Input / Output Module

IOM-4020

User's Operation Manual

Version 2.03

Release Date 8.7.01

ASi
ANITECH
S Y S T E M S   I N C .

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Contents

Preface

Welcome to the Media Pro® IOM-4020User's Operational Manual. Highlighted in this manual are the component features, installation, configuration, software operation, programming reference, examples of typical applications, and technical support information.

This document is provided so users of the Media Pro® 4000 can gain an understanding of the system design and implementation techniques. It is assumed the reader has a basic knowledge of typical show elements and their control requirements. In addition, a basic understanding of programming concepts will help the user understand Anitech System's powerful English based Media Pro® Control Language (MPCL).

For specific information about other Media Pro® 4000 products, please refer to the applicable user manual or on-line help system.

Related Publications

The following documents contain additional information concerning ASI Media Pro® 4000 products. To obtain a copy of any of the documents listed below, contact ASI or visit our website.

Document	Description
ABM – 4010	Allen Bradley Remote Input/Output Module (RIO)
AOM – 4010	Analog Output Module - 16 Channel
APC – 4020	Animation Programming Console
ASM – 4030/4020	Analog Servo Module - 8 Channel / 4 Channel with Compliance
DSM – 4020	Digital Sound Module with PCMCIA socket
HMR – 4000	Horizontal Module Rack - 5 Slot
ICM – 4020	Intelligent Control Module
IMC – 4020/4010	Integrated Module Controller
IOM – 4020	Input/Output Module - 16 Bit (24vdc)
LCM – 4020	Lighting Control Module (DMX 512)
SEM – 4020	Serial Expansion Module - 8 Channel (RS-232)
TCM – 4020	Time Code Module (SMPTE)
VMR – 4000	Vertical Module Rack - 18 Slot

System Requirements

➢ IBM PC compatible computer running Windows 95 / 98 environment with 1 serial port at 19.2Kbps.

➢ The PC should be at least Pentium 90 MHz, with a minimum of 16 Mbytes of Ram.

➢ The recommended minimum system is Pentium 400 MHz or faster with 32M RAM and a serial port at 115.2Kbps.

➢ An EPP 1284-1994 compatible parallel port is required for animation and is recommended for all other operations, but not required. Downloads for Animation and DSM sound files are much faster over the EPP parallel port.

➢ Approximately 12 Mbytes of disk space are required for the MP4000/APU4000 software. In addition, we recommend a minimum of 30 Mbytes storage for each show's application files. This size will vary depending on the show configuration and the size of the sound and animation files that may be required.

Getting Started

The Media Pro® 4000 Software is provided on a set of floppy disks. To install the files, follow these directions:

☐ Place disk 1 into the floppy drive. Open the Explorer and browse **FLOPPY [A:]**

☐ Double click on **SETUP… .EXE**

☐ Follow the on-screen installation instructions.

☐ The default directory **C:\MP4000** will be created and placed on the desktop.

☐ To enter the program, browse the directory and double click **MP4000.EXE**

☐ Current versions of the MP4000 software place an icon on the desktop, earlier versions (1998) do not.

Operating Environment

All Media Pro® Products are manufactured to the highest standards. With proper care and maintenance, they should provide many years of trouble-free service.

To ensure that your equipment has the longest life possible, it should be placed in an area with good ventilation and low humidity, out of direct sunlight and away from heat sources or lamps. Never expose equipment to moisture of any sort. Always maintain a dust, dirt and smoke free environment.

Always remember that high temperature is the enemy of all electronic equipment.

Environmental Conditions:

Recommended Operating:	10° to 32° C (40° - 90° F)
Storage Temperature:	-40° to 60° C (-4° - 140° F)
Relative Humidity:	0 to 95% (Without Condensation)

Warranty

Anitech Systems warrants this product to be free of manufacturing defects for 1 year from the date of purchase. At Anitech System's discretion, Anitech Systems will repair or replace a module that fails due to manufacturing defects.

The warranty does not cover shipping charges or modules damaged due to improper configuration, misapplication, misuse, abuse, accidents, or shipping damage.

Service Options

Obtain a Return Materials Authorization by contacting Anitech Systems.
The contact information for customer support follows:

E-mail	Mail@Anitech-Systems.com
Web	http://www.Anitech-Systems.com
Telephone	(661)257-2184
Fax	(661)257-2025

Non-Warranty Modules Returned for Repair-

Charges will be based on parts used, labor, and shipping charges. Make sure the product is properly packed and insured. Anitech Systems is not responsible for damage that occurs during shipment.

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Section 1 – Introduction

This manual is a technical reference for the IOM-4020 Input/Output Module. It contains specifications, diagrams and instructions to help with the implementation of systems using this product.

1.1   Module Description

The IOM-4020 is a 16-bit 24 volt digital Input/Output module. The Input/Output module provides digital input and output expansion for the Media Pro® 4000 (MP 4000) system. The modules can be connected to external switches and indicators for direct connection to physical devices.

Introduction

Figure 1-1. **IOM – 4020 Input/Output Module**

Green LED
(1 of 16 Bits)
Indicates Logic
Control State
of Input/Output
(5v Level)

Red LED
(1 of 16 Bits)
Indicates I/O
Power State of
Input/Output
(24v Level)

Green LED
Communications
Indicator

48 Pin Din Field Connector
(16) I/O Pairs
(8) Power Pairs

Fuse
(Even Bank – Port Ø)
Fuse
(Odd Bank – Port 1)

Fuse (E-Stop Bus)

Fuse (Constant Bus)

Field Configurable
Power Bus

96 Pin Din
Backplane
Connector.

Red LED
Forced Bit Indicator
Indicates that an Input/Output Bit
on this Module is Forced

1.2 Purpose and Intended Use

The IOM-4020 provides a 24VDC optically isolated digital input and output expansion for the MP 4000 system. Modules can be connected to external switches and indicators providing a direct connection to these physical devices. The 1 amp outputs may be configured to deliver animation data or controlled to the bit level using event commands in a cue. There are no quantity restrictions for the IOM-4020. The MP 4000 Software supports this module.

Introduction

1.3   Specifications

- ➢ 2 8-bit ports on each IOM
- ➢ *Ports can be input or output
- ➢ *All bits on a port are either input or output
- ➢ When a port is configured for 24VDC output, each bit can source approximately 1 Amp @ 24VDC when on (maximum load is approximately 33 Ohms).
- ➢ When a port is configured for 24VDC input, each bit will load approximately 4.5 ma @ 24VDC (tolerance +/- 2 ma).
- ➢ When a port is configured for contact closure input, resistance from source pin through contact to input pin should not be more than 220 Ohms.
- ➢ 5 non-switched E-Stop Bus outputs
- ➢ 3 non-switched Constant Bus outputs
- ➢ 1 Amp Bit Fuses, E/S Bus, Constant Bus
- ➢ 3 Amp Port Fuses

*See sections 2.3 Jumper Configuration and 5.2 Software Requirements for more detailed information)

2 Section 2 – Preparation for Use

This section describes the Input/Output module physical layout. The jumpers and options are detailed for proper configuration of the unit.

