

C-more 4-inch and 6-inch Color Micro-Graphic Panels

Hardware User Manual









HARDWARE USER MANUAL



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1st Edition	12/09	Original issue
2nd Edition	10/10	Added 4-inch panel
Rev. A	07/13	Added hardware version info. Revised cable diagrams. Added CSA information. Added operating system info. Added Productivity Series and Do-more information.
Rev. B	08/17	Multiple small revisions
Rev. C	08/18	Corrected DH485-CBL description



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Introduction

The Purpose of this Manual

Thank you for purchasing from our *C-more*[®] Micro-Graphic family of products. This manual describes *AutomationDirect.com's C-more* Color Micro-Graphic panels, specifications, included components and available accessories and provides you with important information for installation, connectivity and setup. The manual shows you how to install, wire and use the products. It also helps you understand how to interface the panels to other devices in a control system.

This user manual contains important information for personnel who will install the panels and accessories, and for the personnel who will be programming the panel. If you understand control systems making use of operating interfaces such as the *C-more* Micro-Graphic panels, our user manuals will provide all the information you need to get, and keep, your system up and running.

Supplemental Manuals

If you are familiar with industrial control type devices, you may be able to get up and running with just the aide of the Quick Start Guide that is included with each panel. You may also refer to the online help that is available in the *C-more* Micro-Graphic programming software.

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Conventions Used



When you see the "notepad" icon in the left-hand margin, the paragraph to its immediate right will be a special note. The word NOTE: in boldface will mark the beginning of the text.



When you see the "exclamation mark" icon in the left-hand margin, the paragraph to its immediate right will be a warning. This information could prevent injury, loss of property, or even death (in extreme cases). The word WARNING: in boldface will mark the beginning of the text.

Key Topics for Each Chapter

The beginning of each chapter will list the key topics that can be found in that chapter.





Product Overview - EA1-T4CL





The C-more 4" Color Micro-Graphic panel has a 4.1-inch TFT LCD color 320 x 240 dot display with an LED backlight. It features five user-defined function keys, each key with a user-defined red LED indicator. The panel displays up to 40 lines by 80 characters of static text and up to 30 lines by 40 characters of dynamic text with embedded variables and phrases mixed with graphics at landscape orientation. Portrait orientation can display 60 characters and 53 lines of static text and 40 lines by 40 characters of dynamic text. EA1-T4CL is rated UL for use on a flat surface of Type 4X enclosure (for indoor use only). The C-more 4" Micro-Graphic panels are powered from a 12-24 VDC class 2 power supply during operation, or can be powered in low power mode through the USB port from a PC during programming.

Other features include:

- 3276 KB memory
- USB Type B programming port.
- Built in 15-pin serial communications port (RS-232/422/485)
- Optional replaceable clear screen overlay
- Built in Alarm Control setup that activates beep, backlight flash, customized alarm banner, and red LED blinking
- Up to 999 screens, limited only by memory usage
- 0 to 50 °C (32 to 122 °F) operating temperature range
- UL, cUL, CSA & CE agency approvals (see next page for details)
- 2-year warranty from date of purchase

Product Overview - EA1-T6CL



EA1-T6CL shown in Landscape (Horizontal) mode



shown in Portrait (Vertical) mode

The *C-more* 6" Color Micro-Graphic panel has a 5.7-inch TFT LCD color 320 x 240 dot display with an LED backlight. It features five user-defined function keys, each key with a user-defined red LED indicator. The panel displays up to 40 lines by 80 characters of static text and up to 40 lines by 40 characters of dynamic text with embedded variables and phrases mixed with graphics at landscape orientation. Portrait orientation can display 60 characters and 53 lines of static text and 40 lines by 40 characters of dynamic text. EA1-T6CL is rated UL for use on a flat surface of Type 1, 4X enclosure (for indoor use only). The *C-more* 6" Micro-Graphic panels are powered from a 12-24 VDC class 2 power supply during operation, or can be powered in low power mode through the USB port from a PC during programming.

