

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

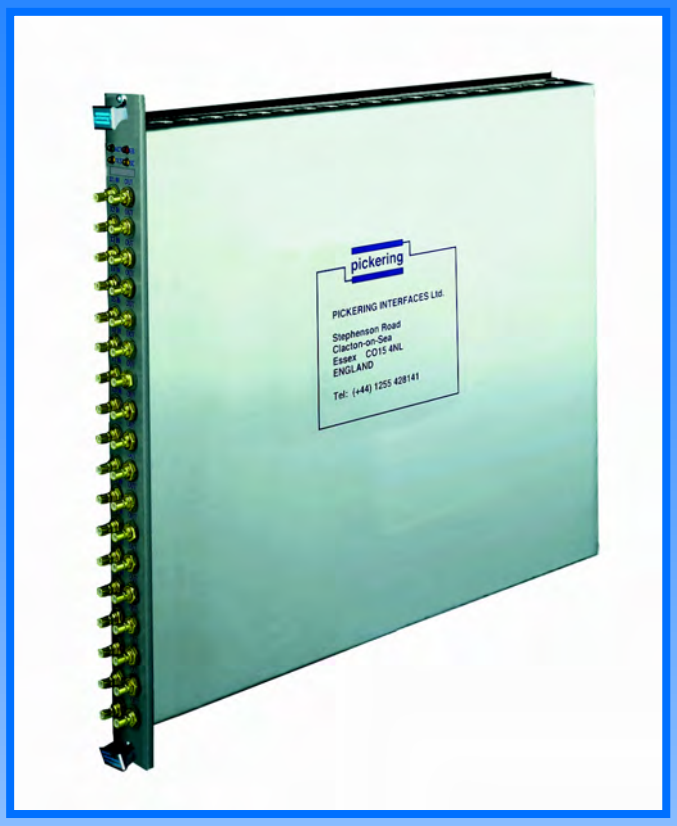
Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Pickering 30-728-721* at our website: ***Click HERE***

USER MANUAL

DUAL 8 X 9 RF COAXIAL MATRIX MODULE (MODEL No. 30-728)



Issue 1, July 2001

ISO 9002
Reg No. FM38792

www.pickeringswitch.com

pickering

Pickering Interfaces Ltd.
Stephenson Road
Clacton-on-Sea
CO15 4NL
United Kingdom

Tel: +44 (0)1255-428141
Fax: +44 (0)1255-475058
E-Mail: sales@pickeringswitch.com

Pickering Interfaces Inc.
966 SW 6th Street
Grants Pass
Oregon 97526
USA

Tel: 541 471 0700
Fax: 541 471 8828
E-Mail: ussales@pickeringswitch.com

Pickering Interfaces GmbH
Buchenstrasse 15
D-77880
Sasbach
Germany

Tel: +49 7841 66 49 10
Fax: +49 7841 66 49 12
E-Mail: desales@pickeringswitch.com

Pickering Eurowall
Karl Nordströmsväg 31
432 53
Varberg
Sweden

Tel: +46 340-69 06 69
Fax: +46 340-69 06 68
E-Mail: ndsales@pickeringswitch.com

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

© COPYRIGHT (2001) PICKERING INTERFACES. ALL RIGHTS RESERVED.

No part of this publication may be reproduced, transmitted, transcribed, translated or stored in any form, or by any means without the written permission of Pickering Interfaces.

Technical details contained within this publication are subject to change without notice.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

TECHNICAL SUPPORT

For Technical Support please contact Pickering Interfaces either by phone, fax, the website or via e-mail.

WARRANTY

All products manufactured by Pickering Interfaces are warranted against defective materials and workmanship for a period of two years from the date of delivery to the original purchaser. Any product found to be defective within this period will, at the discretion of Pickering Interfaces be repaired or replaced.

Warranty is on a return to factory basis, however, for most systems, the module may be replaced on a module exchange basis. A module will be delivered to the user and the faulty part returned to Pickering Interfaces on receipt.

Products serviced and repaired outside of the warranty period are warranted for ninety days.

Extended warranty and service are available. Please contact Pickering Interfaces by phone, fax, the website or via e-mail.

ENVIRONMENTAL POLICY

Pickering Interfaces operates under an environmental management system similar to ISO 14001.

Pickering Interfaces strives to fulfill all relevant environmental laws and regulations and reduce wastes and releases to the environment. Pickering Interfaces aims to design and operate products in a way that protects the environment and the health and safety of its employees, customers and the public. Pickering Interfaces endeavours to develop and manufacture products that can be produced, distributed, used and recycled, or disposed of, in a safe and environmentally friendly manner.



Observe the Electrical Hazard Warning detailed in Section 7.



Observe the Electrostatic Sensitive Device Caution detailed in Section 7.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

THIS PAGE INTENTIONALLY BLANK

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

CONTENTS

Copyright Statement ii

Technical Support and Warranty iii

Contents (this page) v

Section 1
Introduction 1.1

Section 2
Connector Pin Outs 2.1

Section 3
Fault Diagnosis 3.1

Section 4
Programming 4.1

Section 5
Technical Specification 5.1

Section 6
Parts List 6.1

Section 7
Warnings and Cautions 7.1

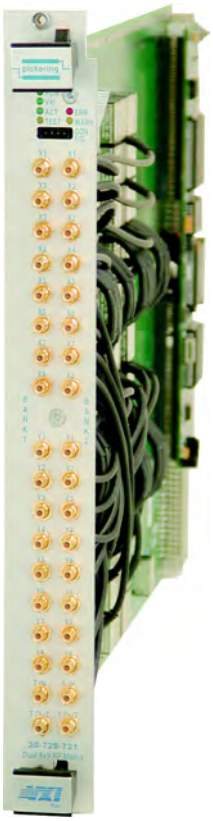
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

THIS PAGE INTENTIONALLY BLANK

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 1 - INTRODUCTION

GENERAL



The 30-728 Dual 8 x 9 RF Matrix Module forms part of the System 30 VXI Programmable Switching system and uses a standard IEEE-488.2 message based VXI interface.

The Module switches frequencies to beyond 400MHz. The 30-728 is provided in either 50Ohm or 75Ohm versions with a choice of coaxial connectors. Automatic Isolation Switches which disconnect the matrix from the external test fixture are located on all coaxial connectors.

Full self-test down to component level is provided, faults being indicated by front panel mounted LEDs.

The Module is provided in the following configurations:

- 50 Ohm SMB (**30-728-511)**
- 75 Ohm BT Type 43/SMZ (**30-728-711)**
- 75 Ohm 1.0/2.3 (**30-728-741)**
- 75 Ohm Mini SMB (**30-728-751)**
- Special version of the 75Ohm Coaxial Matrix, 400MHz Bandwidth with Loop Thru on Y9 position. 75 Ohm Impedance (but using 50 Ohm SMB connectors) (**30-728-721)**

The 30-728 matrix has a built-in Motorola 68332 32 bit microcontroller. The operation of the module is controlled entirely by this microcontroller. The flash memory based microcontroller allows modifications to the matrix instruction set or self-test operation to be implemented by downloading new firmware from disc or from the Pickering Internet Web site. Parametric data is also stored in non-volatile flash memory

MECHANICAL DESCRIPTION

The module is constructed in accordance with VXI specification, revision 1.4. and is mounted in a C sized single slot (30mm) housing. The module comprises:

- A six layer PCB with RFI shielding
- Front Panel mounted 50Ω SMB, 75Ω BT Type 43/SMZ, Siemens 1.0/2.3, or Mini SMB connectors
- Six Front Panel mounted LEDs
- One Front Panel mounted RS232 connector
- Two rear mounted IDC 96-way connectors
- 32 bit Microcontroller (U1) and VXI Interface mounted on a Daughterboard
- RF Relay Matrix
- Spare Relays
- Relay Drivers
- Dip Switch SW1 (mounted on the non-component side)

