

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.

Visit our website - *Click HERE*

48 Channel, RS-422/ TTL Digital I/O and Level Converter

MODEL 1260-700-S-2340R

PUBLICATION NO. 980824-S-2340

RACAL INSTRUMENTS

United States

(Corporate Headquarters and Service Center)
4 Goodyear Street, Irvine, CA 92618
Tel: (800) 722-2528, (949) 859-8999; Fax: (949) 859-7139

5730 Northwest Parkway Suite 700, San Antonio, TX 78249
Tel: (210) 699-6799; Fax: (210) 699-8857

Europe

(European Headquarters and Service Center)
18 Avenue Dutartre, 78150 LeChesnay, France
Tel: +33 (0)1 39 23 22 22; Fax: +33 (0)1 39 23 22 25

29-31 Cobham Road, Wimborne, Dorset BH21 7PF, United Kingdom
Tel: +44 (0) 1202 872800; Fax: +44 (0) 1202 870810

Via Milazzo 25, 20092 Cinisello B, Milan, Italy
Tel: +39 (0)2 6123 901; Fax: +39 (0)2 6129 3606

Racal Instruments Group Limited, Technologie Park, D-51429 Bergisch Gladbach, Germany
Tel: +49 2204 844205; Fax: +49 2204 844219

info@racalinstruments.com
sales@racalinstruments.com
helpdesk@racalinstruments.com
http://www.racalinstruments.com
info@racalinstruments.de
www.racalinstruments.de



PUBLICATION DATE: November 29, 2005

Copyright 2005 by Racal Instruments, Inc. Printed in the United States of America. All rights reserved.
This book or parts thereof may not be reproduced in any form without written permission of the publisher.

THANK YOU FOR PURCHASING THIS RACAL INSTRUMENTS PRODUCT

For this product, or any other Racal Instruments product that incorporates software drivers, you may access our web site to verify and/or download the latest driver versions. The web address for driver downloads is:
http://www.racalinstruments.com/downloads

If you have any questions about software driver downloads or our privacy policy, please contact us at
info@racalinstruments.com

WARRANTY STATEMENT

All Racal Instruments, Inc. products are designed and manufactured to exacting standards and in full conformance to Racal's ISO 9001:2000 processes.

For the specific terms of your standard warranty, or optional extended warranty or service agreement, contact your Racal customer service advisor. Please have the following information available to facilitate service.

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

You may contact your customer service advisor by:

E-Mail:	Helpdesk@racalinstruments.com	
Telephone:	+1 800 722 3262	(USA)
	+44(0) 8706 080134	(UK)
Fax:	+1 949 859 7309	(USA)
	+44(0) 1628 662017	(UK)

RETURN of PRODUCT

Authorization is required from Racal Instruments before you send us your product for service or calibration. Call your nearest Racal Instruments support facility. A list is located on the last page of this manual. If you are unsure where to call, contact Racal Instruments, Inc. Customer Support Department in Irvine, California, USA at 1-800-722-3262 or 1-949-859-8999 or via fax at 1-949-859-7139. We can be reached at: helpdesk@racalinstruments.com.

PROPRIETARY NOTICE

This document and the technical data herein disclosed, are proprietary to Racal Instruments, and shall not, without express written permission of Racal Instruments, be used, in whole or in part to solicit quotations from a competitive source or used for manufacture by anyone other than Racal Instruments. The information herein has been developed at private expense, and may only be used for operation and maintenance reference purposes or for purposes of engineering evaluation and incorporation into technical specifications and other documents which specify procurement of products from Racal Instruments.

DISCLAIMER

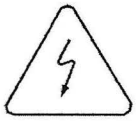
Buyer acknowledges and agrees that it is responsible for the operation of the goods purchased and should ensure that they are used properly and in accordance with this handbook and any other instructions provided by Seller. Racal Instruments products are not specifically designed, manufactured or intended to be used as parts, assemblies or components in planning, construction, maintenance or operation of a nuclear facility, or in life support or safety critical applications in which the failure of the Racal Instruments product could create a situation where personal injury or death could occur. Should Buyer purchase Racal Instruments product for such unintended application, Buyer shall indemnify and hold Racal Instruments, its officers, employees, subsidiaries, affiliates and distributors harmless against all claims arising out of a claim for personal injury or death associated with such unintended use.

FOR YOUR SAFETY

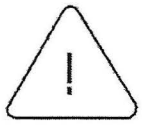
Before undertaking any troubleshooting, maintenance or exploratory procedure, read carefully the **WARNINGS** and **CAUTION** notices.



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.

Table of Contents

Chapter 1 1-1

INTRODUCTION 1-1

Introduction 1-1

Input and Output Specifications 1-4

Outputs 1-4

Inputs 1-4

Ordering Information 1-4

Chapter 2 2-1

INSTALLATION INSTRUCTIONS 2-1

Installation Instructions 2-1

Unpacking and Inspection 2-1

Reshipment Instructions 2-1

Hardware Installation 2-2

Software Installation 2-2

Installation Prerequisite 2-2

Chapter 3 3-1

OPERATION 3-1

Introduction 3-1

Hardware Configuration 3-1

Setting The Module Address 3-1

Operating Modes 3-4

Reply To The MOD:LIST? Command 3-6

Operating The 1260-700-S-2340R in Register-Based Mode 3-6
Register Definitions 3-9
Register Values 3-11