2.1 Unpacking and Inspection

Inspect the shipping carton immediately upon receipt for evidence of mishandling during transit. If the shipping carton is severely damaged or water-stained, request that the carrier's agent be present when the carton is opened. If the carrier's agent is not present when the carton is opened and the contents are damaged, keep the carton and packaging materials for the agent's inspection.

It is suggested that all salvageable shipping cartons and packing material be retained for future use in the event the product must be shipped.

2.2 Installation Considerations

Before installation, make sure no loads will draw more than 1 amp.
Choose the appropriate connector (see section 3.2 Keying and Connector Information for more information). For the IOM to operate 24VDC must be supplied to the E/S and/or Constant Power Busses on the backplane (refer to the Rack Data Sheets: VMR-4000 and HMR-4000 Manuals for more information).

Preparation for Use

2.3   User-Configurable Jumpers and Options

The following diagram shows where the user-configurable jumpers are located on the IOM-4020. Refer to the next page for specific jumper information.

Figure 2-1. **IOM-4020 Input/Output Module.**
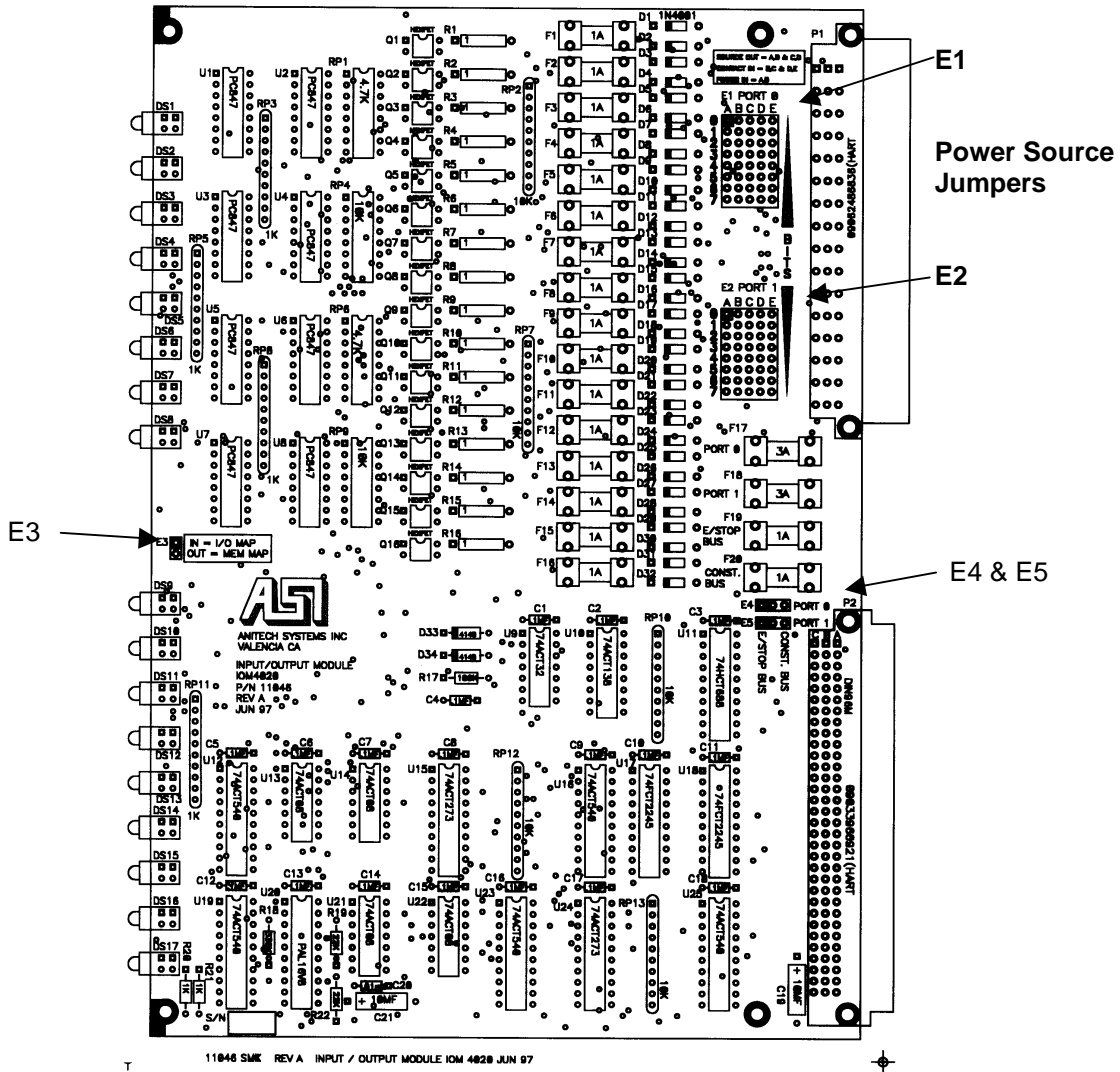
2.3.1 Jumper Settings and Options

E1 and E2
Power Source Jumpers

Source Out = A-B & C-D
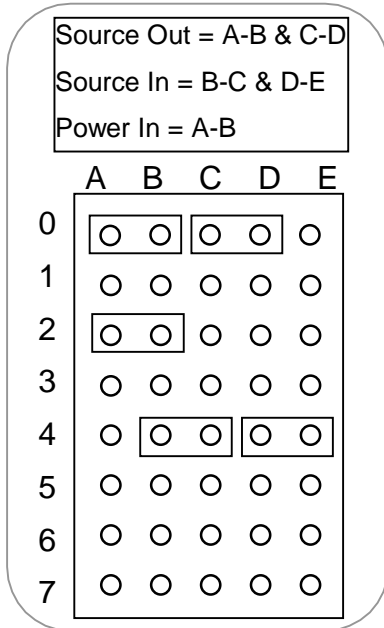Source In = B-C & D-E
Power In = A-B

```
       A   B   C   D   E
   0   ○   ○ │ ○   ○ │ ○
   1   ○   ○   ○   ○   ○
   2   ○   ○   ○   ○   ○
   3   ○   ○   ○   ○   ○
   4   ○ │ ○   ○ │ ○   ○ │
   5   ○   ○   ○   ○   ○
   6   ○   ○   ○   ○   ○
   7   ○   ○   ○   ○   ○
```

E1 is the jumper block for Port 0 and E2 is the jumper block for Port 1.
Place a jumper shunt(s) over the appropriate pins for each port:

24VDC Output	Shunt pins **A-B** & **C-D**
24VDC Input	Shunt pins **A-B** only
Contact Closure	Shunt pins **B-C** and **D-E**

E3
I/O Map

```
 1  □    IN = I/O Map
 2  ○    Out = Mem Map
```
2
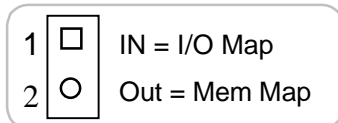
For normal operation, E3 should be open. (factory configured)

E4 and E5
E/Stop or Const Bus

```
E4  □ ○ ○  PORT 0
E5  □ ○ ○  PORT 1
    E/STOP BUS
      CONST. BUS
```
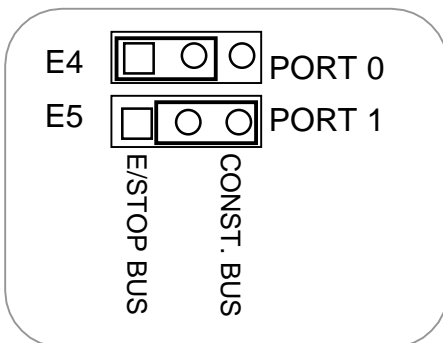
Position the shunt over the pins to select the power bus for each port.