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

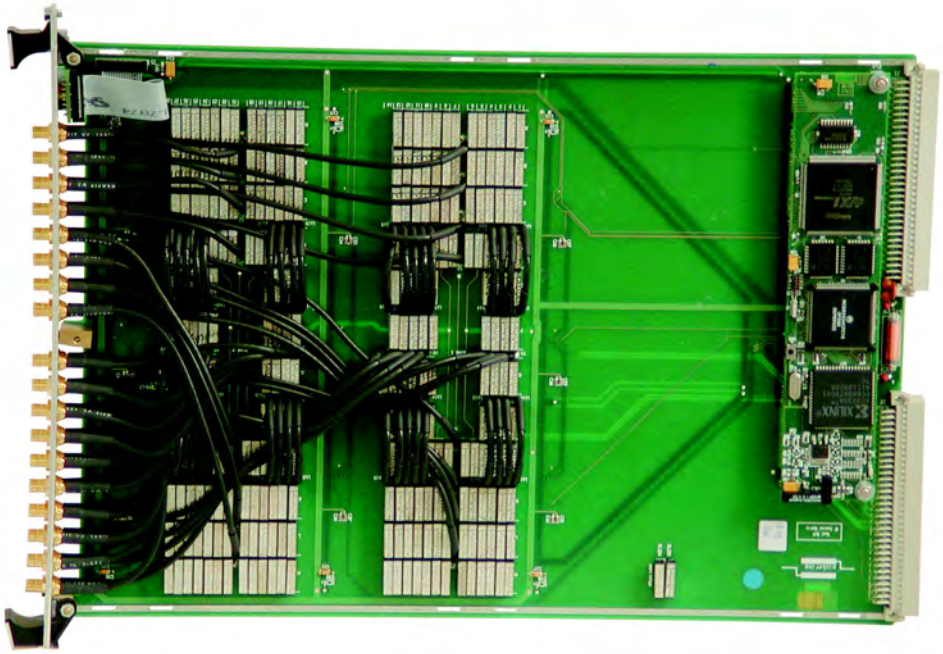


Figure 1.1 - Dual 8 X 9 RF Coaxial Matrix Module 30-728: Component Side

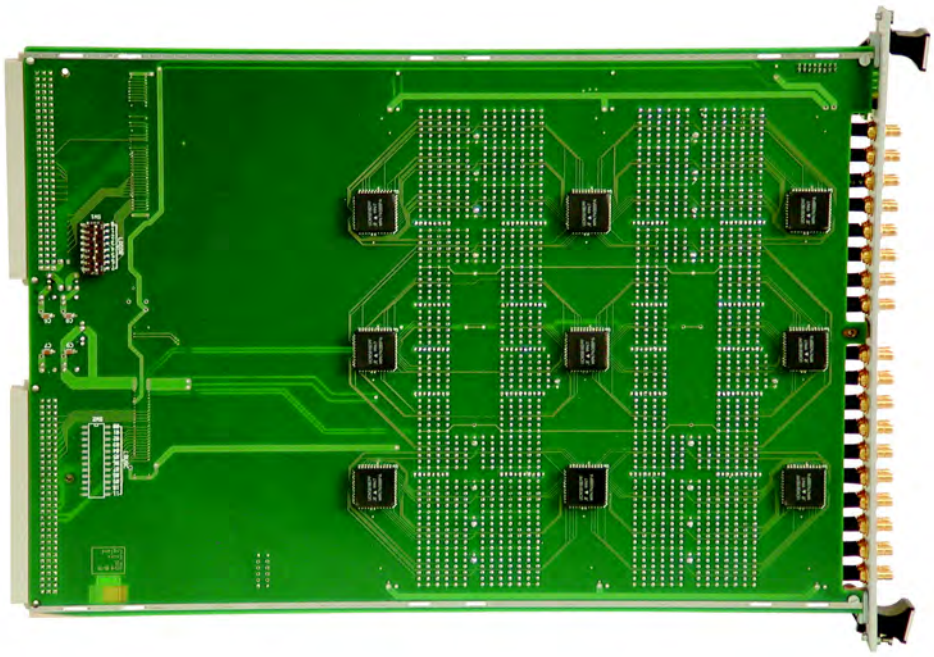


Figure 1.2 - Dual 8 X 9 RF Coaxial Matrix Module 30-728: Reverse Side

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

FUNCTIONAL DESCRIPTION

A functional block diagram is provided in Figure 1.3. The Dual 8 X 9 RF Coaxial Matrix Module is powered by +5V and +12V input via connectors J1 and J2. The interface to the user test equipment is via the front panel mounted co-axial connectors. The module comprises a PCB populated with RF single pole relays connected, via connectors J3 and J4, to a daughterboard which provides mounting for a 32 bit Motorola 68332 microcontroller (U1) and VXI interface (U6) . The operation of the module is controlled by this microcontroller.

The relays are configured as a dual 8 x 9 matrix and any combination of crosspoints may be selected. Only the signal is switched, with all grounds common. The relays are energised via control signals from relay drivers U1 to U9. The relay drivers are addressed by microcontroller U1 on the daughteboard to output the required signal.

The flash memory based microcontroller allows modifications to the matrix instruction set or self test operation to be implemented by downloading new firmware. Parametric data is also stored in non-volatile flash memory.

The 4 pin Molex type connector RS232 port (9600/19200/57600 baud, XON/XOFF, 8 bit, no parity) allows the module to controlled and monitored from any RS232 terminal. DIP Switch SW1 is provided for VXI addressing.

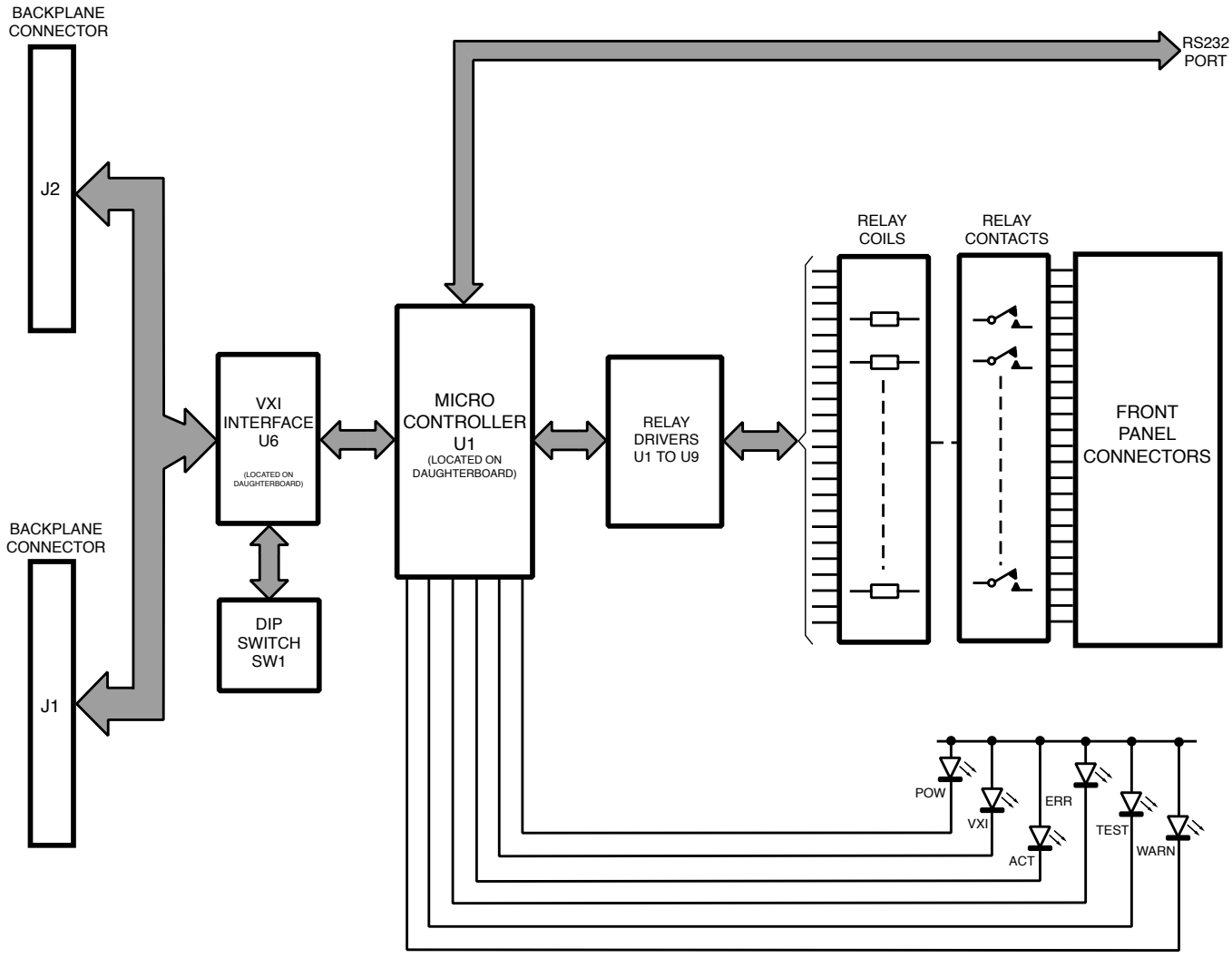


Figure 1.3 - Dual 8 X 9 RF Coaxial Matrix Module (30-728): Functional Block Diagram

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

THIS PAGE INTENTIONALLY BLANK

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 2 - PIN OUTS

Fighure 2.1 provides pinouts, and Figure 2.2 backplane connections, for the Dual 8 X 9 RF Coaxial Matrix Module.