Chapter 4 4-1

SPECIFICATIONS 4-1
Specifications 4-1
Interface Data 4-2
Environmental Data 4-2

Chapter 5 5-1

PRODUCT SUPPORT 5-1
Product Support 5-1
Warranty 5-1
Support Offices 5-2
Repair and Calibration Request Form 5-3

Table of Figure

Figure 1-1, Single - Channel Block Diagram of 1260-700 to S-2340R Interface 1-2

Figure 1-2, 1260-700-S-2340R Module 1-3

Figure 3-1, Front View – Module Addresses for 1 through 6 in a 1260-100 Carrier 3-2

Figure 3-2, Front View – Module Addresses for 7 through 12 in a 1260-100 Carrier 3-2

Figure 3-3, Numbering of Switch Plug-In Slots in a 1256 Chassis 3-3

Figure 3-4, Message-Based Mode of Operation 3-4

Figure 3-5, Register-Based Mode of Operation 3-4

List of Tables

Table 3-1, Register Offset Addresses of the 1260-700-S-2340R Module 3-9

Table 3-2, Ports A-F Register Functionality of the 1260-700-S-2340R 3-10

Table 3-3, RS-422 Control Register Functionality of the 1260-700-S-2340R Module 3-10

Table 3-4, TTL Control Register Functionality of the 1260-700-S-2340R Module 3-11

