

DATA SHEET

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Form 680-050405

Use Table 1 to select RAM expansion options for your controller.

Table 1: RAM Expansion Options

RAM Size	G4LC32		G4LC32SX		G4LC32ISA	G4LC32ISA-LT	M4RTU/M4IO/M4 ³	
	Original ²	New ²	Original ²	New ²	-----	-----	Original ³	New ³
256K	N/A	N/A	Base Configuration	Base Configuration	Base Configuration	Base Configuration	Base Configuration	N/A
512K	Base Configuration	Base Configuration	N/A	N/A	Buy 2 G4RAM1M	N/A	N/A	N/A
1M	G4LC32RAMEX5M	Buy 4 G4RAM1M	N/A	Buy 2 G4RAM4M	Buy 2 G4RAM4M	N/A	Buy 2 G4RAM4M	Base Configuration
2M	N/A	Buy 4 G4RAM4M	N/A	N/A	Buy 4 G4RAM4M	N/A	N/A	N/A
4M	G4LC32RAMEX4M	Buy 8 G4RAM4M	N/A	N/A	N/A	N/A	N/A	N/A

Use Table 2 to select EPROM expansion options for your controller.

Table 2: EPROM Expansion Options

Size	G4LC32		G4LC32SX		G4LC32ISA	G4LC32ISA-LT	M4RTU	M4IO	M4
	Original ² (UV EPROM)	Current ² (Flash)	Original ² (UV EPROM)	Current ² (Flash)	Flash	Flash	Flash	Flash	Flash
128K	Base Configuration	N/A	Base Configuration	N/A	N/A	N/A	N/A	N/A	N/A
256K	Buy 4 27C512-120 ¹	N/A	N/A	Base Configuration	Base Configuration	Base Configuration	Base Configuration	Base Configuration	Base Configuration
512K	Buy 4 27C010-120 ¹	Base Configuration	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1M	Buy 4 27C020-120 ¹	G4LC32F1M	N/A	G4LC32SXF1M	G4LC32ISAF1M	N/A	M4RTUF1M	M4IOF1M	M4F1M

Notes:

¹ = Chips from Intel (N/A from Opto 22). Older chips had a 256K base configuration.

² = See attached to determine if you have a new style G4LC32/G4LC32SX or old style G4LC32/G4LC32SX.

³ = New controllers are marked with a "1MB RAM installed" sticker.

G4LC32 Revised Features

G4LC32 controllers manufactured after January 1994 have been modified and are compatible with the original G4LC32 controllers. The following table describes the changes.

Important: Connectors wired for the G4LC32SX controller are **not** compatible with the G4LC32 or other controllers. Use the connectors provided and refer to the configuration label for wiring information.

Feature	New G4LC32	Original G4LC32
EPROMs	Flash EPROMs. Firmware update is downloaded to the EPROMs by using the FLASH utility	UV EPROMs. Firmware update requires physical removal and installation of UV EPROMs.
RAM Expansion	Requires additional RAM chips. See "RAM and Flash EPROM Installation, Flash EPROM Jumpers" for chip part numbers.	Requires expansion kits G4LC32RAMEX.5M G4LC32RAMEX2M G4LC32RAMEX4M
RS-232 Ports	Ports are green 7-pin mini-receptacles. Cables use green 7-pin mini-plug, Phoenix Contact P/N MCVR 1,5/7-ST-3,81	Use subminiature 9-pin D connectors.
	115.2 K maximum baud rate	38.4 K maximum baud rate
	+ 5 VDC available from Pin 1 on COM0 and COM1	+ 5 VDC source not available
RS-485 Ports	Ports are green 7-pin mini-receptacles. Cables use green 7-pin mini-plug, Phoenix Contact P/N MCVR 1,5/7-ST-3,81	Ports are green 7-pin receptacles. Cables use larger green 7-pin plugs, Phoenix Contact P/N MVSTBW 2,5/7-ST-5,08.
	Switches used to terminate and bias ports.	Jumpers used to terminate and bias ports.
ARCNET Ports	Straight connection to port.	Requires right angle elbow to port.
Power Connector	Straight connection; can be connected without opening controller s front panel door.	Connection is at a right angle; must open controller s front panel door to access.
Power Requirements	+ 5 VDC (± 0.1) @ 2 A	+ 5 VDC (± 0.1) @ 2.5 A - 5 VDC (± 0.25) @ 20 mA
Number of Circuit Boards	3	7
Weight	4.3 lbs	5.5 lbs

G4LC32SX Revised Features

G4LC32SX controllers manufactured after April 1994 have been modified and are compatible with the original G4LC32SX controllers. The following table describes the changes.