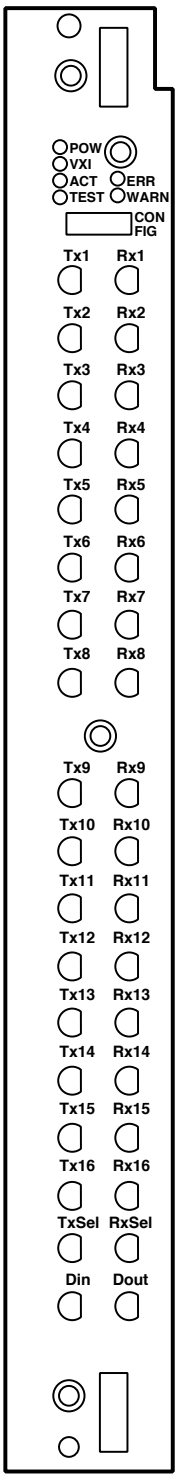
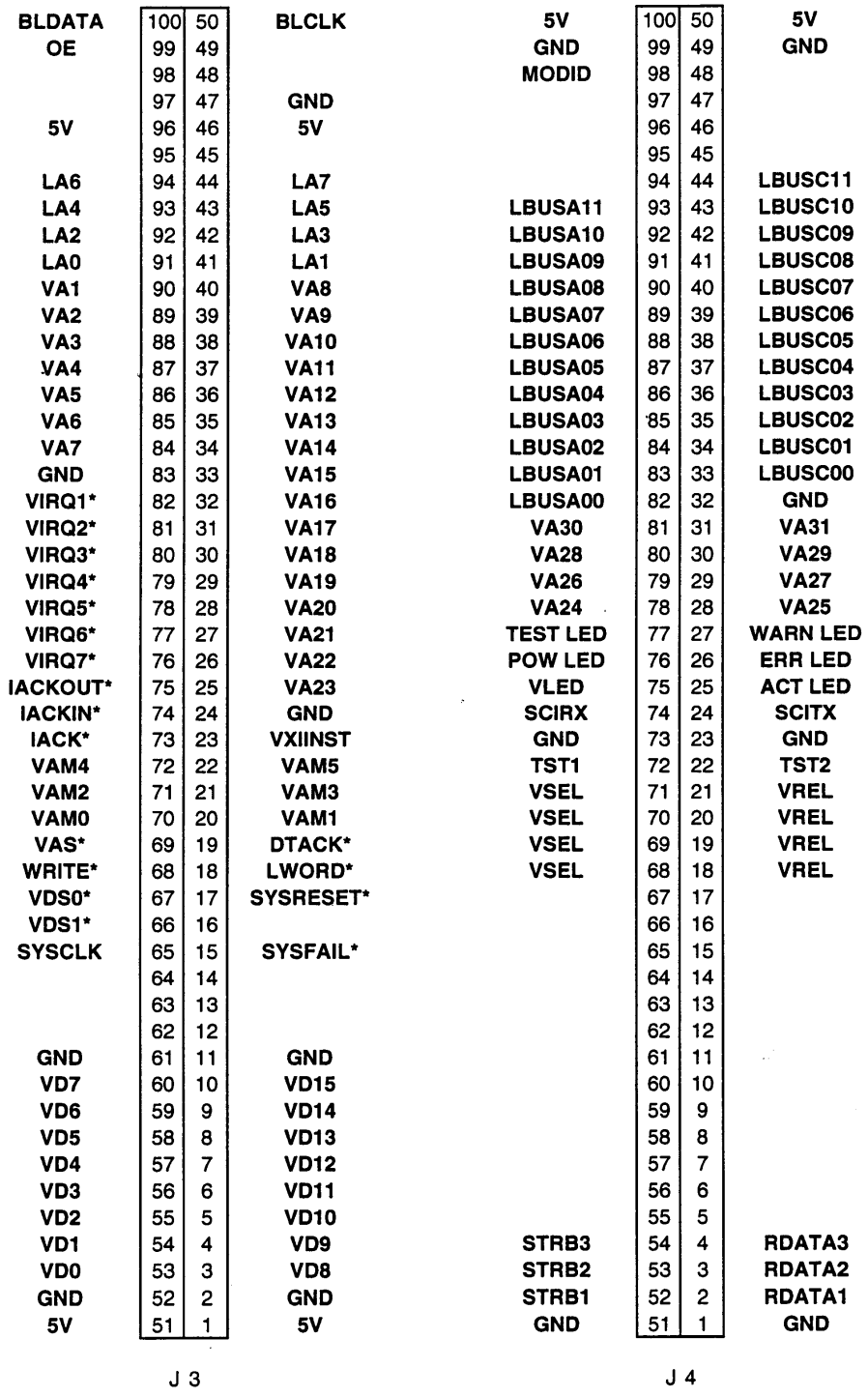


Figure 2.1 - Dual 8 X 9 RF Coaxial Matrix Module (30-728): Pinouts

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



BLDATA	100	50	BLCLK	5V	100	50	5V
OE	99	49		GND	99	49	GND
	98	48		MODID	98	48	
	97	47	GND		97	47	
5V	96	46	5V		96	46	
	95	45			95	45	
LA6	94	44	LA7		94	44	LBUSC11
LA4	93	43	LA5	LBUSA11	93	43	LBUSC10
LA2	92	42	LA3	LBUSA10	92	42	LBUSC09
LA0	91	41	LA1	LBUSA09	91	41	LBUSC08
VA1	90	40	VA8	LBUSA08	90	40	LBUSC07
VA2	89	39	VA9	LBUSA07	89	39	LBUSC06
VA3	88	38	VA10	LBUSA06	88	38	LBUSC05
VA4	87	37	VA11	LBUSA05	87	37	LBUSC04
VA5	86	36	VA12	LBUSA04	86	36	LBUSC03
VA6	85	35	VA13	LBUSA03	85	35	LBUSC02
VA7	84	34	VA14	LBUSA02	84	34	LBUSC01
GND	83	33	VA15	LBUSA01	83	33	LBUSC00
VIRQ1*	82	32	VA16	LBUSA00	82	32	GND
VIRQ2*	81	31	VA17	VA30	81	31	VA31
VIRQ3*	80	30	VA18	VA28	80	30	VA29
VIRQ4*	79	29	VA19	VA26	79	29	VA27
VIRQ5*	78	28	VA20	VA24	78	28	VA25
VIRQ6*	77	27	VA21	TEST LED	77	27	WARN LED
VIRQ7*	76	26	VA22	POW LED	76	26	ERR LED
IACKOUT*	75	25	VA23	VLED	75	25	ACT LED
IACKIN*	74	24	GND	SCIRX	74	24	SCITX
IACK*	73	23	VXIINST	GND	73	23	GND
VAM4	72	22	VAM5	TST1	72	22	TST2
VAM2	71	21	VAM3	VSEL	71	21	VREL
VAM0	70	20	VAM1	VSEL	70	20	VREL
VAS*	69	19	DTACK*	VSEL	69	19	VREL
WRITE*	68	18	LWORD*	VSEL	68	18	VREL
VDS0*	67	17	SYSRESET*		67	17	
VDS1*	66	16			66	16	
SYSCLK	65	15	SYSFAIL*		65	15	
	64	14			64	14	
	63	13			63	13	
	62	12			62	12	
GND	61	11	GND		61	11	
VD7	60	10	VD15		60	10	
VD6	59	9	VD14		59	9	
VD5	58	8	VD13		58	8	
VD4	57	7	VD12		57	7	
VD3	56	6	VD11		56	6	
VD2	55	5	VD10		55	5	
VD1	54	4	VD9	STRB3	54	4	RDATA3
VD0	53	3	VD8	STRB2	53	3	RDATA2
GND	52	2	GND	STRB1	52	2	RDATA1
5V	51	1	5V	GND	51	1	GND