Table 3-5, Register Values for Module Operation 3-12

Table 3-6, Front Panel J200 Pinouts 3-13

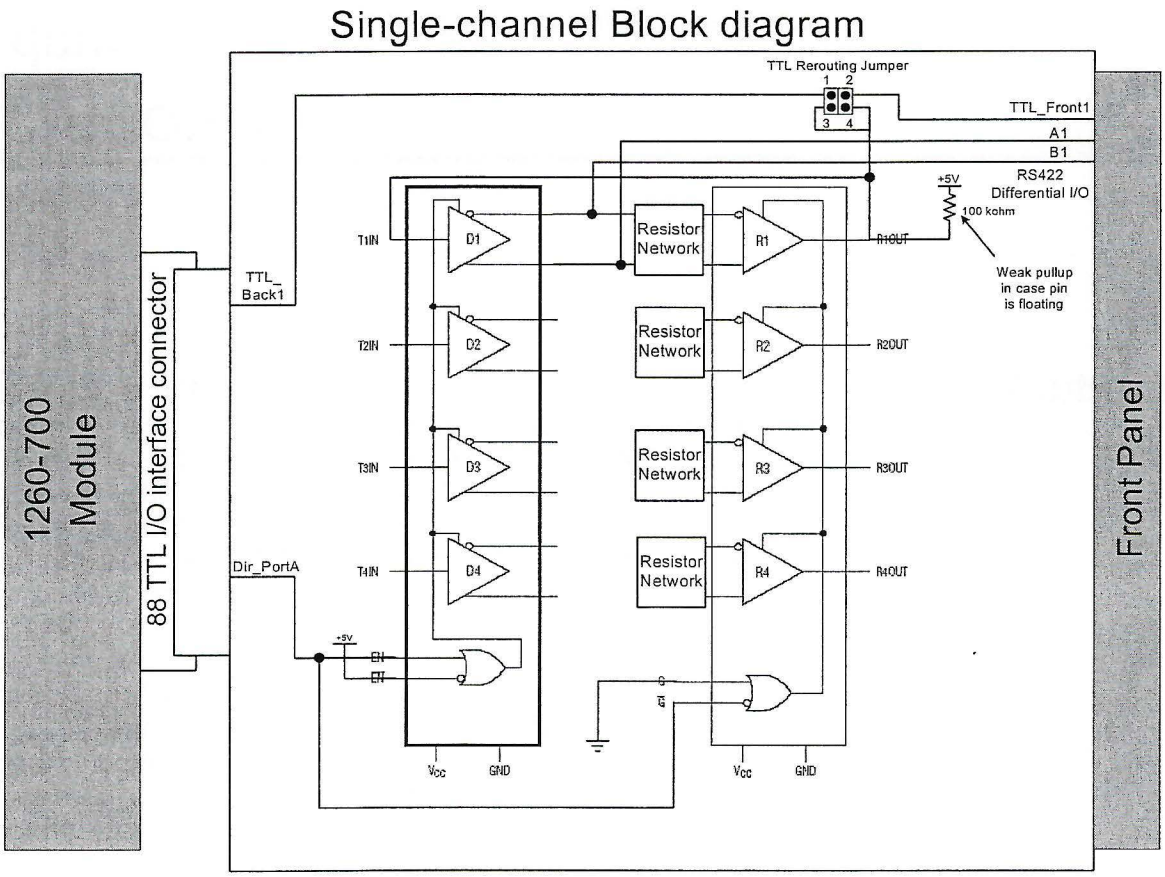


Figure 1-1, Single - Channel Block Diagram of 1260-700 to S-2340R Interface

Racal Instruments © 2005

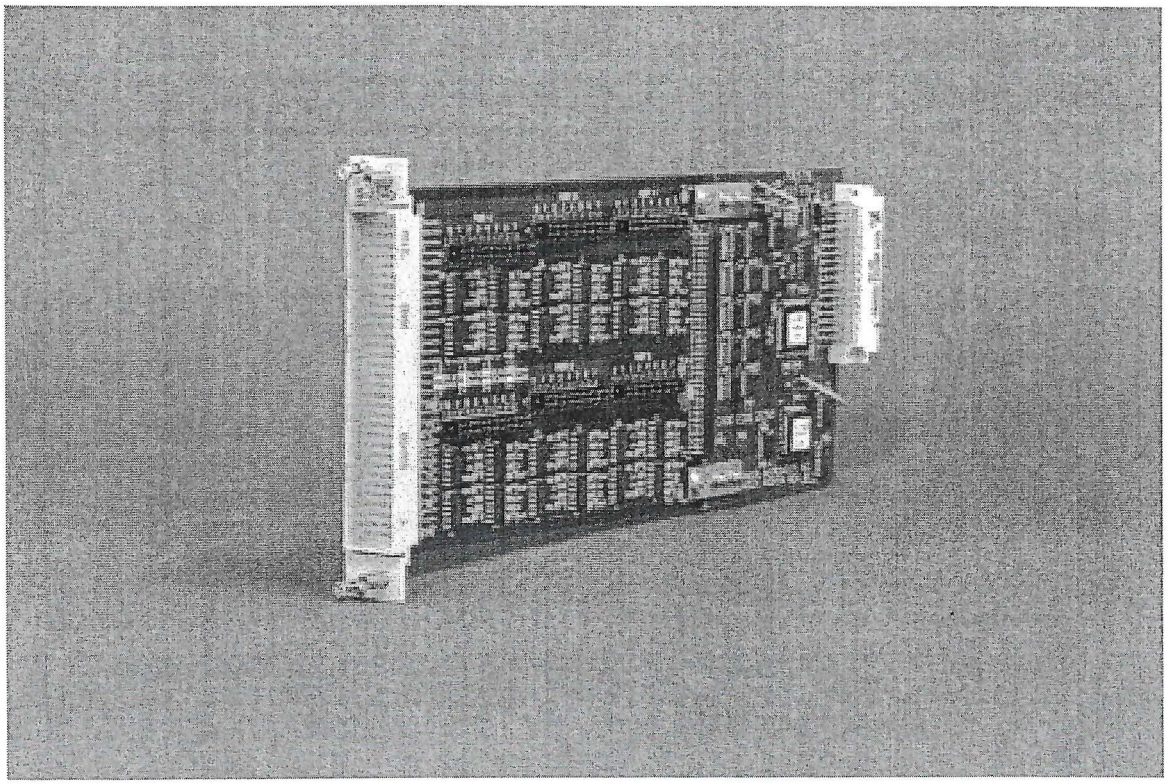


Figure 1-2, 1260-700-S-2340R Module

Input and Output Specifications

Outputs

The Model 1260-700-S-2340R has a front panel 160 pin DIN connector. The channels can be user-configured as output channels via software control of register mapping. The signal levels are either RS-422 differential pair or TTL.

Inputs

The Model 1260-700-S-2340R can be configured as input channels via software control of register mapping. The signal levels are either RS-422 differential pair or TTL.

Ordering Information

Listed below are part numbers for the 1260-700-S-2340R module. The 1260-700-S-2340R uses a single type of mating connector.

ITEM	DESCRIPTION	PART #
1260-700-S-2340R Module	48 Channel, RS-422 / TTL Digital I/O and Level Converter	407827-S-2340
407664	160-pin DIN Connector Kit with Pins	407664
407408-001	160-pin DIN Cable Assembly, 6ft, 24 AWG	407408-001
Additional Manual		980824-S-2340

Racal Instruments © 2005

Chapter 2
INSTALLATION INSTRUCTIONS

Installation Instructions

Unpacking and Inspection



CAUTION
SENSITIVE ELECTRONIC DEVICES
DO NOT SHIP OR STORE NEAR STRONG ELECTROSTATIC, ELECTROMAGNETIC, MAGNETIC OR RADIOACTIVE FIELDS

1. Remove Model 1260-700-S-2340R from its packaging and inspect it for damages. If any damage is apparent, inform the carrier immediately. Retain shipping carton and packing material for the carrier's inspection.

2. Verify that the pieces in the package you received contain Model 1260-700-S-2340R and the 1260-700-S-2340R User Manual. Notify Racal Instruments if the unit appears damaged in any way. Do not attempt to install a damaged module into a VXI chassis.

3. Model 1260-700-S-2340R is shipped in an anti-static bag to prevent electrostatic damage to the unit. Do not remove the module from the anti-static bag unless it is in a static-controlled area.

Reshipment Instructions

1. Use the original packing material when returning the module to Racal Instruments for servicing. The original shipping carton and the instrument's plastic foam will provide the necessary support for safe reshipment.

2. If the original packing material is unavailable, wrap the unit in an ESD Shielding bag and use plastic spray foam to surround and protect the instrument.

3. Reship in either the original or a new shipping carton.

Hardware Installation

This instrument can be installed in either a 1260-100 Carrier Assembly or 1256 Switching System Mainframe. Installation into the 1260 – 100 Carrier Assembly is described in the Installation Section of the 1260-100 Adapt-a-Switch Carrier Manual. Installation into a 1256 Switching System Mainframe is described in the Installation Section of the 1256 Switching System Manual.

Software Installation

There is no software provided with Model 1260-700-S-2340R.

Installation Prerequisite

Model 1260-700-S-2340R is to be installed in a 1260-100 Carrier Assembly or 1256 Switching System Mainframe. In a VXI chassis, the message – based mode of operation is easier to use and control with VIC (VXI Interactive Control) software.

Racal Instruments © 2005

Chapter 3
OPERATION

Introduction

This section provides the operator information needed to operate the Model 1260-700-S-2340R in a VXI system. The unit resides in a VXI chassis and is subject to restrictions and benefits of that environment.

Hardware Configuration

CAUTION

All hardware configurations must be done only while the power to the module is OFF.