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Other features include:

- 3276 KB memory
- USB Type B programming port.
- Built in 15-pin serial communications port (RS-232/422/485)
- 2 optional keypad bezels, 20-button landscape and 21-button portrait mount
- Optional replaceable clear screen overlay
- Built in Alarm Control setup that activates beep, backlight flash, customized alarm banner, and red LED blinking

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- Up to 999 screens, limited only by memory usage
- 0 to 50 °C (32 to 122 °F) operating temperature range
- UL, cUL, CSA & CE agency approvals (see below for details)
- 2-year warranty from date of purchase

UL/CUL/CE Certification Numbers					
Name	UL/CUL	UL508	CSA	CE	ISO-9000
C-more Micro-Graphic Panels & Accessories	E157382	E157382	234884	EN61131-2	Yes
ancy Approval					

US

Part Number Key

Panel Part Number Key

The *C-more* Micro-Graphic panel part numbers consist of the following:



Bezel Part Number Key

The optional *C-more* 6" Micro-Graphic keypad bezel part numbers consist of the following: **Series Name**:

EA-MG6: C-more 6" Micro-Graphic Bezel Option Module



Module Type: ——— BZ2: 20-Key Bezel for landscape mode BZ2P: 21-Key Bezel for portrait mode

Product Label Examples



 WALTONATION DIRECTS
 R02_[1]2]3[4]5]

 MODEL: EA1-T6CL
 CE
 CO

 INPUT:12:24V
 C6.5W Class2
 CE
 CO

 Type 4X Indoor Use Only
 Ro
 CO
 CE
 CE
 CO
 CE
 CE
 CO
 CE
 CE
 CO
 CE
 CE

EA1-T4CL

Serial Number and Date Code format

Serial Number = [Part Number]+[YYMDDFNNN]

- **YY:** Year (07–99 --- e.g. 07 = 2007)
- M: Month (1–9, X, Y, Z --- e.g. X = Oct.)
- **DD:** Day (1–31)
- **F:** Manufacturing Site (0–9, A–Z)
- NNN: Sequence number for the date listed (000–999)

Date Code = YMMF

- Y: Year (0–9 --- e.g. 07 = 2007)
- **MM:** Month (01–12 --- e.g. X = Oct.)
- F: Manufacturing Site (0–9, A–Z)

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Quick Start Steps

Step 1 – Unpack and Inspect

a.) Unpack the *C-more* Color Micro-Graphic panel from its shipping carton. Included in the carton are the following:

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- C-more Color Micro-Graphic panel
- DC power connector
- cutout template
- mounting clips
- gasket
- function key label inserts
- Quick Start Guide



Shipping Carton Contents

- b.) Unpack any accessories that have been ordered, such as: Keypad Bezel, programming cable, PLC communications cable, etc.
- c.) Inspect all equipment for completeness. If anything is missing or damaged, immediately call the *AutomationDirect*[®] returns department @ 1-800-633-0405.

Step 2 – Install Optional Hardware Accessories (EA1-T6CL)

The *C-more* 6" Micro-Graphic panel can be mounted in an optional 20 or 21 button keypad bezel. Below is an example of a *C-more* 6" Micro-Graphic panel being assembled with the optional EA-MG6-BZ2 20-button Keypad Bezel.





NOTE: Mounting clips for the panel and keypad bezels are included with the respective product.





Step 3 - Become Familiar with Available Communication Ports

The *C-more* Color Micro-Graphic panel includes a built-in USB Type B port used to communicate with a PC during project development. There is a 15-pin RS-232/RS-422/RS-485 port for communications to a PLC.



NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.



RS-232/422/485



NOTE: See Chapter 2: Specifications and Chapter 6: PLC Communications for additional details on the available communication ports, protocols and cables.

Step 4 – Install C-more Color Micro-Graphic Panel

The *C-more* Micro-Graphic panel can be mounted through a cutout in an enclosure by using the template that is provided with the panel, or using the dimensions that follow. Cutout dimensions for the *C-more* 6" Color Micro-Graphic panel 20-button landscape and 21-button portrait keypad bezel options are also shown on the next page. The keypad bezels also include a template that can be used.

The enclosure mounting thickness range for the panels and the keypad bezels is 0.04"-0.2" [1-5 mm].

The screw torque range for the screws used on the panel mounting clips and the keypad bezel mounting clips is 21-28 oz-in [0.15-0.2 Nm].

See Chapter 2: Specifications for additional product dimensions and Chapter 3: Accessories for accessory specifications and dimensions.



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Enclosure Clearances

In all installations, a 1.2" [30mm] minimum clearance is required inside an enclosure for proper ventilation of the *C-more* Micro-Graphic panel.



NOTE: Additional clearance inside the enclosure is required when connecting to the 15-pin serial communications port (Port2) unless the 90 EA-ADPTR-4 is used.







<u>cable</u>



1-12

NOTE: Cable connectors are typically longer than 1.2" (30mm). Therefore, in addition to ventilation requirements, clearance must account for the connector and the cable bend radius.

Step 5 – Install the Programming Software and Develop a Project

Following are the minimum system requirements for running *C-more* Micro-Graphic Programming Software, EA-MG-PGMSW, on a PC:

- Operating System Windows® XP Home / Professional Edition Service Pack 2, Windows® 2000 with Service Pack 4, Windows® Vista (32 and 64 bit), Windows® 7 (32 and 64 bit), Windows 8 (32 and 64 bit)
- Keyboard and Mouse or compatible pointing device
- Super VGA color video adapter and monitor with at least 800 x 600 pixels resolution (1024 x 768 pixels recommended) 64K color minimum

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- 150 MB free hard-disk space
- 128 MB free RAM (512 MB recommended); 512 MB free RAM (1GB recommended) for Vista
- CD-ROM or DVD drive for installing software from the CD, or internet access to download free programming software
- USB port for project transfer from software to touch panel

Insert the *C-more* Micro-Graphic Programming Software CD-ROM into the PC's CD-ROM drive or download the programming software from **www.automationdirect.com** and follow the instructions. If you need assistance during the software installation, please refer to the supplied Software Installation Guide or call the *AutomationDirect* Technical Support team at 770-844-4200.

NOTE: The panel has an internal USB to serial converter at Port1. When the device is properly installed and the USB programming cable connects the panel to the PLC, the port will be identified as a serial communications port with an assigned COM port number.

Start a Project	Simulate Project	Send Project to panel
Make a New Project	Allows you to check the operation of your project before downloading it to the panel. Select Project	 Download your project to the connected panel.
×.	Location: C:\My Documents\C-more Projects\ Browse Project: MyProject	 Enter a name for your project
	HMI Type: EA1-T6CL	Select the <i>C-more</i> Micro-Graphic panel
	PLC Protocol: DirectLogic K-Sequence	Select the PLC Driver

Step 6 - Connect C-more Color Micro-Graphic Panel to Computer



NOTE: Install C-more Micro-Graphic Programming software before connecting the panel to the PC to ensure the panel drivers install correctly.

Use a programming cable such as USB-CBL-AB6 from a USB port type A on the project development PC to the USB port type B on the *C-more* Color Micro-Graphic Panel as shown below. Any standard Type A to Type B USB cable can be used such as a standard USB printer cable, maximum length 15'.

USB Programming Cable



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1	-			- 1
	-	_	_	- 1
_	-			_

NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.



Step 7 – Providing Power to the C-more Color Micro-Graphic Panel

Power can be supplied to the *C-more* Micro-Graphic panel in one of two different ways.

ICPAS

- 1). The panel is powered by a 1 Amp @ 12-24 VDC class 2 power source in normal operation.
- 2). The C-more Micro-Graphic panel can be powered during programming from the PC through a USB Programming Cable such as USB-CBL-AB6. When powered from the PC, the panel will operate in Low-Power mode and the screen brightness is diminished.