J 3 J 4

Figure 2.2 - Dual 8 X 9 RF Coaxial Matrix Module (30-728): Backplane Connector

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 3 - FAILURE DIAGNOSIS

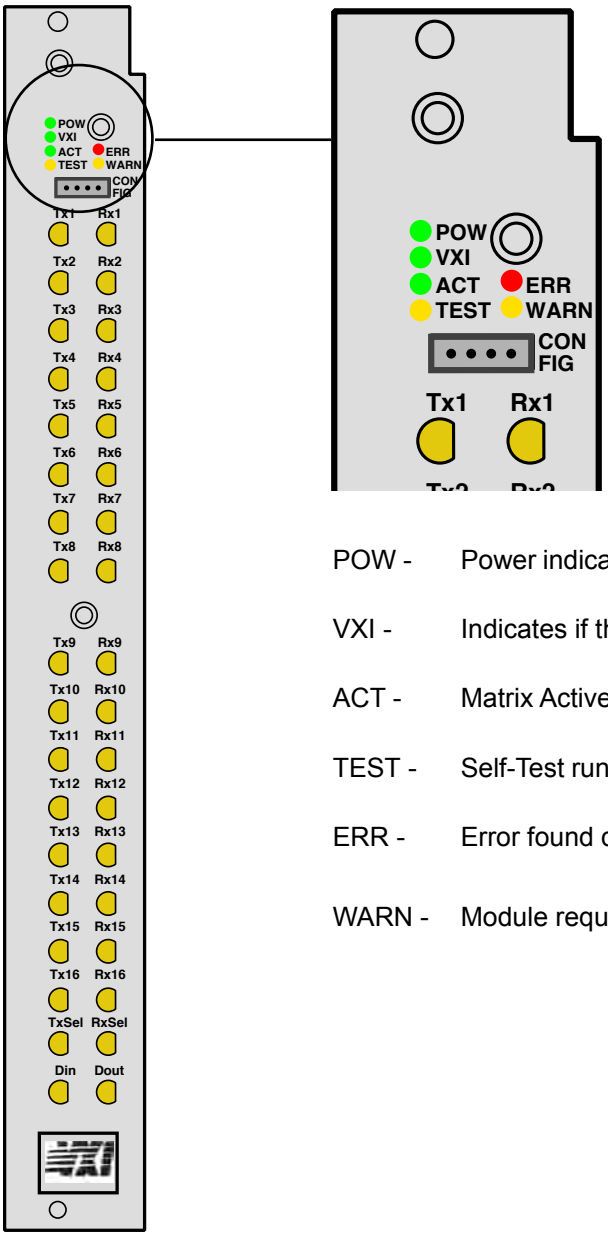
AUTOMATIC SELF TEST

Self-Test is invoked at power on (taking around 5 seconds) and may also be operated under software command (from the VXI or RS-232 ports). Self-Test pass is indicated on a front panel LED with a full pass/fail description available using the DIAGnostic? command. Self-Test comprises two levels (refer to Figure 3.1):

- Power Supply, Logic and Temperature Test
- Relay Coil Test

All relay service and fail test thresholds are re-programmable, detailed diagnostics may be dumped via the RS-232 port.

LED INDICATORS



POW - Power indicator (Green)

VXI - Indicates if the module is connected to the VXI interface (Green)

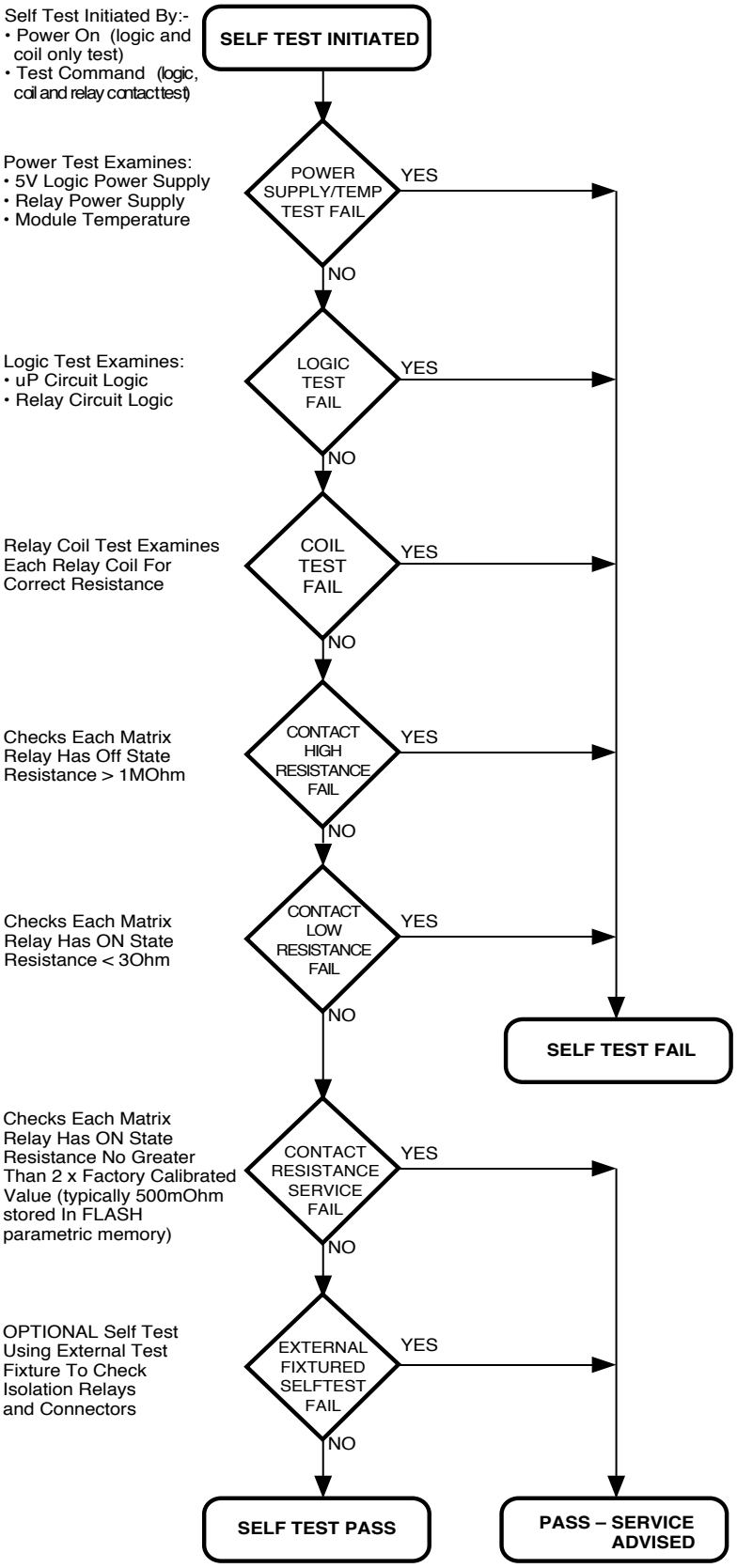
ACT - Matrix Active Indicator; set if any crosspoint is selected (Green)

TEST - Self-Test running indicator (Yellow)

ERR - Error found during Self-Test (Red)

WARN - Module requires maintenance. A failed relay has been diagnosed

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com



All test levels for coil resistance, contact resistance, power supplies, etc., are programmable.

Figure 3.1 - Self Test flow Chart

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 4 - PROGRAMMING

PROGRAMMING

All commands are in IEEE-488.2 format. Software cross references for matrices 1 and 2 are provided after the command listings.

PIL non-SCPI COMMANDS

:PICKering
:SERVice?
:TYPE? [<module_specifier>]
:WAIT <INT_P>[S | mS | uS]
:PTime
:PTime?

:TEst [0 thru 7 <INT_P>] *** DEBUG mode only
:TSt [1 thru 3 <INT_P>] *** DEBUG mode only
:Quit *** DEBUG mode only

488.2 COMMON COMMANDS

*CLS
*ESE <INT_P>
*ESE?
*ESR?
*IDN?
*OPC
*OPC?
*RCL <INT_P>
*RST
*SAV <INT_P>
*SRE <INT_P>
*SRE?
*STB?
*TRG
*TST?
*WAI

SCPI COMMANDS

:STATus
  :OPERation
    [:EVENt]?
    :CONDition?
    :ENABle <INT_P>
    :ENABle?

