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p/n YPM08124

ACRIO
Hardware Manual – Reverse Layout

Effective: October 7, 2002

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CHANGE NOTICE

ACRIO Hardware Manual P/N PM08124 Version Change:

From: Version 1.00, Dated 9/30/1999

To: Version 1.01, Dated 12/8/2001

1.	Miscellaneous	Added ACR8020 to document.
2.	Page 8, Digital Output Sink/Source Select	Added output driver IC source.
3.	Page 16, Technical Specification	Added operating temperature range.

Reverse Layout ACRIO Hardware Manual – Reverse Layout P/N PM08124 Version Change:

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INTRODUCTION

This document provides hardware connection information for the Acroloop Reverse Layout ACRIO Module. This board provides expanded I/O capabilities for the ACR1200, ACR2000, ACR8010 and ACR8020 motion controllers. An additional 32 Digital Inputs and 32 Digital Outputs are provided by this board. Up to four expanded I/O boards can be piggy-backed, for a total of 320 digital I/O.

The Reverse Layout ACRIO Module presents the Auxiliary Digital Input AP4 connector on the left side of the board and the Auxiliary Digital Output AP3 connector on the right side of the board.

WARNING: The Reverse Layout ACRIO Module is the opposite physical P3/P4 connector layout as compared to the ACR8000 I/O Expansion Board and ACR8000/ACR8010/ACR8020 Motherboards.

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CHAPTER 1

ACRIO MODULE HARDWARE SETUP

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CHAPTER 1 OVERVIEW

The ACRIO Plug-In Module provides additional optically-isolated digital I/O capability for the ACR1200, ACR2000, ACR8010, and ACR8020 motherboards. The ACRIO module functions include 32 digital inputs and 32 digital outputs. Up to four ACRIO modules can be stacked to provide a total of 128 digital inputs and 128 digital outputs in addition to the standard 32 digital inputs and 32 digital outputs provided on the ACR8010/ACR8020 motherboard, and 16 digital inputs and 16 digital outputs provided on the ACR1200/ACR2000 motherboards.

This section contains diagrams of the jumpers and switches on the ACRIO module.