Important: Connectors wired for other Opto 22 controllers are **not** compatible with the G4LC32SX. Use the connectors provided and refer to the configuration label for wiring information.

Features	New G4LC32SX	Original G4LC32SX
EPROMs	-Uses Flash - Firmware update is downloaded to the EPROMs by using the FLASH200 utility -EPROM size is expandable from 256 KB to 1 MB	- Uses UV EPROMs - Firmware update requires physical removal and installation of UV - EPROM size is 128 KB
Jumpers	<u>Jumper groups:</u> AX: Address extender E/R: Run from Flash EPROM or RAM RJ0: EPROM type, size MJ0: RAM size X0, X2: Communication mode	<u>Jumper groups:</u> AX: Address extender E/R: Run from EPROM or RAM
RAM Expansion	256 KB, expandable to 1 MB	256 KB, nonexpandable

Products

Opto 22 produces a broad array of reliable, flexible hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications.

SNAP Ethernet Systems

Based on the Internet Protocol (IP), SNAP Ethernet systems offer flexibility in their network connectivity and in the software applications they work with. The physical network may be a wired Ethernet network, a cellular wireless network, or a modem. A wide variety of software applications can exchange data with SNAP Ethernet systems, including:

- Opto 22's own ioProject™ suite of control and HMI software
- Manufacturing resource planning (MRP), enterprise management, and other enterprise systems
- Human-machine interfaces (HMIs)
- Databases
- Email systems
- OPC client software
- Custom applications
- Modbus/TCP software and hardware.



SNAP Ethernet system hardware consists of controllers and I/O units. Controllers provide central control and data distribution. I/O units provide local connection to sensors and equipment.

SNAP OEM Systems

Opto 22 SNAP OEM I/O systems are highly configurable, programmable processors intended for OEMs, IT professionals, and others who need to use custom software with Opto 22 SNAP I/O modules.

Linux® applications running on these systems can read and write to analog, simple digital, and serial I/O points on SNAP I/O modules using easily implemented file-based operations. Applications can be developed using several common development tools and environments, including C or C++, Java, and shell scripts.



M2M Systems

Machine-to-machine (M2M) systems connect your business computer systems to the machines, devices, and environments you want to monitor, control, or collect data from. M2M systems often use wireless cellular communications to link remote facilities to central systems over the Internet, or to provide monitoring and control capability via a cellular phone.

Opto 22's Nvivo™ systems include everything you need for M2M—interface and communications hardware, data service plan, and Web portal—in one easy-to-use package. Visit nvio.opto22.com for more information.

Opto 22 Software

Opto 22's ioProject and FactoryFloor® software suites provide full-featured and cost-effective control, HMI, and OPC software to power your Opto 22 hardware. These software applications help you develop control automation solutions, build easy-to-use operator interfaces, and expand your manufacturing systems' connectivity.



Quality

In delivering hardware and software solutions for worldwide device management and control, Opto 22 retains the highest commitment to quality. We do no statistical testing; each product is made in the U.S.A. and is tested twice before leaving our 160,000 square-foot manufacturing facility in Temecula, California. That's why we can guarantee solid-state relays and optically-isolated I/O modules *for life*.

Product Support

Opto 22's Product Support Group offers comprehensive technical support for Opto 22 products. The staff of support engineers represents years of training and experience, and can assist with a variety of project implementation questions. Product support is available in English and Spanish from Monday through Friday, 7 a.m. to 5 p.m. PST.

Opto 22 Web Sites

- www.opto22.com
- nvio.opto22.com
- www.internetio.com (live Internet I/O demo)

Other Resources

- OptoInfo CDs
- Custom integration and development
- Hands-on customer training classes.



About Opto 22

Opto 22 manufactures and develops hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications. Using standard, commercially available Internet, networking, and computer technologies, Opto 22's input/output and control systems allow customers to monitor, control, and acquire data from all of the mechanical, electrical, and electronic assets that are key to their business operations. Opto 22's products and services support automation end users, OEMs, and information technology and operations personnel.

Founded in 1974 and with over 85 million Opto 22-connected devices deployed worldwide, the company has an established reputation for quality and reliability.