  :QUEStionable
    [:EVENt]?
    :CONDition?
    :ENABle <INT_P>
    :ENABle?
  :PRESet

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

```
:SYSTem
   :COMMunicate
      :SERial
         [:RECeive]
            :BAUD <INT_VAL>
            :BAUD?
            :PARity
               [:TYPE] EVEN|ODD|NONE|IGNore
               [:TYPE]?
            :BITS <INT_VAL>
            :BITS?
            :SBITs <INT_VAL>
            :SBIT?
         :TRANsmit                    *** DEBUG mode only
            :BAUD <INT_VAL>
            :BAUD?
            :PARity
               [:TYPE] EVEN|ODD|NONE|IGNore    *** (Incorrectly) duplicates RECeive
               [:TYPE]?
            :BITS <INT_VAL>
            :BITS?
            :SBITs <INT_VAL>
            :SBIT?

   :ERRor[:NEXT]?
      :ALL?
      :CODE:ALL?
      :CODE[:NEXT]?
      :COUNt?
   :VERSion?
   :CAPability?

[:ROUTe]
   :CLOSe <channel_list>
   :CLOSe? <channel_list>
      :STATe?
   :OPEN <channel_list>
   :OPEN? <channel_list>
      :ALL

:DIAGnostic[:INFormation]?
   :DEBug[:ALL]?
      :LOGical? [<module_specifier>]
      :LOOP?
      :MAP? [<module_specifier>]
      :PROGram?
      :SWITch? [<module_specifier>]
      :TEMPerature?
      :VERSion?
   :DUMP[:ALL]?
      :CLOSe? [<module_specifier>]
      :COIL? [<module_specifier>]
      :OPEN? [<module_specifier>]
```


Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

NOTES

<INT_P>::	<Rounded NRf>	
<BOOLEAN>::	<Rounded NRf>	| ON | OFF
<INT_VAL>::	<Rounded NRf>	| MIN | MAX | DEF
<NUM_VAL>::	<NRf>	| MIN | MAX | DEF

<NRf>::	IEEE 488.2 ‘flexible’ syntax for NR1,NR2, & NR3
<Rounded NRf>::	Number will be rounded to an integer if parameter requires integer

<channel_list>::	SCPI channel list
<module_specifier>::	SCPI module specifier

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MATRIX 1

IC	O/P	FUNC	RLY
X Axis Isolation Switches (16)			
1	14	IS-X1 (Y<5)	A6
1	15	IS-X1 (Y>4)	A7
1	23	IS-X2 (Y<5)	B6
1	24	IS-X2 (Y>4)	B7
1	32	IS-X3 (Y<5)	C6
1	1	IS-X3 (Y>4)	C7
2	11	IS-X4 (Y<5)	D6
2	12	IS-X4 (Y>4)	D7
3	11	IS-X5 (Y<5)	J6
3	12	IS-X5 (Y>4)	J7
3	20	IS-X6 (Y<5)	K6
3	21	IS-X6 (Y>4)	K7
3	29	IS-X7 (Y<5)	L6
3	30	IS-X7 (Y>4)	L7
3	6	IS-X8 (Y<5)	M6
3	7	IS-X8 (Y>4)	M7
X Axis Self-Test Switches (16)			
1	13	STX-X1 (Y<5)	A5
1	16	STX-X1 (Y>4)	A8
1	22	STX-X2 (Y<5)	B5
1	25	STX-X2 (Y>4)	B8
1	31	STX-X3 (Y<5)	C5
1	2	STX-X3 (Y>4)	C8
1	8	STX-X4 (Y<5)	D5
2	13	STX-X4 (Y>4)	D8
3	10	STX-X5 (Y<5)	J5
3	13	STX-X5 (Y>4)	J8
3	19	STX-X6 (Y<5)	K5
3	22	STX-X6 (Y>4)	K8
3	28	STX-X7 (Y<5)	L5
3	31	STX-X7 (Y>4)	L8
3	5	STX-X8 (Y<5)	M5
3	8	STX-X8 (Y>4)	M8

IC	O/P	FUNC	RLY
X Y1 Coordinates			
1	12	X1-Y1	A1
1	21	X2-Y1	B1
1	30	X3-Y1	C1
1	7	X4-Y1	D1
2	7	X5-Y1	J1
3	18	X6-Y1	K1
3	27	X7-Y1	L1
3	4	X8-Y1	M1
X Y2 Coordinates			
1	11	X1-Y2	A2
1	20	X2-Y2	B2
1	29	X3-Y2	C2
1	6	X4-Y2	D2
2	6	X5-Y2	J2
3	17	X6-Y2	K2
3	26	X7-Y2	L2
3	3	X8-Y2	M2
X Y3 Coordinates			
1	10	X1-Y3	A3
1	19	X2-Y3	B3
1	28	X3-Y3	C3
1	5	X4-Y3	D3
2	5	X5-Y3	J3
3	16	X6-Y3	K3
3	25	X7-Y3	L3
3	2	X8-Y3	M3
X Y4 Coordinates			
1	9	X1-Y4	A4
1	18	X2-Y4	B4
1	27	X3-Y4	C4
1	4	X4-Y4	D4
2	4	X5-Y4	J4
3	15	X6-Y4	K4
3	24	X7-Y4	L4
3	1	X8-Y4	M4

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MATRIX 1

IC	O/P	FUNC	RLY
Y Axis Isolation Switches (18))			
2	21	IS-Y1 (X<5)	F1
2	27	IS-Y1 (X>4)	G1
2	20	IS-Y2 (X<5)	F2
2	26	IS-Y2 (X>4)	G2
2	22	IS-Y3 (X<5)	F3
2	25	IS-Y3 (X>4)	G3
2	23	IS-Y4 (X<5)	F4
2	28	IS-Y4 (X>4)	G4
2	24	IS-Y5 (X<5)	F9
2	29	IS-Y5 (X>4)	G9
5	9	IS-Y6 (X<5)	F10
2	30	IS-Y6 (X>4)	G10
5	10	IS-Y7 (X<5)	F11
5	5	IS-Y7 (X>4)	G11
5	11	IS-Y8 (X<5)	F12
5	6	IS-Y8 (X>4)	G12
5	12	IS-Y9 (X<5)	F13
5	7	IS-Y9 (X>4)	G13
Y Axis Self-Test Switches (18)			
2	16	STY-Y1 (X<5)	E1
2	32	STY-Y1 (X>4)	H1
2	15	STY-Y2 (X<5)	E2
2	31	STY-Y2 (X>4)	H2
2	17	STY-Y3 (X<5)	E3
2	1	STY-Y3 (X>4)	H3
2	18	STY-Y4 (X<5)	E4
2	2	STY-Y4 (X>4)	H4
2	19	STY-Y5 (X<5)	E9
2	3	STY-Y5 (X>4)	H9
5	13	STY-Y6 (X<5)	E10
5	1	STY-Y6 (X>4)	H10
5	14	STY-Y7 (X<5)	E11
5	2	STY-Y7 (X>4)	H11
5	15	STY-Y8 (X<5)	E12
5	3	STY-Y8 (X>4)	H12
5	16	STY-Y9 (X<5)	E13
5	4	STY-Y9 (X>4)	H13
Y Axis Loop-Thru Switch (1)			
5	8	LT-Y9G14	

IC	O/P	FUNC	RLY
X Y5 Coordinates			
1	17	X1-Y5	A9
1	26	X2-Y5	B9
1	3	X3-Y5	C9
2	14	X4-Y5	D9
3	14	X5-Y5	J9
3	23	X6-Y5	K9
3	32	X7-Y5	L9
3	9	X8-Y5	M9
X Y6 Coordinates			
4	13	X1-Y6	A10
4	9	X2-Y6	B10
4	5	X3-Y6	C10
4	1	X4-Y6	D10
6	13	X5-Y6	J10
6	9	X6-Y6	K10
6	5	X7-Y6	L10
6	1	X8-Y6	M10
X Y7 Coordinates			
4	14	X1-Y7	A11
4	10	X2-Y7	B11
4	6	X3-Y7	C11
4	2	X4-Y7	D11
6	14	X5-Y7	J11
6	10	X6-Y7	K11
6	6	X7-Y7	L11
6	2	X8-Y7	M11
X Y8 Coordinates			
4	15	X1-Y8	A12
4	11	X2-Y8	B12
4	7	X3-Y8	C12
4	3	X4-Y8	D12
6	15	X5-Y8	J12
6	11	X6-Y8	K12
6	7	X7-Y8	L12
6	3	X8-Y8	M12

