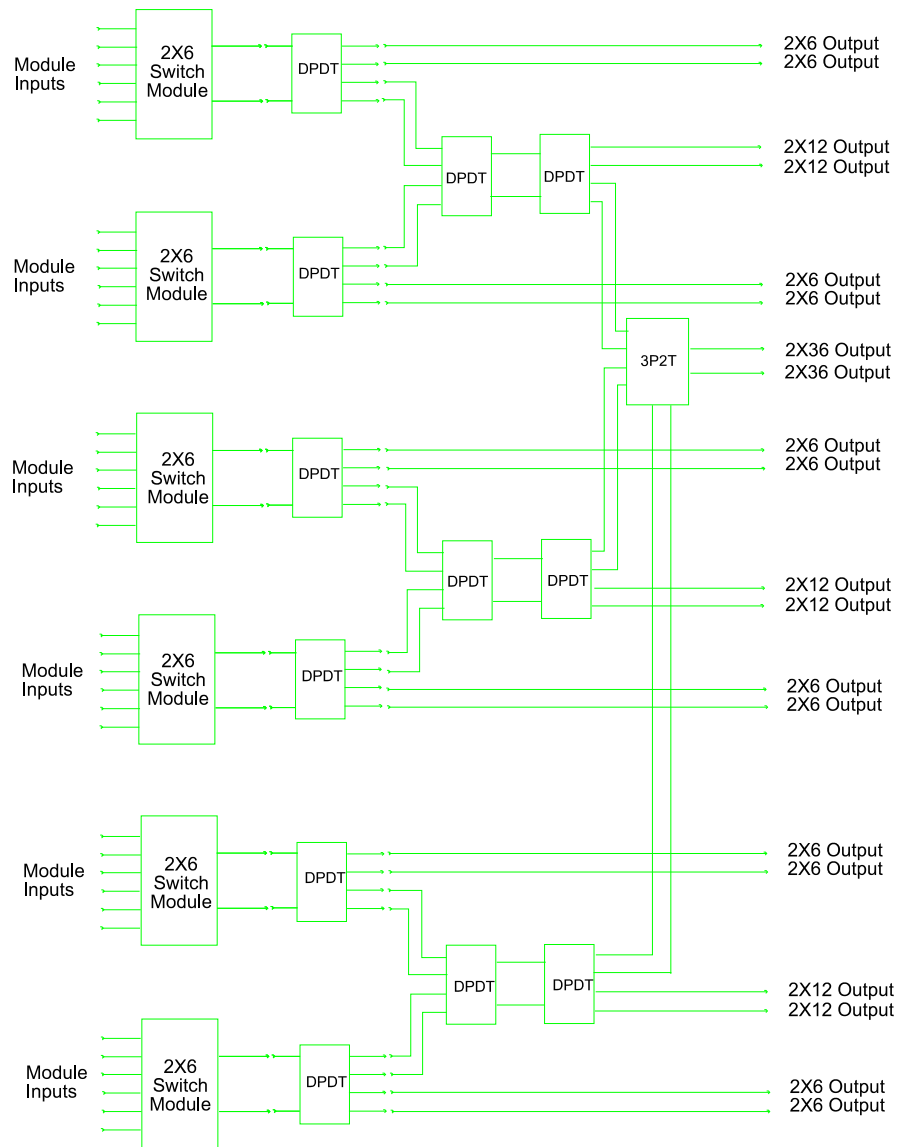


Figure 3-1, 1260-51 Block Diagram

Front Panel Connectors

The 1260-51 front panel. See **Figure 3-1**.

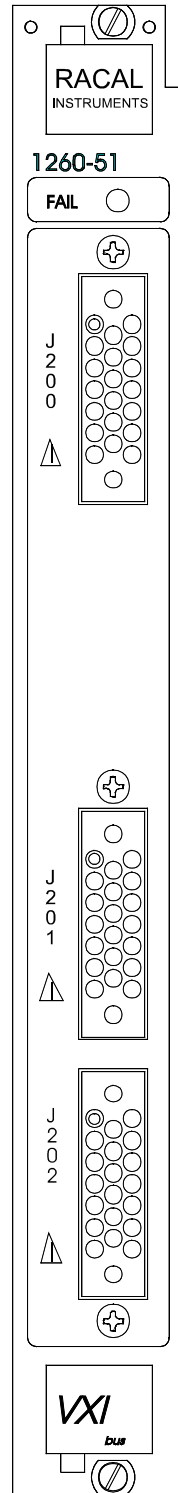


Figure 3-2, Front Panel Connectors

NOTE:

The <module address> used here is not the VXIbus defined Logical Address of the 1260 Series Master. It is unique to the 1260 Series and describes the switching module in relation to the Master. This address corresponds to the binary value of the switch setting of SW1 on the switching module PCB. Refer to the Installation Section of the 1260 Series VXI Switching Cards Manual, Part Number 980673-999, for more information.