Panel Powered from a DC Power Source - Wiring Diagram



NOTE: Recommended DC power supply to power the C-more Micro Graphic Panel, **AutomationDirect** Part No. PSC-24-015 or PSC-24-030.

Step 8 – Accessing the C-more Color Micro-Graphic Panel Setup Screens

To access the **Setup Menu** of the panel's setup screens, press the the BAK [F1] and ENT [F5] function keys simultaneously for three (3) seconds.



From the **Setup Menu**, information about the panel can be obtained, settings can be adjusted, and panel functions can be tested.



NOTE: See Chapter 5: System Setup Screens for details on using the setup screen settings and functions.



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Step 9 - Choose C-more Color Micro-Graphic Panel to PLC Protocol & Cables

Available PLC Protocols

PLC Drivers				
Serial - port2 only				
AutomationDirect Productivity Series	Allen-Bradley DF1 Half Duplex			
AutomationDirect CLICK	Allen-Bradley DF1 Full Duplex			
AutomationDirect Do-more	Allen-Bradley PLC5 DF1			
AutomationDirect K-sequence	Allen-Bradley DH485			
AutomationDirect DirectNET	GE SNPX (90/30, 90/70, Micro 90, VersaMax Micro)			
AutomationDirect Modbus	Mitsubishi FX			
AutomationDirect SOLO	Mitsubishi (Q, QnA)			
AutomationDirect GS Drives	Omron Host Link (C200 Adapter, C500)			
Modicon Modbus RTU	Omron FINS Serial (CJ1, CS1)			
Entivity Modbus RTU	Siemens PPI (S7-200 CPU)			

Available purchased cables

Cable Description	Cable Part No.		
Cables used with serial Port2			
AutomationDirect Productivity Series, Do-more, CLICK, Direct LOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WinPLC (RS-232C)	EA-2CBL		
Direct LOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C).	EA-2CBL-1		
DirectLOGIC PLC RJ-11 port, D3-340 (RS-232C).	EA-3CBL		
<i>Direct</i> LOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C).	EA-4CBL-1		
DirectLOGIC PLC 25-pin D-sub port, DL405, D3-350, DL305 DCU and all DCM's (RS-232C).	EA-4CBL-2		
Allen-Bradley MicroLogix 1000, 1100, 1200, 1400 & 1500 (RS-232C)	EA-MLOGIX-CBL		
Allen-Bradley SLC 5-03/04/05, ControlLogix, CompactLogix, FlexLogix DF1 port (RS-232C)	EA-SLC-232-CBL		
Allen-Bradley PLC-5 DF1 port (RS-232C)	EA-PLC5-232-CBL		
Allen-Bradley SLC 5-01/02/03, DH485 port	EA-DH485-CBL		
GE 90/30, 90/70, Micro 90, Versamax Micro (Port2) 15-pin D-sub port (RS-422A)	EA-90-30-CBL		
MITSUBISHI FX Series 25-pin port (RS-422A)	EA-MITSU-CBL		
MITSUBISHI FX Series 8-pin mini-DIN (RS-422A)	EA-MITSU-CBL-1		
OMRON Host Link (C200 Adapter, C500) (RS-232C)	EA-OMRON-CBL		



NOTE: See Chapter 6: PLC Communications for a detailed chart of PLC compatibility & cable connections. Chapter 6 includes wiring diagrams for end user construction of certain cables.

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Step 10 – Connect C-more Color Micro-Graphic Panel to PLC

Connect the serial communications cable between the *C-more* Micro-Graphic panel and the PLC. The panel can be connected to the PLC via the panel's built-in 15-pin serial communications port with either RS-232, RS-422 or RS-485 communications.



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SPECIFICATIONS

Available Models

The *C-more* Color Micro-Graphic panels expand the next generation of HMI panels brought to you by *AutomationDirect*. They have been designed to display and interchange graphical data from a PLC by viewing, using the function keys, or touching the screen. See **Chapter 3**: Accessories for details on the available accessories for the *C-more* Color Micro-Graphic panels.