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MATRIX 1

IC	O/P	FUNC	RLY
X Y9 Coordinates			
4	16	X1-Y9	A13
4	12	X2-Y9	B13
4	8	X3-Y9	C13
4	4	X4-Y9	D13
6	16	X5-Y9	J13
6	12	X6-Y9	K13
6	8	X7-Y9	L13
6	4	X8-Y9	M13

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MATRIX 2

IC	O/P	FUNC	RLY
X Axis Isolation Switches (16)			
7	17	IS-X1 (Y<5)	A20
7	18	IS-X1 (Y>4)	A21
7	8	IS-X2 (Y<5)	B20
7	9	IS-X2 (Y>4)	B21
7	31	IS-X3 (Y<5)	C20
7	32	IS-X3 (Y>4)	C21
8	20	IS-X4 (Y<5)	D20
8	21	IS-X4 (Y>4)	D21
9	21	IS-X5 (Y<5)	J20
9	22	IS-X5 (Y>4)	J21
9	12	IS-X6 (Y<5)	K20
9	13	IS-X6 (Y>4)	K21
9	3	IS-X7 (Y<5)	L20
9	4	IS-X7 (Y>4)	L21
9	26	IS-X8 (Y<5)	M20
9	27	IS-X8 (Y>4)	M21
X Axis Self-Test Switches (16)			
7	16	STX-X1 (Y<5)	A19
7	19	STX-X1 (Y>4)	A22
7	7	STX-X2 (Y<5)	B19
7	10	STX-X2 (Y>4)	B22
7	30	STX-X3 (Y<5)	C19
7	1	STX-X3 (Y>4)	C22
8	19	STX-X4 (Y<5)	D19
8	22	STX-X4 (Y>4)	D22
9	20	STX-X5 (Y<5)	J19
9	23	STX-X5 (Y>4)	J22
9	11	STX-X6 (Y<5)	K19
9	14	STX-X6 (Y>4)	K22
9	2	STX-X7 (Y<5)	L19
9	5	STX-X7 (Y>4)	L22
9	25	STX-X8 (Y<5)	M19
9	28	STX-X8 (Y>4)	M22

IC	O/P	FUNC	RLY
X Y1 Coordinates			
4	17	X1-Y1	A15
4	21	X2-Y1	B15
4	25	X3-Y1	C15
4	29	X4-Y1	D15
6	17	X5-Y1	J15
6	21	X6-Y1	K15
6	25	X7-Y1	L15
6	29	X8-Y1	M15
X Y2 Coordinates			
4	18	X1-Y2	A16
4	22	X2-Y2	B16
4	26	X3-Y2	C16
4	30	X4-Y2	D16
6	18	X5-Y2	J16
6	22	X6-Y2	K16
6	26	X7-Y2	L16
6	30	X8-Y2	M16
X Y3 Coordinates			
4	19	X1-Y3	A17
4	23	X2-Y3	B17
4	27	X3-Y3	C17
4	31	X4-Y3	D17
6	19	X5-Y3	J17
6	23	X6-Y3	K17
6	27	X7-Y3	L17
6	31	X8-Y3	M17
X Y4 Coordinates			
4	20	X1-Y4	A18
4	24	X2-Y4	B18
4	28	X3-Y4	C18
4	32	X4-Y4	D18
6	20	X5-Y4	J18
6	24	X6-Y4	K18
6	28	X7-Y4	L18
6	32	X8-Y4	M18

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MATRIX 2

IC	O/P	FUNC	RLY	IC	O/P	FUNC	RLY
Y Axis Isolation Switches (18)							
5	21	IS-Y1 (X<5)	F15				
5	25	IS-Y1 (X>4)	G15	**X Y5 Coordinates**			
5	22	IS-Y2 (X<5)	F16	7	20	X1-Y5	A23
5	26	IS-Y2 (X>4)	G16	7	11	X2-Y5	B23
5	23	IS-Y3 (X<5)	F17	7	2	X3-Y5	C23
5	27	IS-Y3 (X>4)	G17	7	25	X4-Y5	D23
5	24	IS-Y4 (X<5)	F18	9	24	X5-Y5	J23
5	28	IS-Y4 (X>4)	G18	9	15	X6-Y5	K23
8	9	IS-Y5 (X<5)	F23	9	6	X7-Y5	L23
8	3	IS-Y5 (X>4)	G23	9	29	X8-Y5	M23
8	10	IS-Y6 (X<5)	F24	**X Y6 Coordinates**			
8	4	IS-Y6 (X>4)	G24	7	24	X1-Y6	A24
8	11	IS-Y7 (X<5)	F25	7	15	X2-Y6	B24
8	5	IS-Y7 (X>4)	G25	7	6	X3-Y6	C24
8	13	IS-Y8 (X<5)	F26	7	29	X4-Y6	D24
8	8	IS-Y8 (X>4)	G26	8	29	X5-Y6	J24
8	12	IS-Y9 (X<5)	F27	9	19	X6-Y6	K24
8	7	IS-Y9 (X>4)	G27	9	10	X7-Y6	L24
Y Axis Self-Test Switches (18)				9	1	X8-Y6	M24
5	17	STY-Y1 (X<5)	E15	**X Y7 Coordinates**			
5	29	STY-Y1 (X>4)	H15	7	23	X1-Y7	A25
5	18	STY-Y2 (X<5)	E16	7	14	X2-Y7	B25
5	30	STY-Y2 (X>4)	H16	7	5	X3-Y7	C25
5	19	STY-Y3 (X<5)	E17	7	28	X4-Y7	D25
5	31	STY-Y3 (X>4)	H17	8	28	X5-Y7	J25
5	20	STY-Y4 (X<5)	E18	9	18	X6-Y7	K25
5	32	STY-Y4 (X>4)	H18	9	9	X7-Y7	L25
8	14	STY-Y5 (X<5)	E23	9	32	X8-Y7	M25
8	30	STY-Y5 (X>4)	H23	**X Y8 Coordinates**			
8	15	STY-Y6 (X<5)	E24	7	22	X1-Y8	A26
8	31	STY-Y6 (X>4)	H24	7	13	X2-Y8	B26
8	16	STY-Y7 (X<5)	E25	7	4	X3-Y8	C26
8	32	STY-Y7 (X>4)	H25	7	27	X4-Y8	D26
8	18	STY-Y8 (X<5)	E26	8	27	X5-Y8	J26
8	2	STY-Y8 (X>4)	H26	9	17	X6-Y8	K26
8	17	STY-Y9 (X<5)	E27	9	8	X7-Y8	L26
8	1	STY-Y9 (X>4)	H27	9	31	X8-Y8	M26
Y Axis Loop-Thru Switch (1)							
8	6	LT-Y9	G28				

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

MATRIX 2

IC	O/P	FUNC	RLY
X Y9 Coordinates			
7	21	X1-Y9	A27
7	12	X2-Y9	B27
7	3	X3-Y9	C27
7	26	X4-Y9	D27
8	26	X5-Y9	J27
9	16	X6-Y9	K27
9	7	X7-Y9	L27
9	30	X8-Y9	M27

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

THIS PAGE INTENTIONALLY BLANK

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 5 - SPECIFICATION

GENERAL SPECIFICATION

Maximum Voltage	100V d.c./100Va.c.
Maximum Power	10W
Maximum Switch Current	0.5A
Maximum Carry Current	1.2A
Characteristic Impedance	50Ohm or 75Ohm
On Path Resistance	< 500 mOhm
Off Path Resistance	> 10^8 Ohm
Differential Thermal Offset	< 30µV
Expected Life (Low Power)	> $1x10^8$ ops
Expected Life (Max Power)	> $5x10^6$ ops
Total Switching Time	10ms
Relay Mechanical Settling Time	< 3ms
Switching Time (1 crosspoint)	< 3.5ms
Switching Time (data block)	< 5.0ms
Switching Time (*RCL)	< 3.0ms

(*Measured on controller with 66MHz 486/DX2)

RF SPECIFICATION

Maximum Frequency	400MHz
Typical Rise Time	800ps †
Insertion Loss (< 400MHz)	< 3dB †
VSWR (< 400MHz)	< 1:1.8 †
Isolation (< 400MHz)	> 70dB
Crosstalk (< 400MHz)	> 60dB

Loop Thru RF Specification (1 Pole)	
Insertion Loss (< 100MHz)	< 1dB
V.S.W.R. (< 100MHz)	< 1:1.05

† Matrix RF Performance is entirely dependant upon the combination of crosspoints currently selected, these figures are for one selected crosspoint on any X or Y channel only, refer to graphs on the following page.