Theory of Operation

The fundamental commands for the 1260-51 RF Matrix are the OPEN and CLOSE commands. The commands for 1260-51 differ in that users specify the input and output port rather than the relays. Then a unique path for the input-output, permanently stored in hardware, is established to make the path from input port to output port.

If a new path requested is in conflict with the other paths already made, all previous paths using that conflicting relay will be opened to make a new path. Furthermore, relays that were part of the previous paths will be opened to make them available for future usage.

Syntax

The Module Specific Syntax for the 1260-51 RF Multiplexer is as follows:

OPEN|CLOSE

<module address>.<4-digit I/O>[;<module address>.<4-digit I/O >]

Example:

```
OPEN <module#>.<starting I/O >-<ending I/O >
CLOSE <module#>.<starting I/O >-<ending I/O >
```

OPEN/CLOSE will make the path for given input -output pairs. Often each path involves multiple relays and thus any previous path which uses relays requested by the new path will be destroyed to make the new path.

```
OPEN 1.0010
00: specify input channel
10: specify output channel
```

Multiple paths may be listed in a single line of instruction, but be

careful about implicit exclusion. The implicit exclusion means that if path *A* belongs to 2X6 matrix and path *B* belongs to 2X36 matrix, path *A* cannot coexist with path *B*. Thus the matrix of most recent path will prevail.

Examples:

CLOSE 1.0020, 0030 will cause only 0030 to be closed. (Same input channel cannot be directed to different output). CLOSE 1.0020, 0130 will cause both 0020 and 0130 to be closed. (Different inputs for different output; and these two paths belong to the same matrix configuration). CLOSE 1.0020, 0601 will cause only 0601 to be closed. (Apparently, input and output pair seem different from each other. But 0020 belongs to 2X12 matrix configuration and 0601 belongs to 2X6. Therefore, making 0601 will force 0020 to be opened because of conflicting matrix configuration.)

SCANLIST

<module#.<starting I/O >-<ending I/O >

Example:

After sending 'SCAN 1.0000-3550', issuing 'TRIGGER' command will close valid pairs of I/O channels in an increasing order.

PDATAOUT

<module address>; [<module address>]; [<module address>]...

PDATAOUT exactly same as any other 1260 modules.

EXCL

<module#>.<starting I/O >-<ending I/O >

All input-output channels specified in EXCL shall be closed in mutually exclusive manner. That is, only one I/O channel can be closed.

Without EXCL, two paths of the same matrix configuration can coexist. For example:

```
CL 1.0020
CL 1.0130 {two paths are connected}
```

```
EXCL 1.0-3550
CL 1.0020
CL 1.0130
(Only latest path is connected; 0130 in this case.)
```

Note: There is implicit exclusion built in the firmware for each different matrix configuration. For example, closing a path in 2x36 mode will destroy the other paths belong to 2x6 and 2x12.

PSETUP

<module address>[<module address>][<module address>]...

where <module address> is the switch card address.

<4-digit I/O > := <2-digit input port><2-digit output port>[,<2-digit input port><2-digit output port>]...

<2-digit input port> is the input port

<2-digit output port> is the output port.

Valid input port is 2 digit numeric between 00 and 35.

Valid output port is 00, 10, 20, 30, 40, 50 if input port is between 00 and, 05;

01, 11, 20, 30, 40, 50 if input port is between 06 and 11;
02, 12, 21, 30, 40, 50 if input port is between 12 and 17;
03, 13, 21, 31, 40, 50 if input port is between 18 and 23;
04, 14, 22, 32, 40, 50 if input port is between 24 and 29;
05, 15, 22, 32, 40, 50 if input port is between 30 and 35;

If these input pairs are incorrectly provided by a user, error (code 3) will be noted.

NOTE

The 1260-51 coaxial switching module is supported by the Option 01 operating systems at revision levels 31.1 and above.

Input-Output Channels

All valid input-output channels for 1260-51 modules are listed below:

1. One 2 X 36

input	output
0-35	40
0-35	50

2. Three 2 X 12

input	output
0-11	20
0-11	30
12-23	21
12-23	31
24-35	22
24-35	32

3. Six 2 X 6

input	output
0-5	00
0-5	10
6-11	01
6-11	11
12-17	02
12-17	12
18-23	03
18-23	13
24-29	04
24-29	14
30-35	05
30-35	15

Preceding 0 may be omitted.

Example:

CL 1.0010	is equivalent to	CL 1.10
CL 1.0000		CL 1.0
CL 1.0250		CL 1.250

1260-51 ID Bytes

The ID bytes for the 1260-51 are:

1260-51 1C hexadecimal (=28 decimal)

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Chapter 4

OPTIONAL HARNESS ASSEMBLIES

The following harness assemblies are used to connect Racal Instruments Model 1260-51 to Freedom Series Test Receiver Interfaces.

407555	Virginia Panel, Inc. Series VP90 Interface Harness
407556	TTI Testron, Inc. Interface Harness (TTI Receiver must be above chassis)

For more information on Racal Instruments complete line of Test Receivers Interface solution, contact your Sales Representative.

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