Setting The Module Address

When the 1260-700-S-2340R is installed in a 1260-100 Adapt-a-Switch™ Carrier, the Option-01T switch controller identifies each Adapt-a-Switch™ plug-in or conventional 1260-Series module by a *module address* that is unique to that module. The module address is a number from 1 through 12, inclusive.

The module address assigned to the 1260-700-S-2340R depends on the carrier slot into which the 1260-700-S-2340R is inserted, and on the position of the logical address DIP switch on the carrier side panel. The switch has two settings:

- 1-6 (closed): When the switch is set to this position, the module addresses of the plug-ins in the 1260-100 Carrier are from 1 through 6. The module with address 1 is in the left slot of the top row. The plug-ins are addressed in the following pattern:

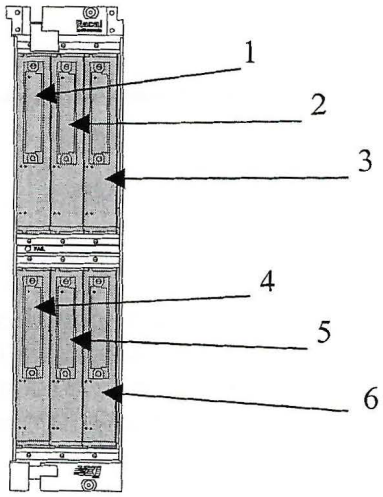


Figure 3-1, Front View – Module Addresses for 1 through 6 in a 1260-100 Carrier

- 7-12 (open): When the switch is set to this position, the module addresses of the plug-ins in the 1260-100 Carrier are from 7 through 12, in the following pattern:

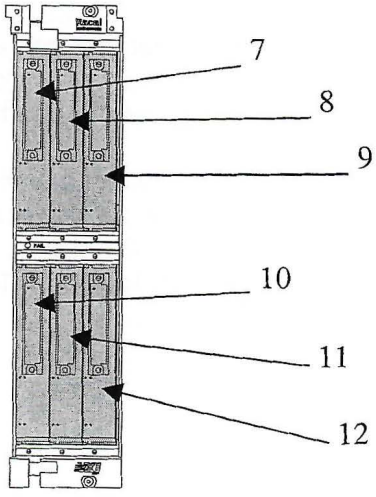


Figure 3-2, Front View – Module Addresses for 7 through 12 in a 1260-100 Carrier

When setting module addresses for Adapt-a-Switch™ Carriers and conventional 1260-Series modules, be sure that no address is used by more than one plug-in or 1260-Series module.

When the 1260-700-S-2340R is installed in a 1256 Chassis, the 1256 backplane switch controller identifies each Adapt-a-Switch™ plug-in by a *module address* that is unique to that module. The module address is a number from 1 through 8, inclusive. Please refer to **Figure 3-3.**

The module address assigned to the 1260-700-S-2340R depends on the slot into which the 1260-700-S-2340R is inserted.

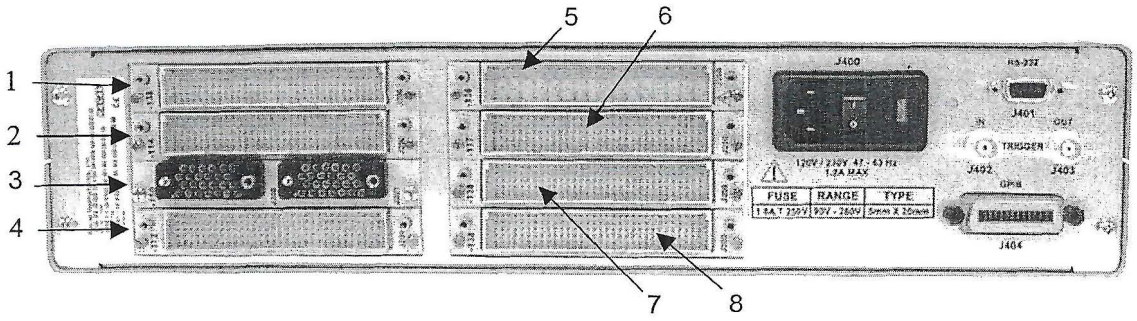


Figure 3-3, Numbering of Switch Plug-In Slots in a 1256 Chassis

Operating Modes

The 1260-700-S-2340R may be operated either in *message-based* mode or in *register-based* mode.

In the *message-based* mode, the 1260-01T switch controller interprets commands sent by the slot 0 controller, and determines the appropriate data to send to the control registers of the 1260-700 –S-2340R module.

For example, if the A24 VXI base address for the 1260-100 Adapt-a-Switch™ carrier is assumed to be at 0x804000A for example purposes and the 1260-700-S-2340R occupies the module 0 slot, **Figure 3-4** below provides a conceptual view of the message-based mode of operation for a read operation on port 1.

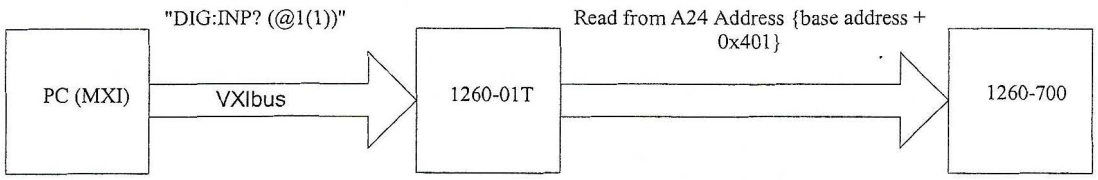


Figure 3-4, Message-Based Mode of Operation

In the *register-based* mode, the user writes directly to the port registers on the 1260-700-S-2340R module. The 1260-01T command module does not monitor these operations, and does not keep track of the port states on the 1260-700-S-2340R module in this mode.

