This Datasheet for the

IC697BEM721

I/O Link Interface Module for the Series 90-70.

http://www.cimtecautomation.com/parts/p-14754-ic697bem721.aspx

Provides the wiring diagrams and installation guidelines for this GE Series 90-30 module.

For further information, please contact Cimtec Technical Support at

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GFK-0645C
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I/O Link Interface Module

Module Features

- IC697 PLC interface to CNC-compatible serial I/O link.

- I/O Link master or slave.

- Occupies single slot in PLC rack.

- Three status LEDs

- I/O Link reset pushbutton.

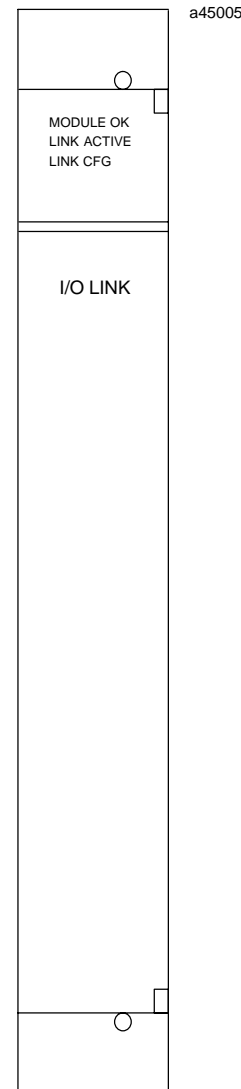- 1.5 MHz serial port transmission rate.

Overview

The Fanuc I/O Link is a serial interface that provides high-speed exchange of I/O data between a master device and up to 16 slaves. The maximum distance between individual devices on an I/O Link is 10 meters (33 feet). If greater distances are required between modules, optional fiber optics cable and Optical Adapters can be used to increase the maximum distance between individual devices to 100 meters (330 feet).

Up to four I/O Link Interface Modules can be installed in an IC697 PLC. Each I/O Link Interface Module can be used in either master or slave mode. Usually, when there are multiple I/O Link Interface Modules in the same PLC, they are on separate I/O Links. However, it is possible to have more than one I/O Link Interface Module in the IC697 PLC connected to the same link, if that suits the needs of the application.

When used as a master, an I/O Link Interface Module can exchange up to 1024 discrete inputs and 1024 discrete outputs with slave devices. Potential slaves include the IC693 PLC, Series 0 CNC, and Power Mate CNC.

When used as a slave, the IC697 I/O Link Interface Module can exchange up to 64 discrete inputs and 64 discrete outputs with the master. The master may be another IC697 PLC, a Series 15, Series 16, or Series 18 CNC, a Series 0 Model C CNC, or an F-D Mate CNC. The IC697 PLC and Series 0 CNC can be used as either master or slave.


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MODULE OK
LINK ACTIVE
LINK CFG

I/O LINK

The I/O Link Module is configured using the MS-DOS® programming software. Application software, supplied on diskettes with the I/O Link Module, can be used to set up and control the I/O Link. This application software can also be used to assign the location of the input and output data to and from the I/O Link, and to provide diagnostics capabilities for the I/O Link. The MS-DOS programmer is used to integrate this application software with the rest of an application program.

® MS-DOS is a registered trademark of Microsoft Corporation.

Module Description

The I/O Link Interface Module occupies one slot in the IC697 PLC rack. It can be installed in any rack, in any slot except slot 1, which is reserved for the CPU module.

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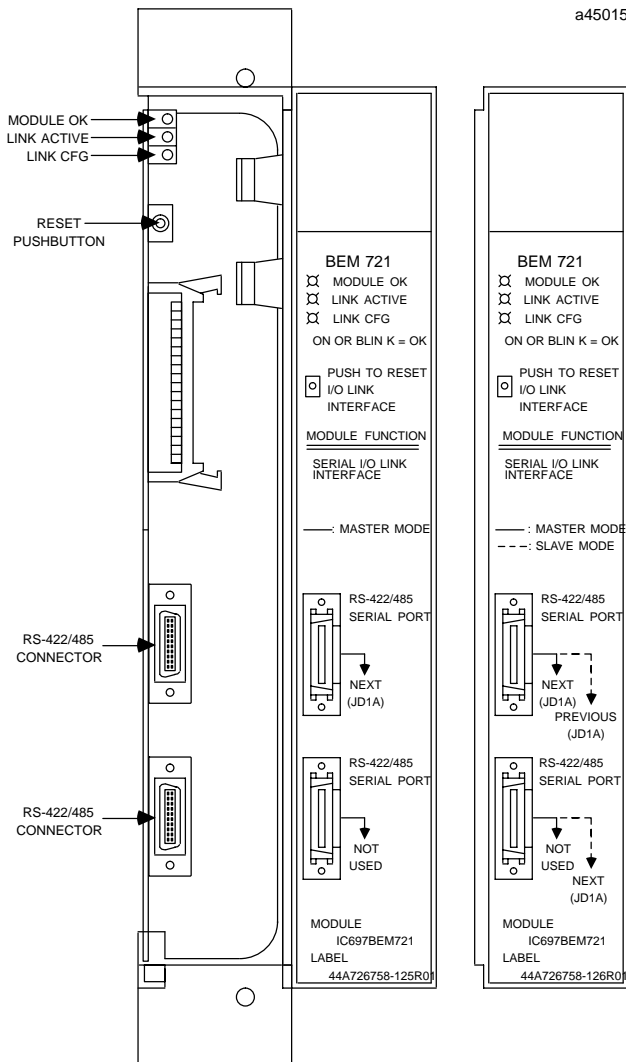
LEDs

The module has three LEDS that show its operating, configuration, and communications status.

Module OK:	indicates the module's operating status.
Link Active:	indicates the module's communications status.
Link Cfg:	indicates whether I/O Link configuration has occurred.

Reset Pushbutton

The Reset pushbutton provides a convenient means of reset if a failure occurs. If the module is being used as a master, pushing the Reset button resets both the module and operation of the link. The application program must be used to re-initialize the link. If the module is being used as a slave, pushing the Reset button resets the module, if a fault has caused the module to stop operating while the rest of the link continues to function.

Serial Ports

The front of the I/O Link Interface Module has two 20-pin, D connector, RS-422/485 serial ports. These ports are used for connection to the Fanuc I/O Link.

Application Software

The IC697 I/O Link Interface Module is provided with an application software diskette. Program logic on the diskette can be used to integrate up to four I/O Link Interface Modules into the PLCs application program. It will transfer I/O data between the module and the PLC, perform diagnostics functions, and transfer application program commands to the module. Additional application program logic can be created to perform the following functions:

1. To specify the number of I/O Link Interface Modules present in the PLC.

2. To specify, for each I/O Link Interface Module:

   A. A rack and slot location.

   B. Master or slave operation.

3. And, for each I/O Link Interface Module that will be a master:

   A. To assign a data length and I/O addresses for each slave on its link.

   B. To control operation of the link and monitor module and link status.

The *I/O Link Interface Module User's Manual* (GFK-0644), chapter 4, explains how to add logic for I/O Link Interface Modules to an application program.

Module Installation

The I/O Link Interface Module can be installed in any rack, in any slot except slot 0, which is reserved for the CPU module. The only placement restriction is the module not be located to the left of any board that generates interrupts (such as a PCM, IC66* Bus Controller, Analog, Factory LAN, or Ethernet module).

Caution

Rack power MUST be OFF when installing or removing the I/O Link Module.

1. Grasp the module firmly with your hand and insert it into the card guide.

2. Align the module's printed circuit board with the connector on the rack backplane and slide it towards the connector until it has started to seat.

3. Place one thumb on the left side of the top plastic flange and the other thumb on the left side of the bottom plastic flange. Push the board into the connector until the top and bottom latches click onto the rack rails.

4. Visually inspect the board to be sure it has seated properly.

Caution

Make sure no exposed wiring touches any conductive material. Such contact could damage the module, and other units to which it is connected.

5. *A CPU module must be present in rack 0 slot 1 before applying power to the I/O Link Interface Module.* Turn on power, and observe the LEDs.

LED Status	LED Status	Indication
Module OK	On	The I/O Link Module has passed its powerup diagnostics and the hardware is operating properly.
	OFF	The module has failed a diagnostic test, or a run-time failure has been detected.
	Blinking	The module is running powerup diagnostics.
Link Active	On	The module is ready to communicate with the I/O Link.
	OFF	A failure has occurred with the I/O Link, and communications are not possible.
	Blinking	The module is transferring data on the I/O Link.
Link Cfg	ON	I/O Link configuration has occurred, and the module is ready to communicate.
	OFF	The module has not been configured for link operation.

Module Removal

1. Remove power from the rack.

2. Grasp the module firmly at the top and bottom of the board cover, with your thumbs on the front of the cover, and your fingers on the plastic clips on the back of the cover.

3. Squeeze the rack clips on the back of the cover to disengage the clips from the rack rail.

4. Pull the module firmly to remove it from the backplane connector.

5. Slide the board along the card guide and remove it from the rack. Avoid contact with neighboring boards and wiring.

Cable Types for the I/O Link

The following cables and connectors can be used to complete the I/O Link between devices.