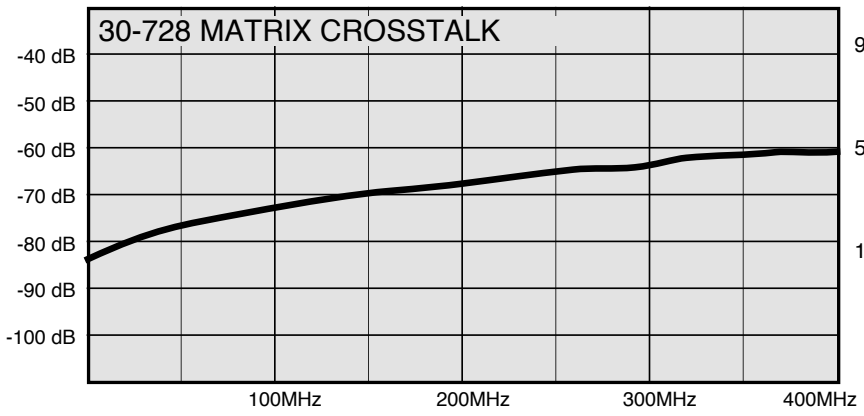
POWER SUPPLY SPECIFICATION

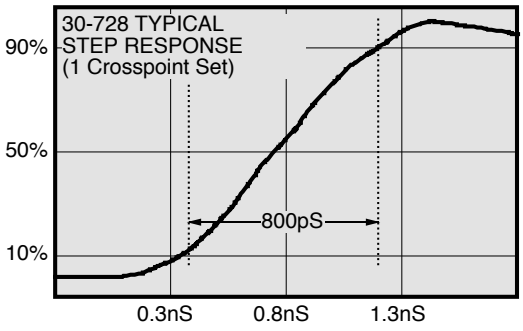
5V d.c.	< 0.5A
12V d.c.	< 0.7A (< 12 crosspoints selected)
Total Power	< 11W (< 12 crosspoints selected)
Power Up Delay	< 15s (required for self-test)

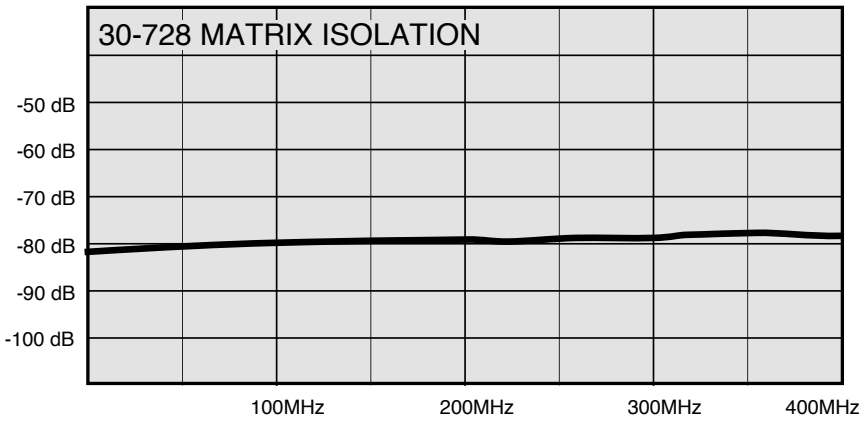
ENVIRONMENTAL SPECIFICATION (ALL VERSIONS)

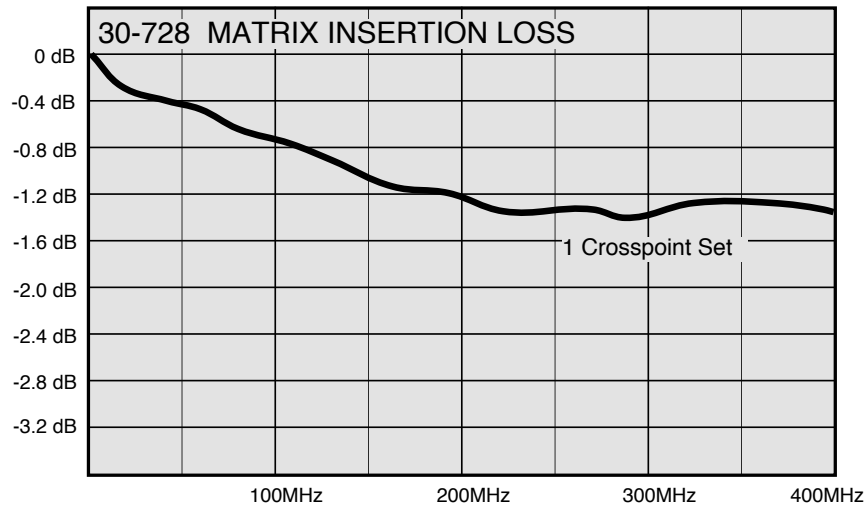
Operating Temperature	0 to 45ºC
Storage Temperature	-20 to +75ºC
Humidity	95% Non Condensing
Cooling Requirements	Forced ventilation advised

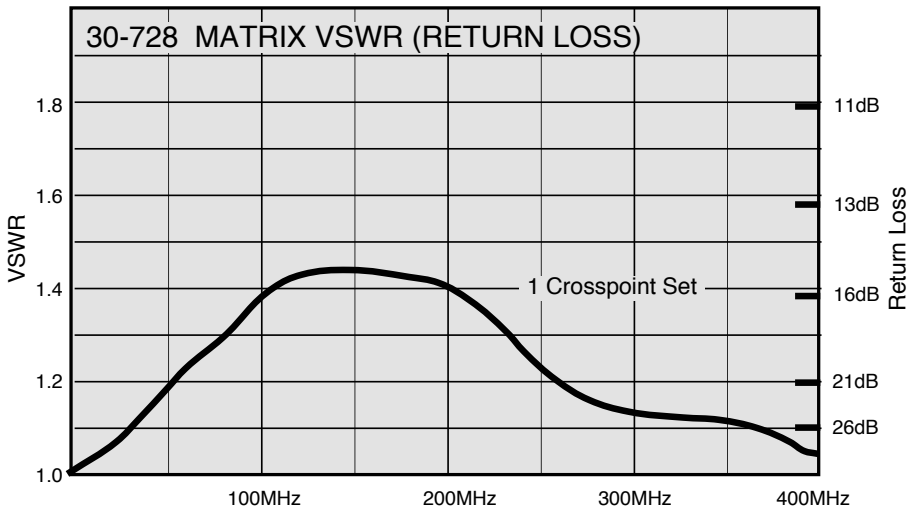
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com











Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 6 - PARTS LIST

The following pages provide parts lists and component location diagrams for the Dual 8 X 9 RF Coaxial Matrix Module 30-728.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