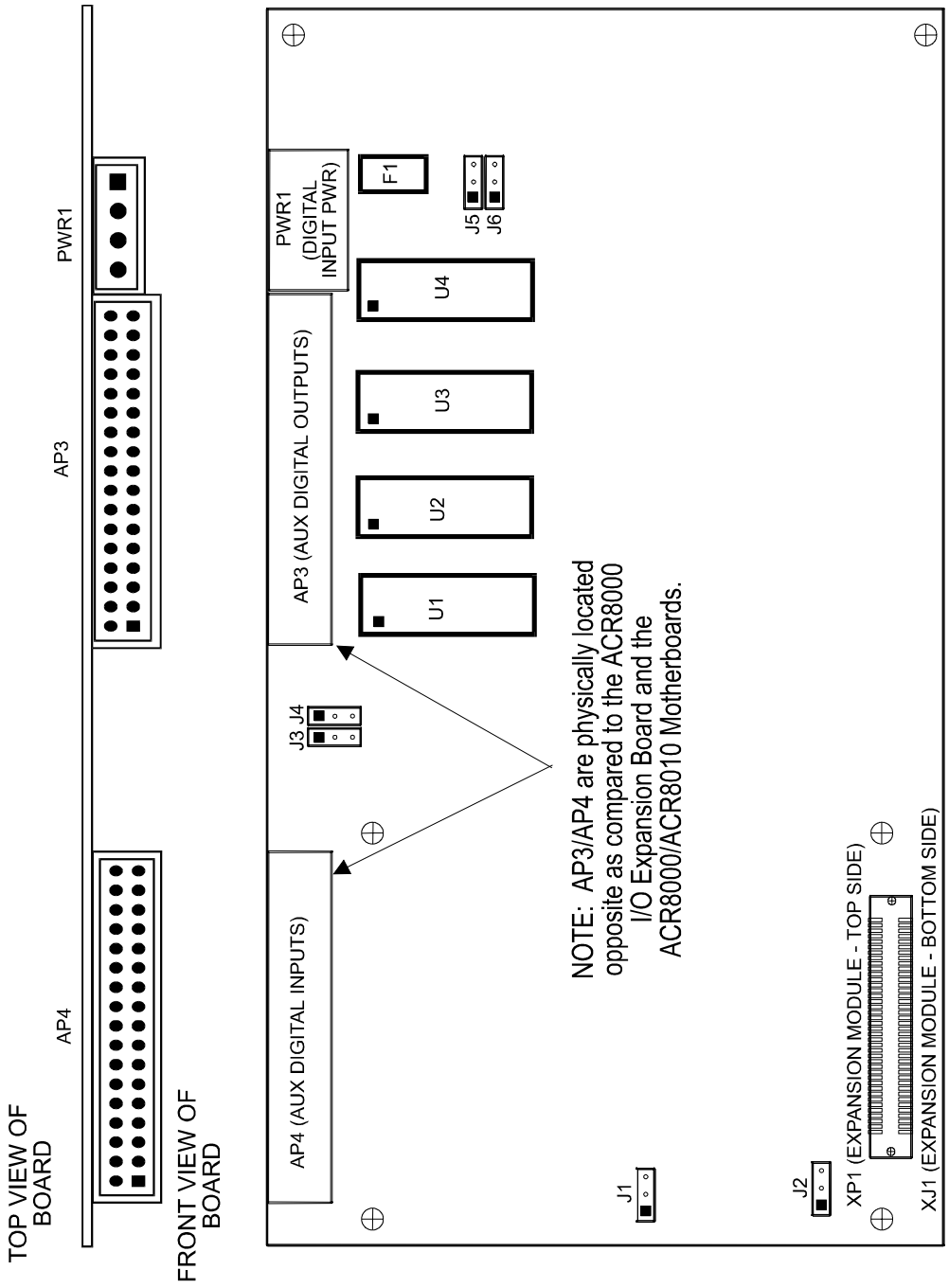
Factory default jumper settings for the ACRIO module are highlighted within the following jumper tables.

Isolated voltage (VEXT) refers to +24VDC.

☠ WARNING

Wiring VEXT with the incorrect voltage will permanently damage the Digital I/O circuitry. The isolated voltage (VEXT) is +24VDC.

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NOTE: Square pin indicates Pin 1.

Figure 1. Reverse Layout ACRIO Module Outline

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ACRIO MODULE JUMPERS

Jumper Table List

The following is a list of the jumper functions on the ACRIO Module:

JUMPER	JUMPER FUNCTION
J1	ACRIO Module Address Select (Page 5)
J2	ACRIO Module Address Select (Page 5)
J3	Digital Input Sink/Source Select (Page 6)
J4	Digital Input Sink/Source Select (Page 6)
J5	Digital Output Sink/Source Select (Page 8)
J6	Digital Output Sink/Source Select (Page 8)

Refer to Figure 1 for jumper location.

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ACRIO MODULE JUMPERS

ACRIO Address Select Jumpers (J1 and J2)

These jumpers provide the address selection for the ACRIO module when one or more ACRIO modules are present. A maximum of four (4) modules can be stacked on an ACR1200/ACR2000/ACR8010/ACR8020 motherboard.

ACRIO Module Address Select		
Board No.	J1	J2
0	1-2	1-2
1	2-3	1-2
2	1-2	2-3
3	2-3	2-3

Table 1.1 ACRIO Address Select Jumpers

There are also four bits (bits 116 thru 119, Reference User's Guide, Miscellaneous Outputs Flags) which act as card enable control bits. The appropriate enable bit must be set for each ACRIO Module board number.

Refer to Figure 1 for jumper location.