A conceptual view of the register-based mode is shown in **Figure 3-5** below.

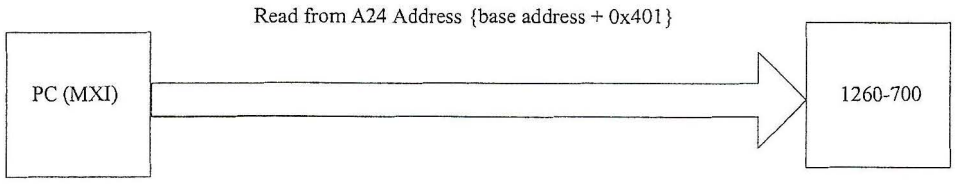


Figure 3-5, Register-Based Mode of Operation

Racal Instruments © 2005

NOTE

Register-Based mode is only available when the 1260-700-S-2340R is installed in a 1260-100 Adapt-a-Switch™ Carrier with an Option 01T.

Since the 1260-01T switch controller does not keep track of port and control register states during the register-based mode, it is advisable to use **either** the message-based or the register-based mode consistently, and use the chosen mode exclusively throughout the application program.

In general, the message-based mode of operation is easier to use with utility software such as the National Instruments VXI Interactive Control (VIC) program. The message-based mode allows the user to send ASCII text commands to the 1260-01T or 1256 and to read replies from the 1260-01T or 1256. In addition, some features, such as synchronous port operation, are available only in the message-based mode. An added benefit of message-based operation is that it obviates the need to manually configure control registers on the 1260-700-S-2340R, controlling such things as port data direction, since these are handled automatically by the 1260-01T or 1256.

The register-based mode provides faster and more direct control of the 1260-700-S-2340R. In this mode, direct port and control register operations are processed in less than 9 microseconds, not counting software overhead inherent in I/O libraries such as VISA.

For further information about message-based vs. register-based comparisons, consult the 1260-01T User's Manual

Reply To The MOD:LIST? Command



NOTE

Since a 1260-700 Digital Interface is based upon Racal Instrument's 1260-114TTL DIO Module, a 1260-700 responds as if it were a 1260-114TTL

The 1260-01T or 1256 returns a reply to the MOD:LIST? command. This reply is unique for each different 1260 series switch module. The syntax for the reply is:

<module address> : <module-specific identification string>

Since a 1260-700 is based upon Racal Instrument's 1260114TTL module, the <module-specific identification string> for the 1260-700 responds like the 1260-114TTL as:

```
1260-114TTL DIGITAL INPUT/OUTPUT TTL MODULE
```

So, for a 1260-700 whose <module address> is set to 8, the reply to this query would be:

```
8 : 1260-114TTL DIGITAL INPUT/OUTPUT TTL
MODULE
```

Operating The 1260-700-S-2340R in Register-Based Mode

NOTE

Register-Based mode is only available when the 1260-700-S-2340R is installed in a 1260-100 Adapt-a-Switch™ Carrier with an Option 01T.

In register-based mode, the 1260-700-S-2340R is operated by directly writing and reading to port and control registers on the 1260-700-S-2340R module. To access the various registers, the following details must be assembled to generate an absolute address that can be written to or read from:

The port and control registers are located in the VXIbus A24 Address Space. The A24 address for a port or control register depends on:

Racal Instruments © 2005

1. The A24 Address Offset assigned to the 1260-01T module by the Resource Manager program. The Resource Manager program is provided by the VXIbus slot-0 controller vendor. The A24 Address Offset is placed into the "Offset Register" of the 1260-01T by the Resource Manager.

2. The <module address> of the 1260-700-S-2340R module. This is a value in the range from 1 and 12 inclusive.

3. The 1260-700-S-2340R port or control register to be written to or read from. Each register on the 1260-700-S-2340R has a unique offset from the base address.

The base A24 address for the 1260-700-S-2340R module may be calculated by:

(A24 Offset of the 1260-01T) + (1024 x Module Address of 1260-700).

The A24 address offset is usually expressed in hexadecimal. A typical value of 204000_{16} is used in the examples that follow.

A 1260-700-S-2340R with a module address of 7 would have the base A24 address computed as:

Base A24 Address of 1260-700 = $204000_{16} + (400_{16} \times 7_{10})$ = $205C00_{16}$

The port and control registers for Adapt-a-Switch™ plug-ins and conventional 1260-Series modules are always on odd-numbered A24 addresses. For port registers, the 1260-700-S-2340R reads and writes to the same location. For control registers, the 1260-700-S-2340R writes to one location, but reads back from another. **Table 3-1** provides offsets relative to the base address of the module for all port and control registers of the 1260-700-S-2340R.