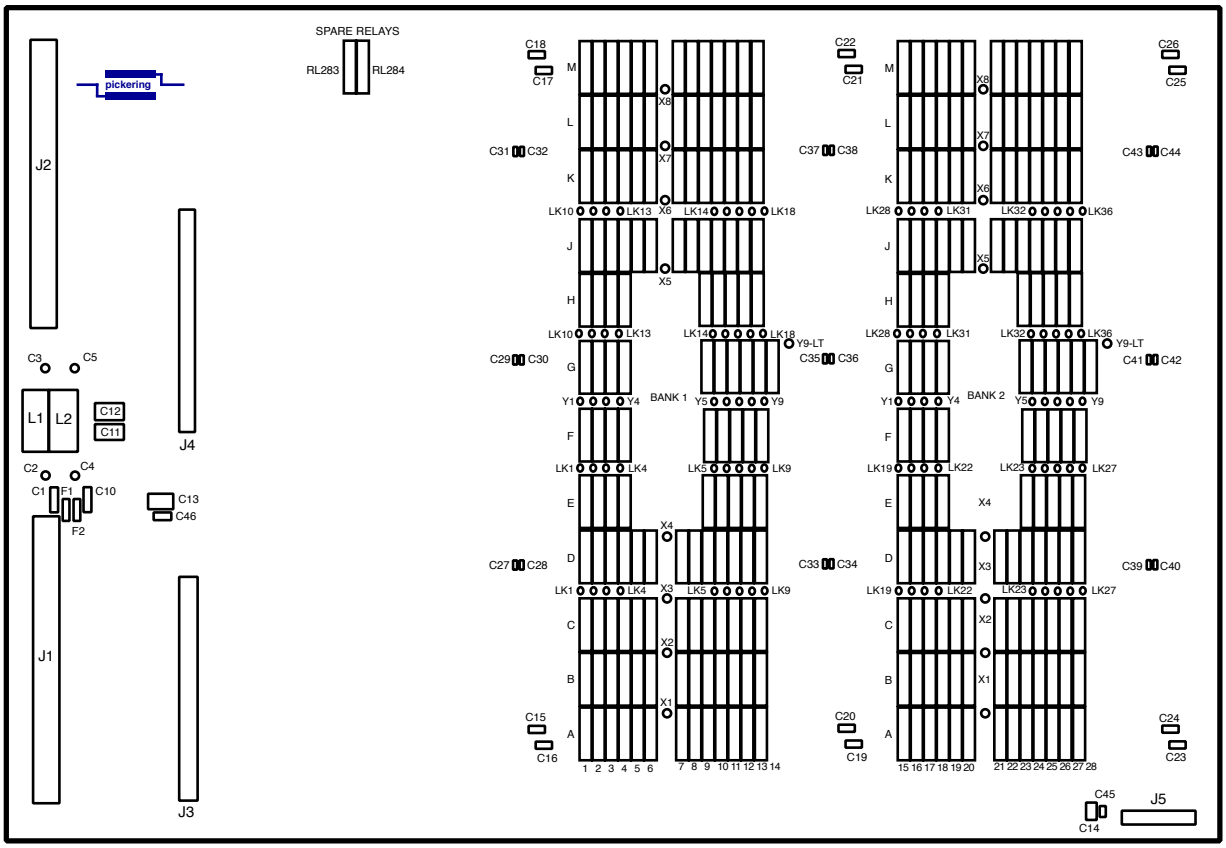
Table 6.1 provides a parts list and Figure 6.1 a component layout diagram for the Dual 8 X 9 RF Coaxial Matrix Module.

TABLE 6.1 - DUAL 8 X 9 RF COAXIAL MATRIX MODULE 30-728 Parts List

PCB Location	Pickering Interfaces Part Number	Part Description	Quantity
A1 to M27, RL283, RL284	C/RL/075	109RF-1-A-12/408D	284
RL87 to RL92, RL98	C/RL/094	G5Y-1	7
C1, C10	C/CP/035	CAPACITOR 22nF	2
C2, C3, C4, C5	C/CP/032	CAPACITOR 6.8uF TANT SMD	4
C6 to C9	C/CP/020	CAPACITOR 10nF (1206)	4
C11, C12	C/CP/002	CAPACITOR ELECT 47uF 16V	2
C13, C14	C/CP/024	CAPACITOR 10uF TANT SMD	2
C15 to C26	C/CP/030	CAPACITOR 1uF 16V TANT	12
C27 to C46	C/CP/021	CAPACITOR 10nF (0805)	20
F1, F2	C/MS/076	FUSE AXIAL 2A	2
L1, L2	C/MS/069	INDUCTOR 56uH 1.5A	2
J1, J2	C/CN/254	DIN41612C 96 WAY IDC	2
J3, J4	C/CN/348	CLP-150-02-L-D	2
J5	C/CN/293	TMM-108-01-T-D	1
U1 to U9	C/IC/035	UCN5818EPF	9
SW1	C/SW/020	DIL SWITCH 8 WAY GULL WING	1
FRONT PANEL			
J1	C/CN/	TCMD-08-T-2.0-01	1
J2	C/CN/251	4-WAY PLUG	1
LD1, LD2, LD3	C/SC/043	LED GREEN 2mm	3
LD4, LD6	C/SC/044	LED YELLOW 2mm	2
LD5	C/SC/024	LED RED 2mm	1

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

COMPONENT SIDE



NON-COMPONENT SIDE

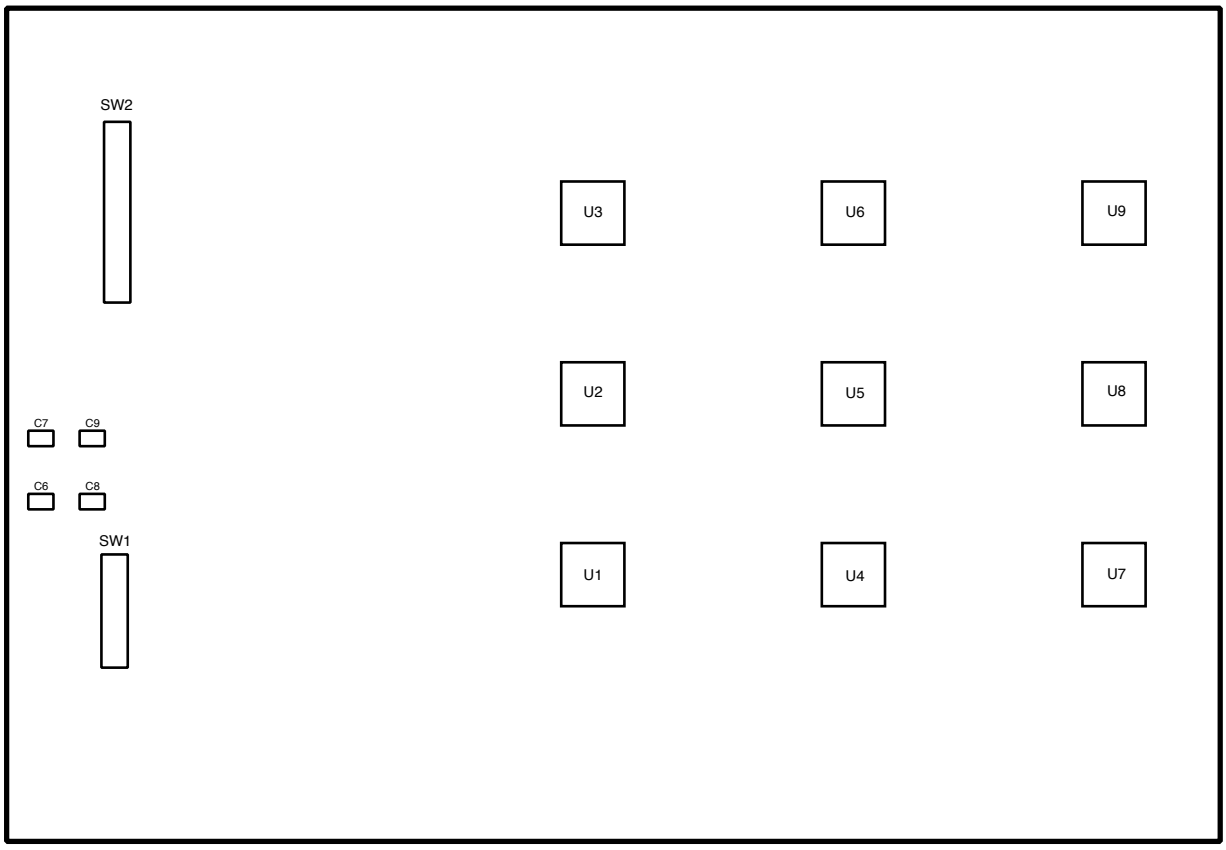
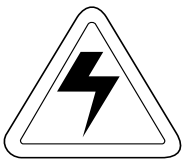


Figure 6.1 - Dual 8 X 9 RF Coaxial Matrix Module 30-728: Component Layout

THIS PAGE INTENTIONALLY BLANK

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

SECTION 7 - WARNINGS AND CAUTIONS



WARNING - DANGER OF ELECTRIC SHOCK

THIS MODULE MAY CONTAIN HAZARDOUS VOLTAGES. BEFORE REMOVING THE MODULE FROM THE RACK REMOVE ALL SUPPLIES.



CAUTION
Handling of Electrostatic-Sensitive Semiconductor Devices

Certain semiconductor devices used in the equipment are liable to damage due to static voltage. Observe the following precautions when handling these devices in their unterminated state, or sub-units containing these devices:

(1) Persons removing sub-units from an equipment using these devices must be earthed by a wrist strap and a resistor at the point provided on the equipment.

(2) Soldering irons used during the repair operations must be low voltage types with earthed tips and isolated from the mains voltage by a double insulated transformer.

(3) Outer clothing worn must be unable to generate static charges.

(4) Printed Circuit Boards (PCBs) fitted with these devices must be stored and transported in anti-static bags.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

THIS PAGE INTENTIONALLY BLANK

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP