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 *OMRON / Adept Technology VJI* at our website: *Click HERE*

Adept Joint Interface Module(VJI) 11

11.1 Introduction **132**

11.2 Connections and Indicators **132**

11.3 VMEbus Address **133**

Address Settings for VJI Modules 133

Address Settings for Multiple Servo Boards 133

11.4 Belt Encoder Interface **134**

11.5 VJI Module Specifications **136**

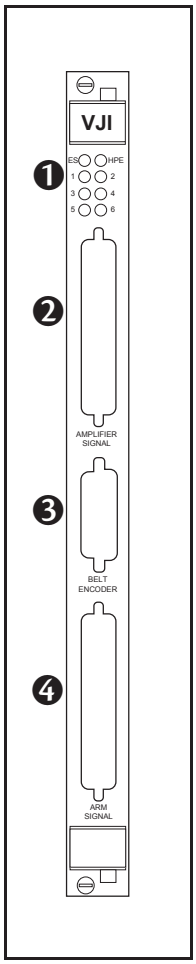
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

11.1 Introduction

The Adept VME Joint Interface (VJI) module is a 6U single-slot VME module designed to control the motion axes on an Adept robot. The VJI module has connectors for the power chassis cable and the arm (robot) signal cable. There is another connector for external encoders, typically used for belt tracking.

See the user's guide for your Adept robot for complete information on installation, configuration, and operation of the VJI module and your robot.

11.2 Connections and Indicators



1. Status LED's. When lit:

   ES – indicates a latched E-Stop signal on the backplane has been asserted from the VJI module or somewhere else in the system.

   HPE – indicates the High Power Enable signal is asserted.

   1 to 6 – indicates the corresponding output (motor drive) channel is enabled.

2. **Amplifier Signal** connector – the VJI to Amp cable from the power chassis is installed here.

3. **Belt Encoder** connector – a 15 pin D-Sub connector for up to two belt encoders in a conveyor tracking installation.

4. **Arm Signal** connector – the VJI to Robot cable from the Adept robot is installed here.

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

11.3 VMEbus Address

Address Settings for VJI Modules

The VMEbus address for a single VJI module is set at the factory and will not need to be changed. If you have multiple VJI modules, each VJI module must have a unique VMEbus address. The information in Table 11-1 shows how to set the address when you have multiple modules in an Adept MV controller.

The address is set at DIP Switch package U18 on the VJI PC board. To operate the switch, use a small insulated instrument, such as the point of a pencil. Each switch position is a miniature rocker switch. To open a switch, press down on the side of the switch marked "open". The switch is located in the upper right-hand corner of the board.

Table 11-1. VMEbus Address Switch Settings for VJI Module

Servo Board Address	Switch Position on DIP Switch U18[a]							
	1	2	3	4	5	6	7	8
1	Open	Closed	Open	Open	Closed	Closed	Closed	Closed
2	Open	Closed	Open	Open	Closed	Closed	Closed	Open
3	Open	Closed	Open	Open	Closed	Closed	Open	Closed
4	Open	Closed	Open	Open	Closed	Closed	Open	Open
5	Open	Closed	Open	Open	Closed	Open	Closed	Closed
6	Open	Closed	Open	Open	Closed	Open	Closed	Open

[a] The position notation on DIP switches can vary. If the switch is marked open/closed, then open = off and closed = on.

Address Settings for Multiple Servo Boards

If you have MI6 modules installed along with a VJI, each module must have a unique VMEbus address. Check the address settings on all modules to make sure they are all different. If you purchased the Adept MV controller from Adept with all the motion modules installed, the correct DIP switch settings will have already been set for you by Adept.

In systems with a VJI (Adept robot systems) in addition to MI6(s), the first MI6 Module should be set to Servo Board Number 3. In systems with two VJI modules (Dual Adept robots) the second VJI should be set to Servo Board 3. This is to facilitate optimal processor allocation for the servo code with the default V+ software configuration. See Table 11-2 for examples of address settings for various configurations.

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

Table 11-2. VMEBus Address Settings for Multiple Servo Board Systems

	First Board Address	Second Board Address	Third Board Address	Fourth Board Address
2 MI6	1 – MI6	2 – MI6		
1 VJI plus 1 MI6	1 – VJI	3 – MI6		
2 VJI	1 – VJI	2 – VJI		
2 VJI plus 1 MI6	1 – VJI	3 – VJI	5 – MI6	
2 VJI plus 2 MI6	1 – VJI	3 – VJI	5 – MI6	6 – MI6

11.4 Belt Encoder Interface

For use with conveyor tracking, the VJI module supports two independent external belt encoders through a single, female, 15 pin D-sub connector. The pin assignments for the "Belt Encoder" connector are shown in Table 11-3. See Figure 11-2 for a typical input circuit drawing. Adept strongly recommends using differential encoders outputs for maximum noise immunity. See the *V+ Language User's Guide* for more information on setting up and programming a conveyor tracking application.

Table 11-3. Belt Encoder Connector Pin Assignments

Channel 1		Channel 2		Pin Locations
Signal	Pin	Signal	Pin	
A+	9	A+	13	
A–	2	A–	6	
B+	10	B+	14	
B–	3	B–	7	
I+	11	I+	15	
I–	4	I–	8	
Pull up[a]	1	Pull up[a]	1	
Encoder power out	5	Encoder power out	5	
Encoder ground	12	Encoder ground	12	

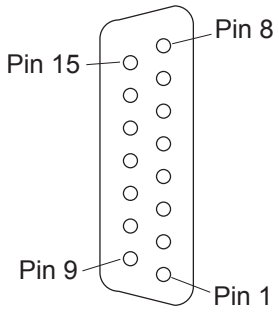
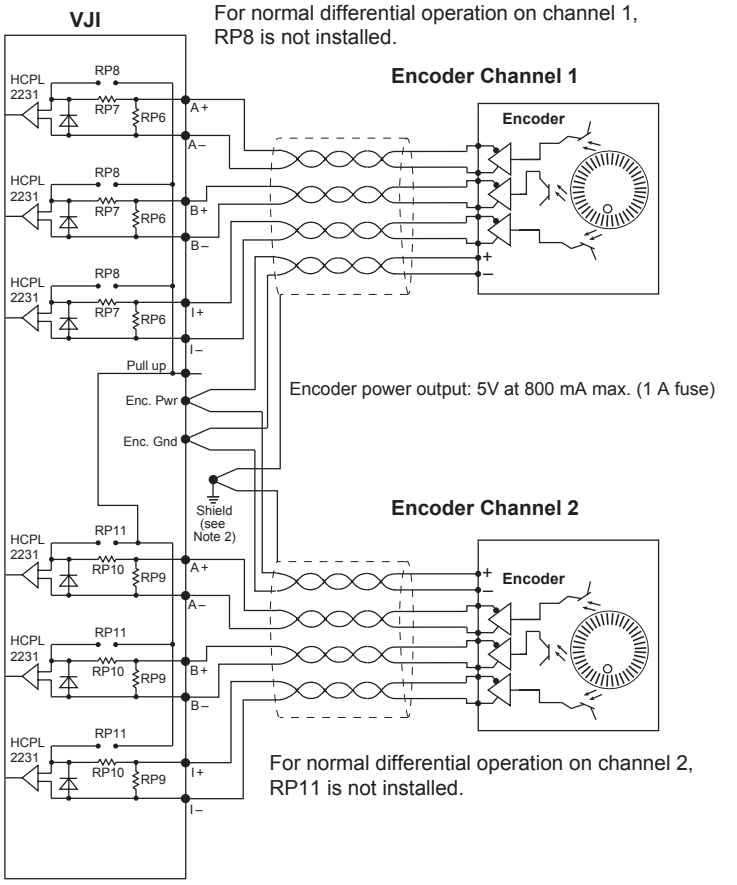


Figure 11-1. VJI Belt Encoder Connector Pinout

[a] User-supplied pull up (used for single-ended encoders only)

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



Note 1:
RP6 & RP9: 330Ω, 6-pin resistor pack, socketed
RP7 & RP10: 470Ω, 6-pin resistor pack, socketed
RP8 & RP11: 470Ω, 6-pin resistor pack, socketed
For single-ended encoders, remove RP7 and RP10, and install RP8 and RP11.
HCPL2231: Hewlett-Packard Opto-coupler

Note 2: Connect cable shield to connector shell.

Figure 11-2. VJI Belt Encoder Typical Input Circuity

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

11.5 VJI Module Specifications

Table 11-4. Technical Specifications[a]

Maximum VJI's per controller[b]	2
Number of axes of control (maximum)	5 axes of robot joint control per VJI module
Number of belt encoders (maximum)	2 conveyor belts per VJI module
Width	Occupies one backplane slot

[a] Specifications subject to change.

[b] Note that there may be limitations preventing the operation of dual Adept robots from a single controller.

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