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ACRIO MODULE JUMPERS

Digital Input Reference Select Jumpers (J3 and J4)

These jumpers select the reference voltage to be used for the optically-isolated inputs. The reference voltage selected applies to all inputs; there are no combinations available.

Refer to Figure 1 for jumper location. Isolated voltage (VEXT) refers to +24VDC.

☠ WARNING

Wiring VEXT with the incorrect voltage will permanently damage the Digital I/O circuitry. The isolated voltage (VEXT) is +24VDC.

Digital Input Reference Jumper				
Input Type	Reference Voltage	J3	J4	User Supplies
Sinking	Reference Inputs to +24VDC Isolated Voltage (VEXT)	1-2	1-2	Path to GEXT
Sourcing	Reference Inputs to Isolated Common (GEXT)	2-3	2-3	Path to VEXT

Table 1.2 ACRIO Digital Input Reference Jumpers

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ACRIO MODULE JUMPERS

USER CIRCUIT	JUMPER POSITIONS
Sink Input  	J3-1 to J3-2 J4-1 to J4-2
Source Input +24VDC Isolated Voltage (VEXT)  	J3-2 to J3-3 J4-2 to J4-3

Figure 2. ACRIO Module Digital Input User Circuit

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ACRIO MODULE JUMPERS

Digital Output Sink/Source Select Jumpers (J5 and J6)

These jumpers are set at the factory based on the type of the output drivers, IC's U1 thru U4. The selected type of the output driver applies to all outputs; there are no combinations available.

Isolated voltage (VEXT) refers to +24VDC.

WARNING

Wiring VEXT with the incorrect voltage will permanently damage the Digital I/O circuitry. The isolated voltage (VEXT) is +24VDC.

Selecting the wrong jumper settings for the type of output drivers installed on the board will permanently damage the output driver IC's (U1 thru U4). The output drivers are installed at the factory, based on the Sinking or Sourcing Option selected when ordering the board.

Refer to Figure 1 for jumper location.

Digital Output Sink/Source Select Jumpers				
Output Type	Output Driver IC Type Installed (U1 thru U4) (See Warning Above)	J5	J6	User Supplies
Sink	Motorola / ST Micro ULN2803	1-2	1-2	Path to +24VDC (VEXT)
Source	Allegro UDN2981A	2-3	2-3	Path to GEXT

Table 1.3 ACRIO Digital Output Sink/Source Select Jumpers

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ACRIO MODULE JUMPERS

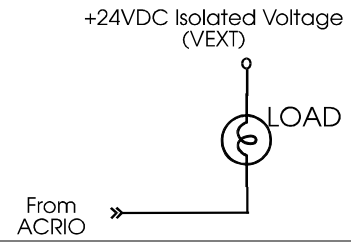
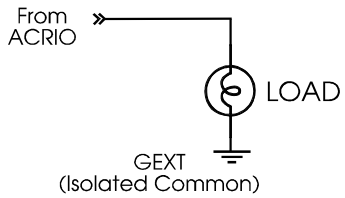
USER CIRCUIT	JUMPER POSITIONS
Sink Output  	J5-1 to J5-2 J6-1 to J6-2
Source Output  	J5-2 to J5-3 J6-2 to J6-3

Figure 3. ACRIO Module Digital Output User Circuit

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ACRIO MODULE HARDWARE WIRING

This section contains diagrams of the connectors on the ACRIO module.

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Auxiliary Digital Inputs / Outputs (AP3 / AP4)

There are two 34 pin headers provided on the ACRIO expansion board for the auxiliary digital I/O interface. One of the 34 pin headers is used for the auxiliary 32 Digital Inputs and the second is used for the auxiliary 32 Digital Outputs. Refer to Figure 1 for connector location.

WARNING: The Reverse Layout ACRIO Module is the opposite physical P3/P4 connector layout as compared to the ACR8000 Expansion I/O Board and ACR8000/ACR8010/ACR8020 Motherboards.

Note: AP3 and AP4 are 34-pin shrouded male headers.

AP3--Digital Outputs			
Usage	**Pin**	**Usage**	**Pin**
OUT-32	1	OUT-33	2
OUT-34	3	OUT-35	4
OUT-36	5	OUT-37	6
OUT-38	7	OUT-39	8
OUT-40	9	OUT-41	10
OUT-42	11	OUT-43	12
OUT-44	13	OUT-45	14
OUT-46	15	OUT-47	16
OUT-48	17	OUT-49	18
OUT-50	19	OUT-51	20
OUT-52	21	OUT-53	22
OUT-54	23	OUT-55	24
OUT-56	25	OUT-57	26
OUT-58	27	OUT-59	28
OUT-60	29	OUT-61	30
OUT-62	31	OUT-63	32
N/C	33	N/C	34

Table 1.4 ACRIO Auxiliary Digital Output Connector

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Digital Inputs / Outputs, Continued

AP4 -- Digital Inputs			
Usage	**Pin**	**Usage**	**Pin**
INP-00	1	INP-01	2
INP-02	3	INP-03	4
INP-04	5	INP-05	6
INP-06	7	INP-07	8
INP-08	9	INP-09	10
INP-10	11	INP-11	12
INP-12	13	INP-13	14
INP-14	15	INP-15	16
INP-16	17	INP-17	18
INP-18	19	INP-19	20
INP-20	21	INP-21	22
INP-22	23	INP-23	24
INP-24	25	INP-25	26
INP-26	27	INP-27	28
INP-28	29	INP-29	30
INP-30	31	INP-31	32
N/C	33	N/C	34

Table 1.5 ACRIO Auxiliary Digital Input Connector

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ACRIO MODULE HARDWARE WIRING

Digital I/O Power (PWR1)

PWR1 is the connection on the ACRIO expansion board for the user supplied voltage for the Auxiliary Digital Inputs and Digital Outputs and should be wired to the isolated voltage (VEXT) as shown in the table below. Refer to Figure 1 for connector location.

Isolated voltage (VEXT) refers to +24VDC.

☠ WARNING

Wiring VEXT with the incorrect voltage will permanently damage the Digital I/O circuitry. The isolated voltage (VEXT) is +24VDC.

Note: PWR1 is a 4-pin male Weidmuller plug.

PWR1 Isolated Power Connector	
Usage	**Pin**
Isolated Common (GEXT)	1
Isolated Common (GEXT)	2
+24VDC Isolated Voltage (VEXT)	3
+24VDC Isolated Voltage (VEXT)	4

Table 1.6 ACRIO Isolated Power Connector

Isolated Power Fuse			
Fuse	Circuit	Amps	Littelfuse Part No.
F1	VEXT	4	154.004

Table 1.7 ACRIO Isolated Power Fuses

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CHAPTER 2
TECHNICAL SPECIFICATIONS

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ACRIO TECHNICAL SPECIFICATION

ITEM	SPECIFICATION
External I/O Power Supply Requirements:	+24 VDC (+3/-6VDC) @ 4A
Operating Temperature:	0°C to 50°C (32°F to 122°F)
Humidity:	0 to 95%, Non-Condensing
Digital Inputs:	32 Optically Isolated (standard) @ External Voltage Sinking or Sourcing Available Activates on 10mA per input
Digital Outputs:	32 Optically Isolated (standard) Open-Collector Sinking or Sourcing Type Available Output Loads: 32 Outputs @ 50 mA continuously, each or Up to 12 Outputs @ 125mA continuously, each, distributed across the four (4) output drivers, as follows: up to 3 between OUT32 and OUT39 up to 3 between OUT40 and OUT47 up to 3 between OUT48 and OUT55 up to 3 between OUT56 and OUT63

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CHAPTER 3

ACRIO MECHANICAL DRAWINGS

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ACRIO MODULE MECHANICAL DIMENSIONS

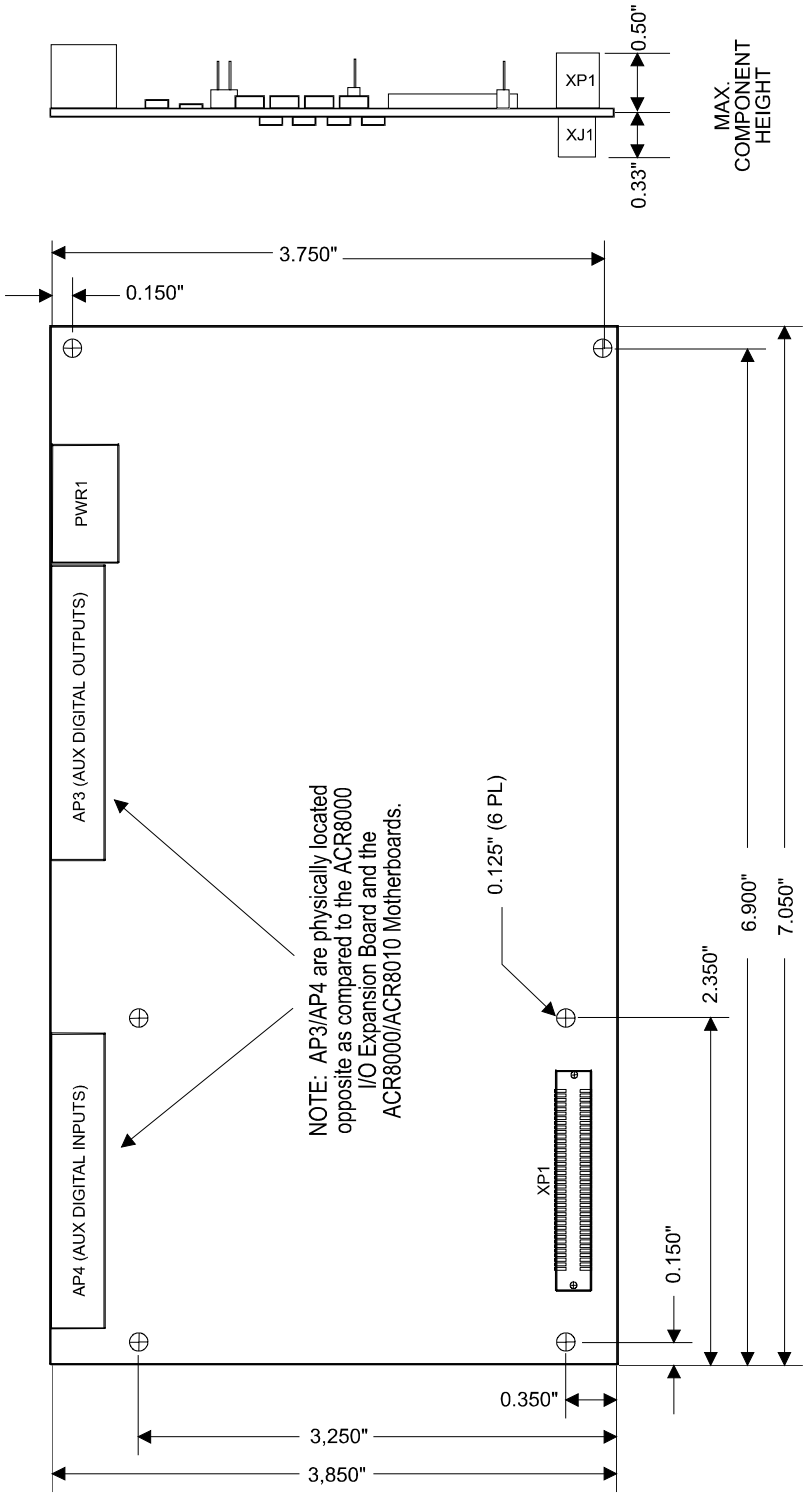


Figure 4. Reverse Layout ACRIO Mechanical Dimensions

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