3

Section 3 – Installation

This section describes the installation and connection information for the IOM.

3.1 Typical Installation Example

To install the IOM-4020, power down the system and refer to the following diagrams for typical wiring installation examples:

Figure 3-1. **IOM In - Driven by Power Source**
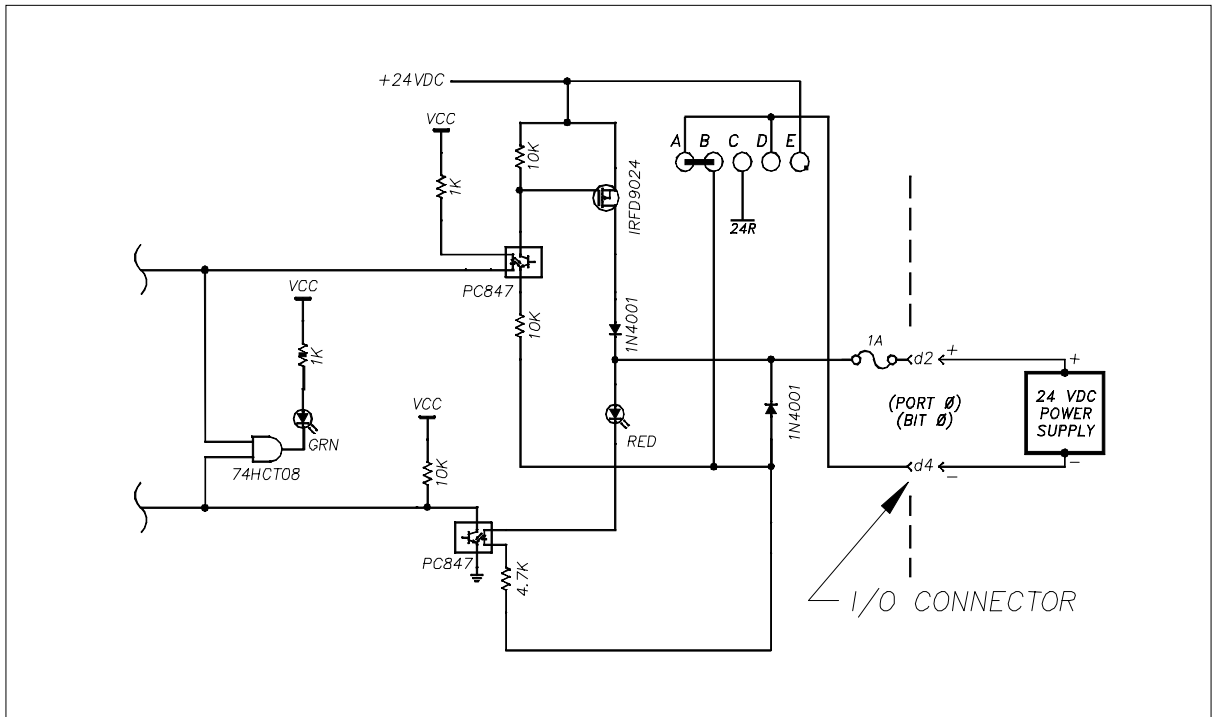
Installation

Figure 3-2. **IOM Out Driving Indicator Load**

Figure 3-3. **IOM In Contact Closure Input**

Figure 3-4. **IOM In PLC Output**

Figure 3-5. **IOM Out Driving Coil Load**

Figure 3-6. **IOM Out Driving PLC Input Load**

3.2 Keying and Connector Information

The field connector Keying is optional. To utilize keying, the IOM key pin(s) should be inserted at the intersection between column d & b and above row 2.

Note: If the key pin(s) are installed in the female field connector, the IOM's male connector must have holes drilled at the appropriate places for the connectors to mate.

Figure 3-7. IOM-4020 Keying

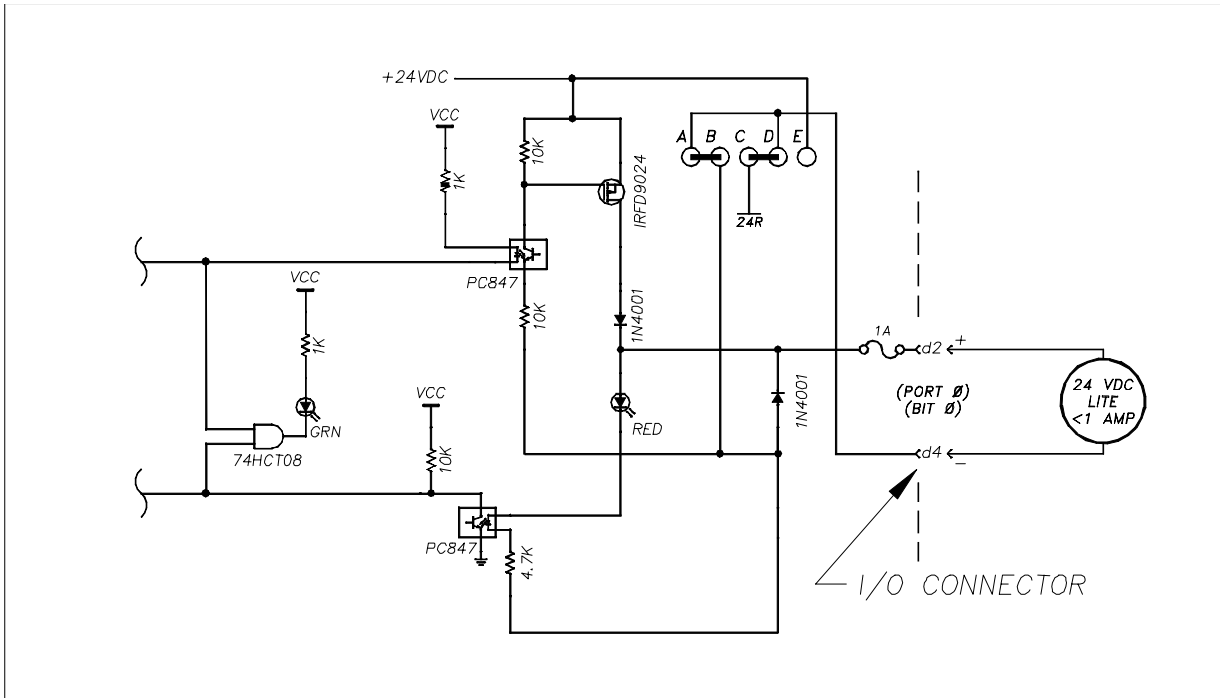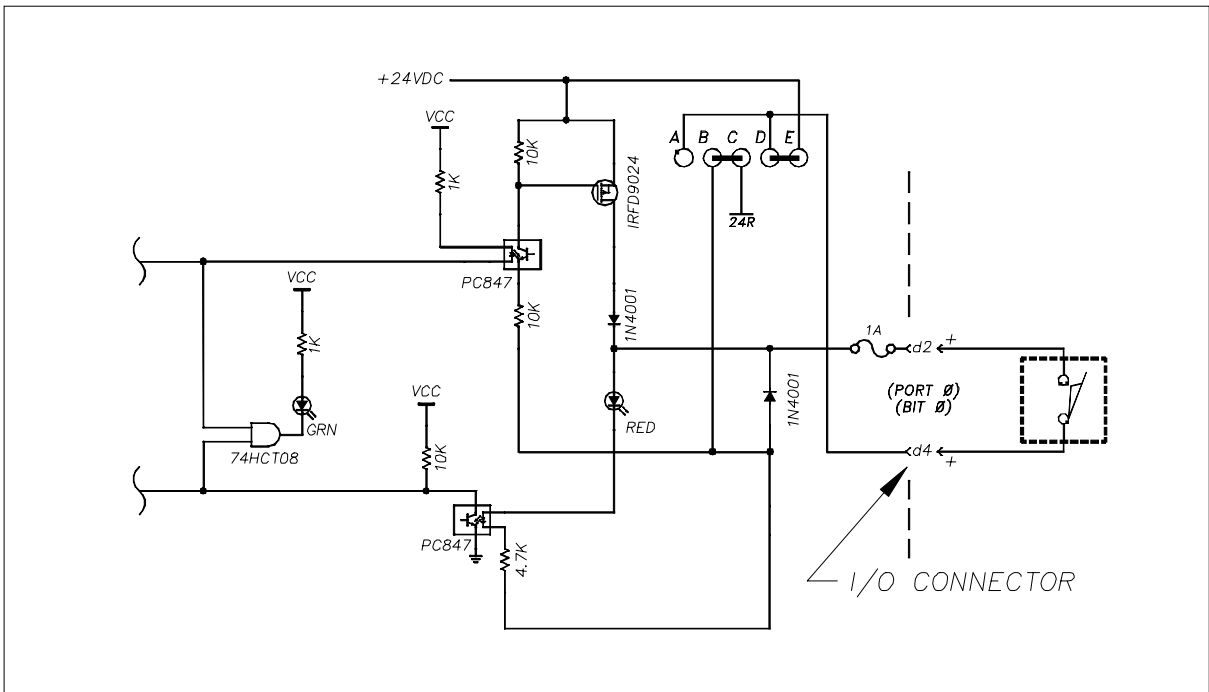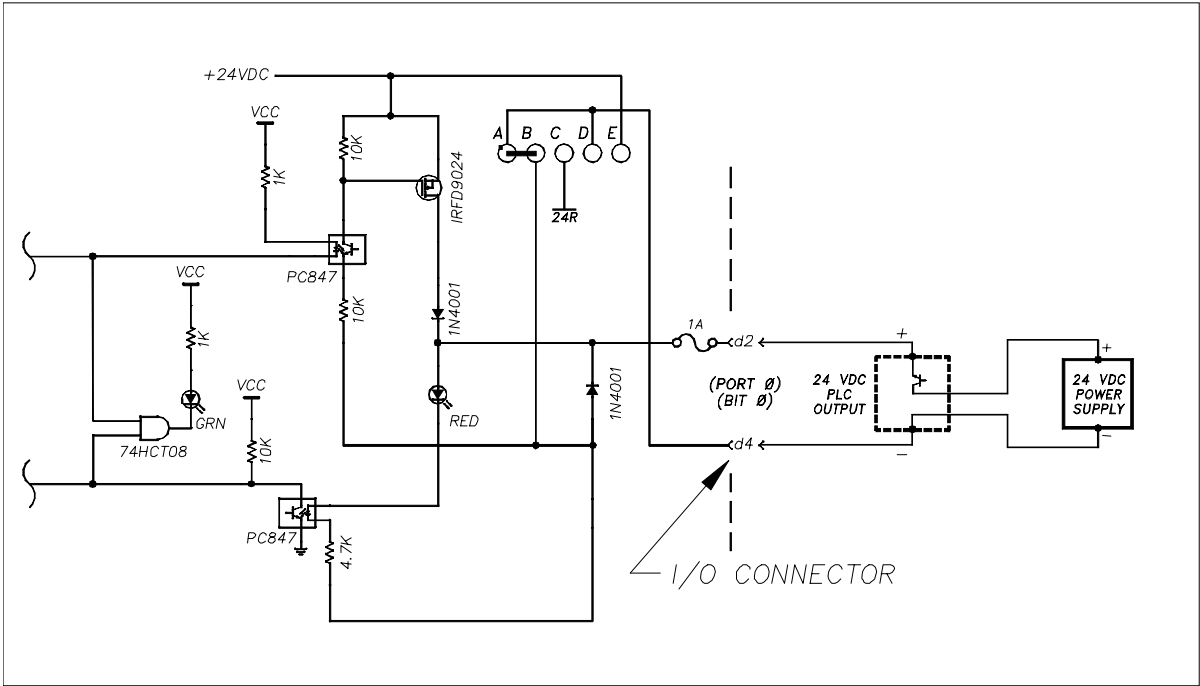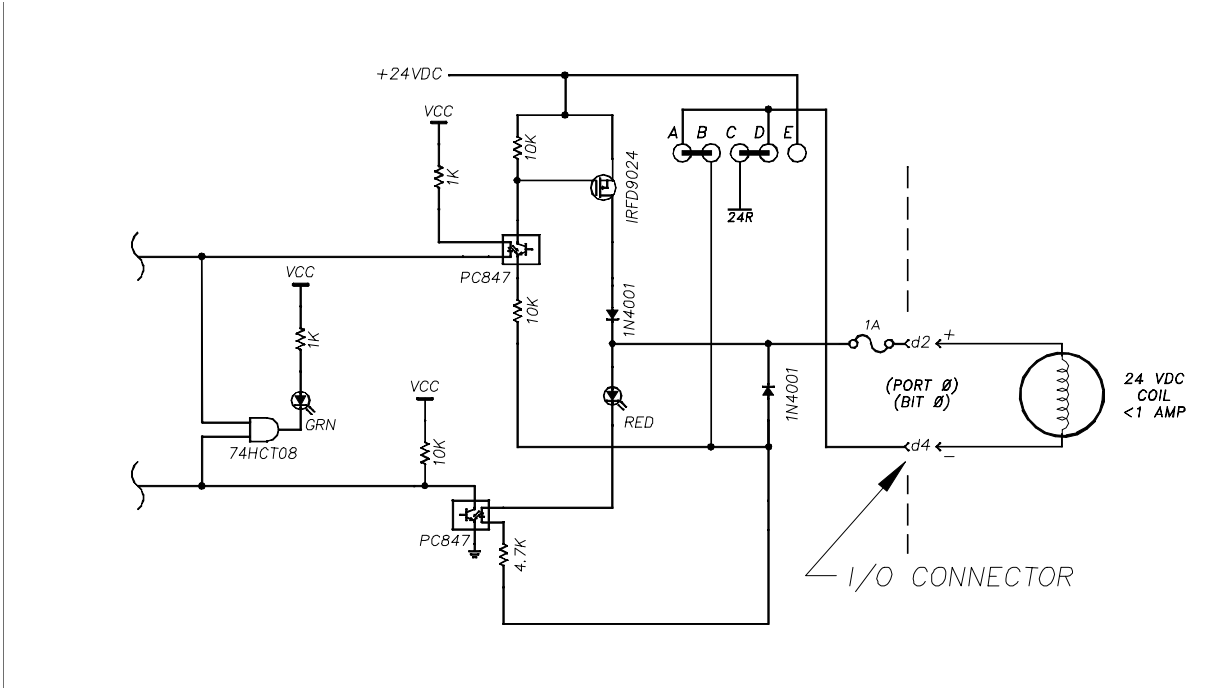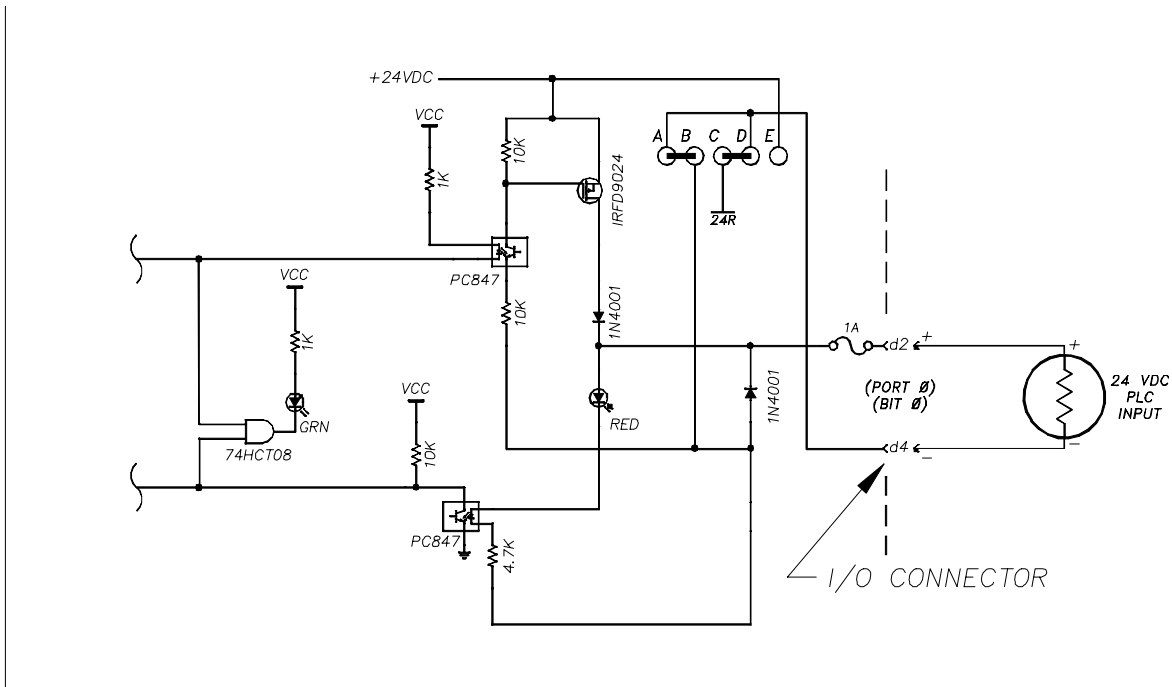| Rear View, Looking at IOM-4020 Male Contacts			Front View, Looking at Field Connector Female Contacts		
The Key is located at the intersection between column d and b, and above row 2.			The Key is located at the intersection between column d and b, and above row 2.		
d	**b**	**z**	**z**	**b**	**d**
	●	○	○		●
|	2	|	|	|	2
	○	○	○		○
|	4	|	|	|	4
	○	○	○		○
|	6	|	|	|	6
	○	○	○		○
|	8	|	|	|	8
	○	○	○		○
|	10	|	|	|	10
	○	○	○		○
|	12	|	|	|	12
	○	○	○		○
|	14	|	|	|	14
	○	○	○		○
|	16	|	|	|	16
	○	○	○		○
|	18	|	|	|	18
	○	○	○		○
|	20	|	|	|	20
	○	○	○		○
|	22	|	|	|	22
	○	○	○		○
|	24	|	|	|	24
	○	○	○		○
|	26	|	|	|	26
	○	○	○		○
|	28	|	|	|	28
	○	○	○		○
|	30	|	|	|	30
	○	○	○		○
|	32	|	|	|	32

Legend: | = Contact; ● = Key Hole Location; ○ = unused position

Legend: | = Contact; ● = Key Pin Location; ○ = unused position

Installation

Figure 3-8. **IOM-4020 Pinout**

	d	**b**	**z**
2	Port 0 Bit 0 Signal	Port 0 Bit 1 Signal	Port 0 Bit 2 Signal
4	Port 0 Bit 0 Reference	Port 0 Bit 1 Reference	Port 0 Bit 2 Reference
6	Port 0 Bit 3 Signal	Port 0 Bit 4 Signal	Port 0 Bit 5 Signal
8	Port 0 Bit 3 Reference	Port 0 Bit 4 Reference	Port 0 Bit 5 Reference
10	Port 0 Bit 6 Signal	Port 0 Bit 7 Signal	Port 1 Bit 0 Signal
12	Port 0 Bit 6 Reference	Port 0 Bit 7 Reference	Port 1 Bit 0 Reference
14	Port 1 Bit 1 Signal	Port 1 Bit 2 Signal	Port 1 Bit 3 Signal
16	Port 1 Bit 1 Reference	Port 1 Bit 2 Reference	Port 1 Bit 3 Reference
18	Port 1 Bit 4 Signal	Port 1 Bit 5 Signal	Port 1 Bit 6 Signal
20	Port 1 Bit 4 Reference	Port 1 Bit 5 Reference	Port 1 Bit 6 Reference
22	Port 1 Bit 7 Signal	E/S Bus +24VDC Supply	E/S Bus +24VDC Supply
24	Port 1 Bit 7 Reference	E/S Bus Reference	E/S Bus Reference
26	E/S Bus +24VDC Supply	E/S Bus +24VDC Supply	E/S Bus +24VDC Supply
28	E/S Bus Reference	E/S Bus Reference	E/S Bus Reference
30	Const Bus +24VDC Supply	Const Bus +24VDC Supply	Const Bus +24VDC Supply
32	Const Bus Reference	Const Bus Reference	Const Bus Reference
	Rear View, Looking at IOM-4020 Male Contacts		

3.3   Support Tools and Parts Numbers

The following connectors or equivalents may be used:

Part	Number
Din48F connector (Z-Rail mount) (Solder Tail)	Harting 09-06-248-6823
Din48F connector (Z-Rail mount) (Wire Wrap)	Harting 09-06-248-6821
Din48F connector (Z-Rail mount) (Crimp Pins required)	Harting 09-06-248-3201
(50) crimp pins (for above connector) 26-20 AWG	Harting 09-06-000-8481
(50) crimp pins (for above connector) 20-16 AWG	Harting 09-06-000-8482
Crimping tool for 26-20 AWG pins	Harting 09-99-000-0076
Crimping tool for 20-16 AWG pins	Harting 09-99-000-0077
Pin Locator (for above crimping tools)	Harting 09-99-000-0086
Crimp Pin Insertion Tool	Harting 09-99-000-0088
Crimp Pin Removal Tool	Harting 09-99-000-0087
*(2) M2.5X6 Screws	*Schroff 21100-146
Code Pin (metal key post)	Harting 09-06-000-9950
Code Pin Insertion Tool	Harting 09-99-000-0103
2AG (.177 D x .58 L) 1 AMP, 250Volt, fast blow Bit Fuses F1 through F16. Non switched E/S & constant Bus fuses F19, F20	LittleFuse 225001
2AG (.177 D x .58 L) 3 Amp, 250Volt, fast blow Port Fuses F17, F18	LittleFuse 225003

*These come in bags of 100. Only 2 screws are needed per IOM.

Installation

3.3.1 Field Connector Kit

A kit for the field connector is available from Anitech Systems which may be purchased separately. Refer to the Product Price List and/or contact ASI to order the item.

DIN-F48C – Contains the following items:

Qty	Description	Part Number
1	Din 48F Pin Connector	Harting 09-06-248-3201
50	Crimp Pins	Harting 09-06-000-8481
3	Mounting Screws	Schroff 21100-146

4 Section 4 – Module Operation

This section describes the operating modes of the module. It includes fault conditions, indicators, and troubleshooting information.

4.1 Normal Operations

Under normal operations, the following conditions will apply to the Front Panel LEDs:

❑ Both LEDs will be off when the bit is off.

❑ The GREEN and RED LEDs will be on if the bit is on.

❑ At the bottom of the card there is a green LED. The GREEN LED flashes when the ICM communicates with the IOM.

❑ At the bottom of the card there is a red LED. The RED LED flashes when there is a maintenance force on this board.

Refer to figure 4-1 on the following page for further information on IOM indicators.

4.2 Fault Conditions

The following may be reasons for fault conditions on Front Panel LEDs:

❑ If none of the port's RED LEDs are on when configured as an output port, then the port fuse for that port is probably blown.

❑ If only a specific bit's GREEN LED is on when configured as an output port bit, then the bit fuse for that bit is probably blown.

Note:

The fuse has no affect on LEDs when the port is configured for input.

Module Operation

4.3 Indicators

Figure 4-1. IOM-4020 Indicators

	Indication		Description	Probable Cause	Recommended Action
⓪	OFF	Bit L {Logical, Green}	Normal Condition	The Bit is OFF (Input or Output)	
⓪	OFF	Bit O {Input/Output, Red}			
❶	ON Solid	Bit L {Logical, Green}	Normal Condition	The Bit is ON (Input or Output)	
❶	ON Solid	Bit O {Input/Output, Red}			
✸	Blinking Slow	COM {Communications, Green}	Normal Condition	The IOM is communicating with the ICM.	
✸	Blinking Fast	COM {Communications, Green}	Normal Condition	The IOM is Receiving Animation Data from the ICM.	
⓪	OFF	Force {Forced bit(s), Red}	Normal Condition	No bits are forced ON, or OFF.	
✸	Blinking	Force {Forced bit(s), Red}	Maintenance Forces Active	The IOM has Maintenance Forces Active	If necessary, Remove Forces
❶ ⓪	ON Solid OFF	Bit L {Logical, Green} Bit O {Input/Output, Red}	The Logical Bit is Commanded ON, The Output is OFF.	No 24 VDC Output Power	1) Make certain that the Module Rack has 24VDC on the E/S, & Constant Buss; See Module Rack Manual for more information 2) Check the Port Fuse F17, F18 3) Check the Port Power Source Jumpers, E4, E5. 4) Check the Software Configuration. 5) Check the Bit I/O Jumper Settings E1, E2 6) Check the Bit Fuses F1 through F16. 7) Check for Shorts or overloads in the Field
❶ ❶	ON Solid ON Solid	Bit L {Logical, Green} Bit O {Input/Output, Red}	The Logical Bit is Commanded OFF, but the Logical LED is ON. The Output is ON.		1) Make certain that the bit is not being told to be on by any cue, animation, maintenance forces, or other logical data (from PLC) 2) Disconnect the I/O Cable,;+F1If the LED is no longer on, Power is being back-fed into the IOM through the I/O cable. 3) Try the board in an unused slot , that is not being commanded to turn any bits on. If the LEDs are still on the FET may be damaged.
⓪ or ❶ or ❶	OFF or ON Solid or ON Solid	COM {Communications, Green} COM {Communications, Green} Force {Forced bit(s), Red}	No Communications	The ICM is NOT communicating with the IOM.	1) Make certain that the IOM is fully seated in its slot. 2) Make certain that the Module Rack is Powered, and Turned on 3) Make certain ICM is running, & no downloads are occuring.

4.4 Troubleshooting

The following table (continued on the next page) identifies troubleshooting problems and solutions for the IOM-4020.

Problem	Solution
Module will not mate with the field connector.	1. Check the orientation of the field connector. Make sure that pin 1 is at the top. 2. Check the field connector for proper mounting and position on the rear z-rails. 3. Check the keying of both connectors. Make sure you do not connect the IOM to a connector wired for other peripherals (damage may occur). 4. Check for bent pins on the male connector, or plugged sockets on the female connector.
If none of the bits seem to be going on any of the IOMs.	1. Make certain that 24VDC bus power is being provided to the backplane (see Module Rack DATA sheet for more information). 2. If a whole port on the IOM does not seem to be going on when configured as an output port, check the port fuses. 3. Check the port power source jumpers. 4. Check the port SW config. 5. If only a single bit on an IOM does not seem to be going on when configured as an output port, check the bit jumper settings. 6. Check the bit fuses.
RED and GREEN LED are on when configured as an output port bit when the bit is commanded to be off.	Either the bit is being back fed power, or the output FET is damaged. 1. Make certain the bit is not being told to be on by any cue, animation, maintenance forces, or other logical data (from PLC data transfer). 2. Disconnect the cable from the back of the IOM. If the LED is no longer on, then the power was being back fed into the IOM bit through the I/O cable. 3. Try the board in an unused slot of a chassis that is not telling any bit to be on. If the LEDs are still on, the FET is probably damaged.

Module Operation

4.5 Maintenance

Bits on the IOM can be set by using the serial maintenance port of the ICM with a command as follows:

Set r s p.b = value

Where r=Rack, s=Slot, p=Port, b=Bit

This command works inter-rack (see the ICM Reference Manual for more information).

5 Section 5 – Programming

This section provides software configuration and programming information for the IOM-4020 module.

5.1 Module Programmable Functions

Each port on the module can be set for input or output, aliases assigned and logical channels assigned in the SW configuration (refer to the MP 4000 Software Programming Manual for more information).

5.2 Software Configuration

IOM configuration is necessary to ensure proper operation (refer to the MP 4000 Software Programming Manual for more information).

Programming
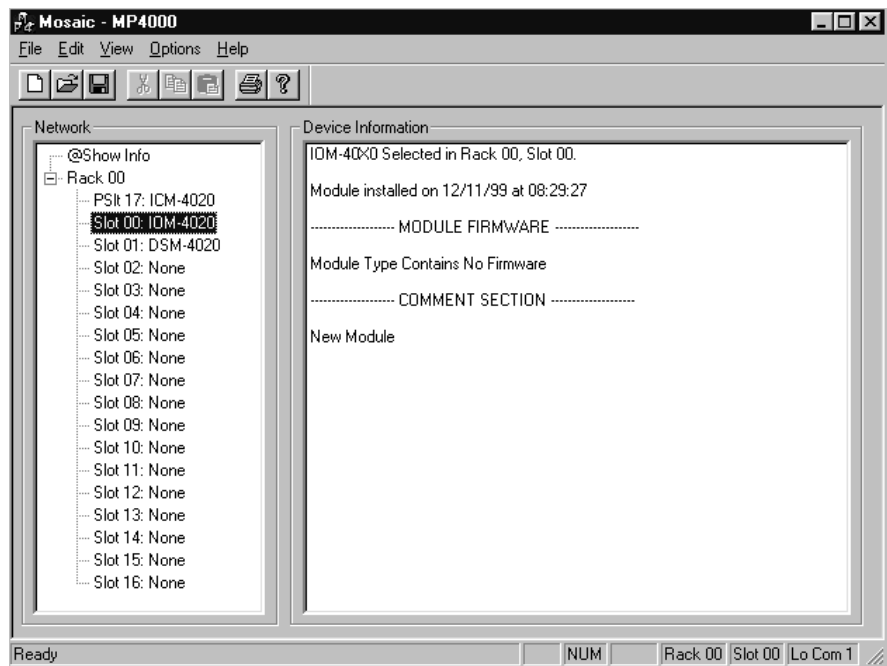
IOM Configuration –

On the IOM Configuration page, enter the channel number for the appropriate port. This is the channel that communicates with the ICM.
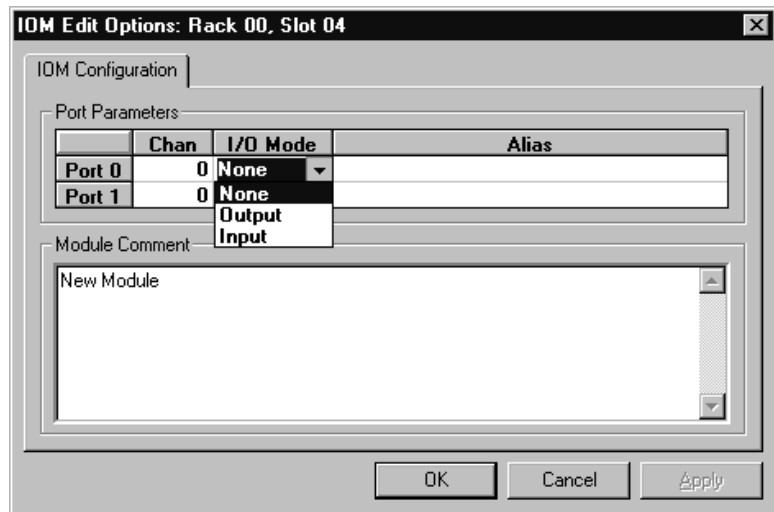
Select the Mode by left-clicking on the scroll bar and highlight the desired mode. Choices for mode are:
- None
- Output
- Input

When selected for Output, all the bits on that Port are used as output bits. The same for a selection of Input.

Each Port, however, can be either Input or Output.

Enter the Alias for the port, if an alias is being used in the MPCL for the show.

5.3   Supported Commands Format

Verb	RSP	Token 1	Parameter 1	Token 2	Param 2	Token 3	Param 3
Set	@r0,0,0	To	0				
Set	@r31,16,1	To	255				
Set	@r0,0,1	To	@v10				
Set	@r31,16,0	To	@o500				
Set	@r0,0,1	To	@i900				
Set	@r0,0,0.0	To	0				
Set	@r31,16,0.0	To	1				
Set	@r0,0,1.7	To	@v10.0				
Set	@r31,16,0.7	To	@o500.0				
Set	@r0,0,1.0	To	@i900.7				
Set	'Alias'	To	255				
Set	'Alias'	To	@v20				
Set	'Alias'	To	@i900.0				
Set	'Bit_Alias'	To	1				
Set	'Bit_Alias'	To	@v20.1				
Set	'Bit_Alias'	To	@o500.7				

*See section 5.4 for example usage of above commands

5.3.1   Load Status Statement

Refer to the MP4000 Programming Reference Manual and the ICM User Manual for a detailed explanation of the Load Status statement and its usage. Below is the description of the IOM Status available.

IOM STATUS (IOM port values) Status-of-Interest:

Index (n)	Description	Bytes
0	reserved	
1	reserved	
2	VALUE_IOM_PORT	

Note that if status VALUE_IOM_PORT is chosen for port 0 with a byte range of 0-1, then both port values will be returned.

Programming

5.4   Application Example

There are several ways to use an IOM. Below are some examples, (refer to the MP 4000 software programming manual for more information).

Configure the IOM
For this example of the IOM functions of the IMC, the IOM is in Rack 0, Slot 0.
The IOM is configured with the Top Port (0) for INPUT, and the Bottom Port (1) for OUTPUT.

1) Port 0 on the IOM can be referenced as @R0,0,0 (Rack 0, Slot 0, Port 0) Port 1 on the IOM can be referenced as @R0,0,1 (Rack 0, Slot 0, Port 1)
   - A specific bit of Port 0 can be referenced as @R0,0,0.0 (Rack 0, Slot 0, Port 0, Bit 0) through @R0,0,0.7 (Rack 0, Slot 0, Port 0, Bit 7).
   - A specific bit of Port 1 can be referenced as @R0,0,1.0 (Rack 0, Slot 0, Port 1, Bit 0) through @R0,0,1.7 (Rack 0, Slot 0, Port 1, Bit 7).

2) If Port 0 is assigned the Alias 'INPUTA', and Port 1 the Alias 'OUTPUTA'.
   - Port 0 can also be referenced as 'INPUTA'.
   - Port 1 can also be referenced as 'OUTPUTA'.

3) If Port 0 is assigned Logical Channel 10, and Port 1 is assigned Logical Channel 11.
   - Port 0 can also be referenced as i10 (Logical input channel 10).
   - Port 1 can also be referenced as o11 (Logical output channel 11).

4) A specific bit of Port 0 can be referenced as i10.0 (Logical input channel 10, Bit 0) through 10.7 (Logical input channel 11, Bit 7).
   - A specific bit of Port 1 can be referenced as o11.0 (Logical output channel 11, Bit 0) through o11.7 (Logical output channel 11, Bit 7).
   - Setting a port to a logical output channel below 512 also allows that port to be controlled by an animation data file.

In addition to the previous IOM configurations, specific bits can be given an alias in the Alias Editor of the MP4000 software:

- @R0,0,0.5 (Rack 0, Slot 0, Port 0, Bit 5) could be assigned alias 'Show7'
- @R0,0,1.3 (Rack 0, Slot 0, Port 1, bit 3) could be assigned alias 'FxWater'

The previous IOM assignments allow a Cue to be controlled in several ways.
A cue could be configured to:

- Play on @R0,0,0.5 when it Changes to High, or
- Play on i10.5 when it Changes to High, or
- Play on 'Show7' when it Changes to High.

The IOM assignments allow the Ports to be used in Cue scripts in several ways:

- Set @R0,0,0 to 123;
- Set 'OUTPUTA' to 123;
- Set o11 to 123;
- Set @R0,0,0.3 to 1;
- Set 'FxWater' to 1;
- Set o11.3 to 1;
- Set @v11 to @r0,0,0;
- Set @r0,0,0 to @i10;
- Set @o11.3 to @i10.5;
- Set 'INPUTA' to @v10;
- Set 'INPUTA' to 123;

Animation Note –
If an Animation file is configured in the ICM, and downloaded, playing the Animation file will cause all ports with Logical addresses that are defined in the Animation file to change with the contents of the Animation data.

Programming

6 Section 6 – Appendix

The following pages contain technical briefs relating to this module. There are additional technical briefs on the ASI website and new briefs are added on an on-going basis. Please visit the website for updated information –

http://www.Anitech-Systems.com

Updated manuals are placed on the Web periodically. Please check to see if a more recent revision is available on the website. Revision numbers are located in the footer of the manual pages.

Also, a glossary of terms is in this section, for terms used by ASI as well as terms used in the Show Control Industry.

6.1 Saving Files from a Web Page without Displaying -

This is useful for retrieving a non-formatted page that is not intended for viewing:

From Internet Explorer® Browser

1 - Saving files from a Web page.
    A) To save a file without opening it:
        1) **Right**-click on the link for the item you want, a pop-up menu appears,
            (a) Select, then Left-click **Save Target As**
            (b) Enter the desired folder and filenames and select **Save**

From Netscape® Communicator Browser

1 - Saving files without displaying them.
    A) To save a file without viewing it:
        1) **Right**-click on the file's link to display a pop-up menu,
            (a) Select, then Left-click **Save Link As**
Enter the desired folder and filename and select **Save**

6.2   Power Specification for Continuous *Normal* Operation

The power usage and requirements for Media Pro® modules are depicted in the following table. It is important that **<u>both</u>** of the following considerations are evaluated for proper system configuration:

  ✓ The power usage of the modules does not exceed any *individual* maximum current and wattage.
  ✓ The sum of the modules do not exceed the supply *overall* maximum wattage.

IOM-4020, PCB 11046-A

Voltage	Current Requirements (Amps)			Wattage Requirements (VA)		
DC	Min	Typical	Max	Min	Typical	Max
+ 5	0.050	0.100	0.200	0.25	0.50	1.0
+ 12	0.000	0.000	0.000	0.00	0.00	0.0
- 12	0.000	0.000	0.000	0.00	0.00	0.0
+ 24	0.000	3.000	8.000	0.00	72.00	192.0
				0.3	72.5	193.

Glossary

ALIAS	English representation contained within single quotes that references an object.
.ani	Extension used for Animation files.
ASCII	A numeric code used by computers to represent characters.
BIT	A single logical or physical resource that can be either ON (true, 1) or OFF (false, 0).
COMMENT	Text following a semicolon on an event line within a cue, it is used to annotate the cue.
COMPLIANCE	Additional feedback applied according to the equations in the firmware and parameters supplied by the user that tends to reduce the output signal.
CONST	Constant
CONTACT CLOSURE	Completes a circuit. A voltage is applied to a reference pin of a bit's connector. When the switch is closed, the voltage is returned on another wire to the same bit, completing the circuit. When the switch is closed, the I/O pin gets voltage.
CUE	A list of up to 512 EVENTS containing verb, object, token, and variable items.
db	Decibel
E/S	Emergency Stop
EVENT	A single line of verb, object, token and parameter items contained in a CUE.
FET	Field Effect Transistor - an electronically controlled switch.
FLASH	Fast, electrically erasable, and programmable in the circuit non-volatile memory devices.
FW	Firmware
HMR	Horizontal Module Rack
HW	Hardware

ICM	Intelligent Controller Module
I/O	Input/Output
IOM	Input/Output Module
JMP	Push-on jumper, shunt - a small (approximately ¼" x 1/8" thick) piece of plastic with a metal insert. The jumper is set by pushing it down over a pair of pins.
KEY	A piece of hardware that keeps a module from being plugged into a slot that is wired and keyed for a different kind of module.
LABEL	A name, followed by a colon on a line of a CUE, used for a forward or backward jump.
LED	Light Emitting Diode (indicator, light, lamp)
MIDI	Musical Instrument Digital Interface
MPCL	Media Pro® Control Language
OBJECT	Term used to reference a resource within the Media Pro® system.
OFF	False, 0, Open
ON	True, 1, Closed
PARAMETER	The item that follows a token. The list of parameters is in section 3 of the MP4000 User's Operation Manual.
PLC	Programmable Logic Controller
PORT	A resource on a module in case of the DSM. There are 2 ports.
P-P	Peak to Peak
RACK	A card cage containing Media Pro® 4000 Modules.
RESOURCE	A controllable device connected to or contained within the Media Pro® 4000 system.
RMS	Root Mean Squared
SLOT	A physical location in a RACK that contains a Media Pro® Module.

SMPTE   Refers to **S**ociety of **M**otion **P**icture & **T**elevision **E**ngineers, and the standard for timing signals set by this group.

STRING   A collection of alphanumeric characters contained in double quotes, used with the DISPLAY command.

SW   Software

THD & N   Total harmonic distortion and noise

TOKEN   Reserved words for modifiers of the VERBs used in a cue event. The list of TOKENs is in section 3 of the MP4000 User's Operation Manual.

TYPE   The kind of OBJECT being referred to in a direct addressing statement. The list of TYPEs is in section 3 of the MP4000 User's Operation Manual.

VAC   Volts Alternating Current

VARIABLE   A 32-bit value that can contain a number used in a cue line. A variable may be assigned an ALIAS. There may be a maximum of 512 variables per cue.

VDC   Volts Direct Current

VERB   Reserved words for the actions used in a CUE EVENT. The list of VERBs is in section 3 of the MP4000 User's Operation Manual.

VMR   Vertical Module Rack.

.wav   Extension used for WAVE files, contains sound data.

Z-RAILS   Two Z-shaped rails on the back of the rack, adjacent and parallel to the space for the I/O connectors on the Modules when the modules are inserted. The field connectors attach to the Z-rails.