Item	Catalog Number	Vendor	Description
Cable	A03B-0807-K801	†	5 meter length with connectors on both ends. Connects between master and slave device, or between two slave devices.
Cable	A03B-0807-K802	†	10 meter length with connectors on both ends. Connects between master and slave device, or between two slave devices.
Cable	AMW2076	OKI Electric Cable	10-pair shielded cable without connectors, for making custom-length cable. Connects between master and slave device, or between two slave devices.
Connector	A02B-0120-K301	†	20-pin connector with solder lug. Consists of the two following parts.
Connector	PCR-E20FS	Honda	20-pin female connector with solder lug.
	PRC-V20L	Honda	Connector cover.
Cable	A03B-0807-K803	†	1 meter length with connectors on both ends. Connects between master or slave and Optical Adapter. This cable can only be used with an Optical Adapter; do not use it for master/slave or slave/slave connections.
Optical Adapter	A138-154-B001	†	Required for optical fiber cable.
Cable	A66L-6001-009	†	Optical fiber cable for use with Optical Adapter.
	″ #L10R03		10m
	″ #L15R03		15m
	″ #L20R03		20m
	″ #L30R03		30m
	″ #L40R03		40m
	″ #L50R03		50m
	″ #L60R03		60m
	″ #L80R03		80m
	″ #L90R03		90m
	″ #L100R03		100m

† See your local PLC distributor or local sales office for purchasing information.

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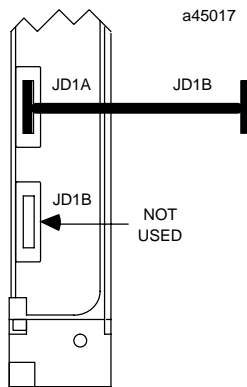
I/O Link Connection

The devices on an I/O Link must be installed in the order expected by the master. If the IC697 PLC is the master, be sure to connect the devices on a link in the order that agrees with the information provided to the application Program Block.

Using the appropriate cable, connect the devices on the link. Notice that the cables are marked JD1A on one end and JD1B on the other.

The functions of the ports on the I/O Link Interface Module depend on whether the module is used as a master or as a slave. Refer to the illustrations below.

I/O Link Module Used as a Master

If the module will be used as a master, connect the cable from the first slave to the upper port. The lower port is not used in master mode.

I/O Link Module Used as a Slave

If the module will be used as a slave, connect the cable from the previous device (either the master or another slave) to the upper port. If the module is followed by another slave on the link, connect the cable from that device to the lower port.
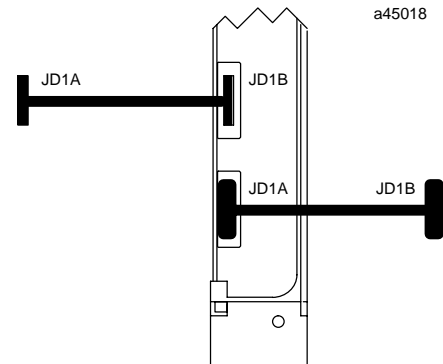
Serial Port Pin Assignments

Pin #	Signal	Pin #	Signal
1	SIN	11	0 volts
2	*SIN	12	0 volts
3	SOUT	13	0 volts
4	*SOUT	14	0 volts
5		15	0 volts
6		16	0 volts
7		17	
8		18	+5 volts
9	+5 volts	19	
10		20	+5 volts

The +5-volt output from each connector powers the fiber optic link modules for long distance applications. The +5-volt output is not used otherwise.

Caution

Do not use a cable that includes the +5 volt line (cable A03B-0807-K803) to directly connect I/O Link devices. Damage to the equipment may result.

If the link includes Optical Adapters and fiber optic cables, please refer to the *I/O Link Interface Module User's Manual* for installation instructions.

I/O Link Interface Module

Module Specifications †

Physical dimensions:	6.3 in x 9.19 in (160 mm x 233 mm). Single slot in IC697 rack.
Module type:	IC697 PLC module, providing I/O Link communications with up to 16 slave devices in master mode.
Current requirement from +5-volt bus	1.0 Amp without Optical Adapter. 0.2 Amps per Optical Adapter.
LEDs:	Module OK, I/O Link Active, I/O Link Configured
Pushbutton:	Reset I/O Link
Configuration:	
In master mode	Controls up to 16 slaves
	Choice of 32 or 64 inputs/outputs per slave.
In slave mode	Controlled by one master
	Choice of 32 or 64 inputs/outputs
I/O Points:	
In master mode	1024 inputs, 1024 outputs maximum
	(64 inputs/outputs per slave maximum)
In slave mode	64 inputs, 64 outputs maximum
PLC capacity (examples; for further details, refer to the I/O Link Module User's Manual):	
781 CPU	Up to four I/O Link Modules
771 CPU	Up to two I/O Link Modules
731 CPU	One I/O Link Module
RS-422/485 Serial Ports:	1.5 MHz transmission rate.

† Refer to GFK-0867B, or later for product standards and general specifications. For installations requiring compliance to more stringent requirements (for example, FCC or European Union Directives), refer to *Installation Requirements for Conformance to Standards.*

Note: For Conformal Coat option, or Low Temperature Testing option please consult the factory for price and availability.

For More Information,

Please refer to these related publications:
I/O Link Module User's Manual (GFK-0644).
Programmable Controller Installation Manual (GFK-0262).
Programming Software User's Manual (GFK-0263).
Programmable Controller Reference Manual (GFK-265).