To obtain the absolute address where data is to be written or read from, the base address is added to the offset:

(Base A24 1260-700 Address) + offset = absolute address

So, for our example base A24 address computed earlier, the following absolute addresses would apply for the operations indicated:

205C01	Port 0 read or written at this location
205C19	Control Register 1 written at this location
205E03	Control Register 1 read at this location

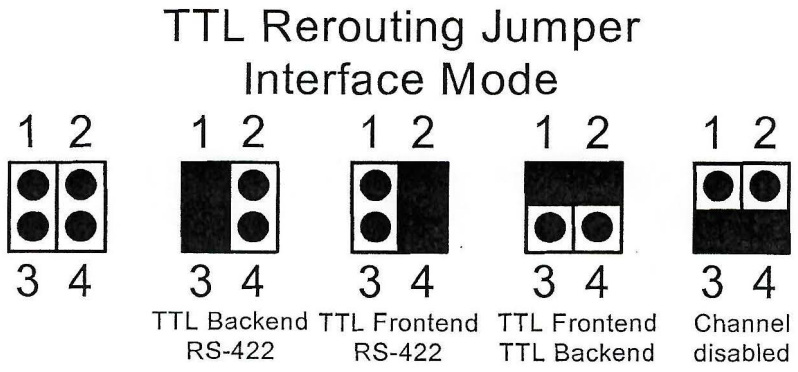
Before explaining the particulars of reading and writing to port and control registers, it is necessary to understand how the registers interact with the 1260-700. **Table 3-1** provides a detailed explanation of each register and how it interacts with the 1260-700-S-2340R module.

Hardware Jumper and Position

Interface Modes (each channel's mode jumper-selectable)

Interface Mode	Jumper
TTL backend to/from RS-422	1 to 3
TTL frontend to/from RS-422	2 to 4
TTL backend to/from TTL frontend	1 to 2
Channel disabled	3 to 4

I/O Direction
Port-selectable in software



Racal Instruments © 2005

Register Definitions

The 1260-700-S-2340R consists of a series of TTL I/O channels in the 1260-700 backend and a RS-422 interface frontend card. There are six bidirectional TTL ports (Ports A-F) used to communicate with the RS-422 channels, I/O Control Register (RS-422 Control Register) to set the direction of the RS-422 interface, and the 1260-700 backend control register (TTL Control Register).

The following **Table 3-1** shows the address offset for each of these registers.

Table 3-1, Register Offset Addresses of the 1260-700-S-2340R Module

Register Name	Register Offsets to Add to Base Module Address	
	Write Location (hexadecimal)	Read Location (hexadecimal)
Port A (Port 0)	0x01	0x01
Port B (Port 1)	0x03	0x03
Port C (Port 2)	0x05	0x05
Port D (Port 3)	0x07	0x07
Port E (Port 4)	0x09	0x09
Port F (Port 5)	0x0B	0x0B
RS-422 Control Register	0x1D	0xD
TTL Control Register	0x19	0x203

Table 3-2, Ports A-F Register Functionality of the 1260-700-S-2340R

Register Table		Ports A-F
Module Version	**Bit**	**Functionality Description**
1260-700-S-2340R	0	Each port is an 8-bit register where the lowest order bit corresponds to lowest order connector pin of the port group. When port direction is set to output, a '1' written to any bit drives the appropriate output driver high while a '0' drives the appropriate output driver low. If a port is read, the data will appear identical to what was written to the register. When set to port input, a logic high will set the appropriate bit '1' and a logic low will set the appropriate bit to '0'.
	1	
	2	
	3	
	4	
	5	
	6	
	7	

Table 3-3, RS-422 Control Register Functionality of the 1260-700-S-2340R Module

Register Table		RS-422 Control Register (0x0D)	
Module Version	**Bit**	**Functionality Description**	
1260-700-S-2340R	0	0: Port A Input Port	1: Port A Output Port
	1	0: Port B Input Port	1: Port B Output Port
	2	0: Port C Input Port	1: Port C Output Port
	3	0: Port D Input Port	1: Port D Output Port
	4	0: Port E Input Port	1: Port E Output Port
	5	0: Port F Input Port	1: Port F Output Port
	6		1: Reserved
	7		1: Reserved

NOTE: In order to set the RS-422 port I/O direction, the RS-422 Control Register and TTL Control Register must both be set to input or output. Please refer to Table 3-5 for further details.

Racal Instruments © 2005

Table 3-4, TTL Control Register Functionality of the 1260-700-S-2340R Module

Register Table		TTL Control Register (Wr: 0x19, Rd: 0x203)	
Module Version	**Bit**	**Functionality Description**	
1260-700-S-2340R (As written to register: bits normally read inverted)	0	0: Port A Input Port	1: Port A Output Port
	1	0: Port B Input Port	1: Port B Output Port
	2	0: Port C Input Port	1: Port C Output Port
	3	0: Port D Input Port	1: Port D Output Port
	4	0: Port E Input Port	1: Port E Output Port
	5	0: Port F Input Port	1: Port F Output Port
	6		1: Reserved
	7		1: Reserved

NOTE: On initialization RS-422 and TTL Control Register must be set to 0x03. Please refer to Table 3-5 for further details.

Register Values

The following table shows the register values for reading and writing to the ports and setting the direction. Note that on initialization the RS-422 Control Register and TTL Control Register must both be set to 0x03. The Port Register bit 'b' is the logic value pertaining to that channel where '0' is for logic low and '1' is for logic high. The TTL Control Register bit 'd' sets the direction of a particular port where '0' is for port input at the front panel and '1' is port output at the front panel.

Table 3-5, Register Values for Module Operation

Channel #	Port Register		RS-422 Control	TTL Control
	Address	Value	Register (0x0D)	Register(0x19)
1	Port A (0x01)	xxxxxxxb	11xxxxxd	11xxxxxd
2	Port A (0x01)	xxxxxxbx	11xxxxxd	11xxxxxd
3	Port A (0x01)	xxxxxbxx	11xxxxxd	11xxxxxd
4	Port A (0x01)	xxxxbxxx	11xxxxxd	11xxxxxd
5	Port A (0x01)	xxxbxxxx	11xxxxxd	11xxxxxd
6	Port A (0x01)	xxbxxxxx	11xxxxxd	11xxxxxd
7	Port A (0x01)	xbxxxxxx	11xxxxxd	11xxxxxd
8	Port A (0x01)	bxxxxxxx	11xxxxxd	11xxxxxd
9	Port B (0x03)	xxxxxxxb	11xxxxdx	11xxxxdx
10	Port B (0x03)	xxxxxxbx	11xxxxdx	11xxxxdx
11	Port B (0x03)	xxxxxbxx	11xxxxdx	11xxxxdx
12	Port B (0x03)	xxxxbxxx	11xxxxdx	11xxxxdx
13	Port B (0x03)	xxxbxxxx	11xxxxdx	11xxxxdx
14	Port B (0x03)	xxbxxxxx	11xxxxdx	11xxxxdx
15	Port B (0x03)	xbxxxxxx	11xxxxdx	11xxxxdx
16	Port B (0x03)	bxxxxxxx	11xxxxdx	11xxxxdx
17	Port C (0x05)	xxxxxxxb	11xxxdxx	11xxxdxx
18	Port C (0x05)	xxxxxxbx	11xxxdxx	11xxxdxx
19	Port C (0x05)	xxxxxbxx	11xxxdxx	11xxxdxx
20	Port C (0x05)	xxxxbxxx	11xxxdxx	11xxxdxx
21	Port C (0x05)	xxxbxxxx	11xxxdxx	11xxxdxx
22	Port C (0x05)	xxbxxxxx	11xxxdxx	11xxxdxx
23	Port C (0x05)	xbxxxxxx	11xxxdxx	11xxxdxx
24	Port C (0x05)	bxxxxxxx	11xxxdxx	11xxxdxx
25	Port D (0x07)	xxxxxxxb	11xxdxxx	11xxdxxx
26	Port D (0x07)	xxxxxxbx	11xxdxxx	11xxdxxx
27	Port D (0x07)	xxxxxbxx	11xxdxxx	11xxdxxx
28	Port D (0x07)	xxxxbxxx	11xxdxxx	11xxdxxx
29	Port D (0x07)	xxxbxxxx	11xxdxxx	11xxdxxx
30	Port D (0x07)	xxbxxxxx	11xxdxxx	11xxdxxx
31	Port D (0x07)	xbxxxxxx	11xxdxxx	11xxdxxx
32	Port D (0x07)	bxxxxxxx	11xxdxxx	11xxdxxx
33	Port E (0x09)	xxxxxxxb	11xdxxxx	11xdxxxx
34	Port E (0x09)	xxxxxxbx	11xdxxxx	11xdxxxx
35	Port E (0x09)	xxxxxbxx	11xdxxxx	11xdxxxx
36	Port E (0x09)	xxxxbxxx	11xdxxxx	11xdxxxx
37	Port E (0x09)	xxxbxxxx	11xdxxxx	11xdxxxx
38	Port E (0x09)	xxbxxxxx	11xdxxxx	11xdxxxx
39	Port E (0x09)	xbxxxxxx	11xdxxxx	11xdxxxx
40	Port E (0x09)	bxxxxxxx	11xdxxxx	11xdxxxx
41	Port F (0x0B)	xxxxxxxb	11dxxxxx	11dxxxxx
42	Port F (0x0B)	xxxxxxbx	11dxxxxx	11dxxxxx
43	Port F (0x0B)	xxxxxbxx	11dxxxxx	11dxxxxx
44	Port F (0x0B)	xxxxbxxx	11dxxxxx	11dxxxxx
45	Port F (0x0B)	xxxbxxxx	11dxxxxx	11dxxxxx
46	Port F (0x0B)	xxbxxxxx	11dxxxxx	11dxxxxx
47	Port F (0x0B)	xbxxxxxx	11dxxxxx	11dxxxxx
48	Port F (0x0B)	bxxxxxxx	11dxxxxx	11dxxxxx

Racal Instruments © 2005

Table 3-6, Front Panel J200 Pinouts

Channel #	Port	Differential Pair		TTL pin	Ground pin
		Positive	Negative		
1	Port A (0x01)	A32	A31	B32	D32
2		C32	C31	B31	
3		E32	E31	D31	
4		A30	A29	B30	D30
5		C30	C29	B29	
6		E30	E29	D29	
7		A28	A27	B28	D28
8		C28	C27	B27	
9	Port B (0x03)	E28	E27	D27	
10		A26	A25	B26	D26
11		C26	C25	B25	
12		E26	E25	D25	
13		A24	A23	B24	D24
14		C24	C23	B23	
15		E24	E23	D23	
16		A22	A21	B22	D22
17	Port C (0x05)	C22	C21	B21	
18		E22	E21	D21	
19		A20	A19	B20	D20
20		C20	C19	B19	
21		E20	E19	D19	
22		A18	A17	B18	D18
23		C18	C17	B17	
24		E18	E17	D17	
25	Port D (0x07)	A16	A15	B16	D16
26		C16	C15	B15	
27		E16	E15	D15	
28		A14	A13	B14	D14
29		C14	C13	B13	
30		E14	E13	D13	
31		A12	A11	B12	D12
32		C12	C11	B11	
33	Port E (0x09)	E12	E11	D11	
34		A10	A9	B10	D10
35		C10	C9	B9	
36		E10	E9	D9	
37		A8	A7	B8	D8
38		C8	C7	B7	
39		E8	E7	D7	
40		A6	A5	B6	D6
41	Port F (0x0B)	C6	C5	B5	
42		E6	E5	D5	
43		A4	A3	B4	D4
44		C4	C3	B3	
45		E4	E3	D3	
46		A2	A1	B2	D2
47		C2	C1	B1	
48		E2	E1	D1	

This page was left intentionally blank.

Racal Instruments © 2005

Chapter 4
SPECIFICATIONS

Specifications

INPUT / OUPUT

Output Voltage

Vout (high)	>3.5VDC @ -4mA
Vout (low)	<0.40VDC @ 4mA

Input Voltage TTL

Vin (high)	>2VDC
Vin (low)	<0.8VDC
Vin (max)	5.5VDC

Input Voltage RS-422

Vin, differential (high)	>0.2VDC
Vin, differential (low)	<-0.2VDC
Vin, common mode	-7V to 12V

Output Voltage RS-422

Vout, differential (high)	>1.9VDC @ 50Ω line termination
Vout, differential (low)	<-1.9VDC @ 50Ω line termination

Available I/O Channels	48 - Bi-Directional RS-422 Differential Pair
	48 - Channel TTL

Configuration	I/O line selected as either input or output on a byte basis
Data Rate (VXIbus capability)	Static to 200 kHz

ESD Protection

TTL backend to RS-422	± 10kV – Human Body Model
TTL frontend to RS-422	± 10kV – Human Body Model
TTL backend to TTL frontend	No protection

INTERFACE DATA

Cooling	See 1260-100 and 1256 cooling data
Power Requirements	+5VDC at 3.0A maximum with all channels sourcing maximum loads

ENVIRONMENTAL DATA

Temperature	Operating: 0°C to 55°C Storage: -40°C- to 75°C
Relative Humidity	85% +/- 5%, non –condensing at <30°C
Altitude	Operating: 10,000 ft Non-Operating: 15,000 ft.
Shock	30 g, 11 ms, ½ sinewave

Racal Instruments © 2005

Vibration	0.013 in. (pk-pk), 5-55 Hz
Bench Handling	4-inch drop at 45°
EMC	
Emissions	EN55011A with limits in accordance with EN5008-1
Immunity	IEC801-2.3.4, with limits in accordance with EN50082-1
Safety	EN61010-1
RELIABILITY	
MTBF	>100,000 hrs. MIL-STD-217E
MTTR	<5 min.
MECHANICAL	
Weight	5.47 ounce (155 grams)
Dimensions	4.5" H x 0.75" x 9.5" D
Front Panel I/O Interface Connector	160 – pin DIN Connector

This page was left intentionally blank.

Racal Instruments © 2005

Chapter 5
PRODUCT SUPPORT

Product Support

Racal Instruments has a complete Service and Parts Department. If you need technical assistance or should it be necessary to return your product for repair or calibration, call 1-800-722-3262. If parts are required to repair the product at your facility, call 1-949-859-8999 and ask for the Parts Department.

When sending your instrument in for repair, complete the form in the back of this manual.

For worldwide support and the office closes to your facility, refer to the Support Offices section on the following page.

Warranty

Use the original packing material when returning the 1260-700-S-2340R to Racal Instruments for calibration or servicing. The original shipping container and associated packaging material will provide the necessary protection for safe reshipment.

If the original packing material is unavailable, contact Racal Instruments Customer Service for information.

Support Offices

RACAL INSTRUMENTS

United States

(Corporate Headquarters and Service Center)
4 Goodyear Street, Irvine, CA 92618
Tel: (800) 722-2528, (949) 859-8999; Fax: (949) 859-7139

5730 Northwest Parkway Suite 700, San Antonio, TX 78249
Tel: (210) 699-6799; Fax: (210) 699-8857

Europe

(European Headquarters and Service Center)
18 Avenue Dutartre, 78150 LeChesnay, France
Tel: +33 (0)1 39 23 22 22; Fax: +33 (0)1 39 23 22 25

29-31 Cobham Road, Wimborne, Dorset BH21 7PF, United Kingdom
Tel: +44 (0) 1202 872800; Fax: +44 (0) 1202 870810

Via Milazzo 25, 20092 Cinisello B, Milan, Italy
Tel: +39 (0)2 6123 901; Fax: +39 (0)2 6129 3606

Racal Instruments Group Limited, Technologie Park,
D-51429 Bergisch Gladbach, Germany
Tel: +49 2204 844205; Fax: +49 2204 844219

Racal Instruments © 2005

Repair and Calibration Request Form

To allow us to better understand your repair requests, we suggest you use the following outline when calling and include a copy with your instrument to be sent to the Racal Instruments Repair Facility.

Model_____ Serial No._____ Date_____

Company Name_____ Purchase Order #_____

Billing Address_____

City

State/Province Zip/Postal Code Country

Shipping Address_____

City

State/Province Zip/Postal Code Country

Technical Contact_____ Phone Number ( )_____
Purchasing Contact_____ Phone Number ( )_____

1. Describe, in detail, the problem and symptoms you are having. Please include all set up details, such as input/output levels, frequencies, waveform details, etc.

_____
_____
_____
_____

2. If problem is occurring when unit is in remote, please list the program strings used and the controller type.

_____
_____
_____
_____
_____

3. Please give any additional information you feel would be beneficial in facilitating a faster repair time (i.e., modifications, etc.)

_____
_____
_____
_____
_____

4. Is calibration data required? Yes No (please circle one)

Call before shipping
Note: We do not accept "collect" shipments.

Ship instruments to nearest support office.

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