C-more Color Micro-Graphic Panels				
Part Number	Number Description			
EA1-T4CL		4-inch <i>C-more</i> Micro-Graphic Touch Panel with TFT Color LCD, 320 x 240 dot, 32,768 color display with LED backlight. 5 user-defined function keys with LED indicators. Two built-in ports (USB Type-B port and 15-pin D-sub RS-232/422/485 port). Display supports portrait and landscape modes. NEMA 4/4X, IP65 (when mounted correctly; for indoor use only)		
EA1-T6CL		6-inch <i>C-more</i> Micro-Graphic Touch Panel with TFT Color LCD, 320 x 240 dot, 32,768 color display with LED backlight. 5 user-defined function keys with LED indicators. Two built-in ports (USB Type-B port and 15-pin D-sub RS-232/422/485 port). Display supports portrait and landscape modes. NEMA 4/4X, IP65 (when mounted correctly; for indoor use only)		





EA1-T4CL Specifications

Specifications				
Description:	320 x 240 dots LCD display (Landscape Mode), Five user defined keypad function buttons, and five user defined LED's			
Display:				
• Туре	4.1" TFT Color LCD, graphical characters			
 Resolution 	320 (W) x 240 (H) dots (Landscape Mode) 240 (W) x 320 (H) dots (Portrait Mode)			
• Color	327	68 colors		
 Display Brightness 	USB Bus Power (Programming)	High Power Mode		
(Reference)	180 nits (typ)	360 nits (typ)		
 Viewing Area Size 	3.357" (W) x 2.54" (H) [85.26 mm x 64.62 mm]			
Active Area Size	3.250" (W) x 2.438" (H) [82.56 mm x 61.92 mm]		
Brightness	Adjusted from the panel's I	puilt-in configuration setup menu		
 Viewing Angle (landscape mode) 	3, 9 o'clock axis -> 35 degrees 6 o'clock axis -> 50 degrees 12 o'clock axis -> 20 degrees			
Backlight:				
• Туре		LED		
• Color	White			
User Replaceable	No			
Touch Screen:				
●Туре	Analog touch	panel, single touch*		
Operation	82 gram force [0.8 N] maximum			
• Life	Minimum of 1,000,000 cycles			
Features:				
User Memory		76 kBytes		
Number of Screens	Up to 999 – limited	by project memory usage		
Beep (Internal)		Yes		
 Keypad Function Buttons 	Five user defined function key buttons with the ability to custom label with an overlay. Minimum of 500,000 cycles			
 Keypad Function Button LEDs 	Each function key button includes	a red LED that can be user programmed.		
 Programming Port 	USB Type B (USB 2.0 full speed mode 12 Mbps)			
 Serial Communications 	15-pin D-sub serial communications port (RS-232, RS-485 / 422).			
*Note: The Touchscreen is designed to respond to a single touch. If it is touched at multiple points at the same time, an unexpected object may be activated.				

Specification table continued at the top of the next page.

EA1-T4CL Specifications (cont'd)

Specifications (cont'd)				
Screen Objects:				
• Functional Devices	Push Button, Switch, Indicator Button, Indicator Light, Graphic Indicator Light, Numeric Display, Numeric Entry, Inc/Dec Value, Bar Graph, Bitmap Button, Static Bitmap, Dynamic Bitmap, Multi-State Bitmap, Recipe Button, Radio Button, Tri-State Button Static Text, Lookup Text, Dynamic Text, Scroll Text, Screen Change Push Button, Screen Selector, Adjust Contrast, Function Key Configuration Object, Real Time Graphics Line Graph, Analog Meter.			
 Static Shapes 	Lines, Rectangles,			
 Displayable Fonts 	Fixed fonts: 4x6, 6x6, 6x6B, 6x8, 8x16, 8x32, 8x64, 16x16, 16x32, 16x64, 32x16, 32x32, 32x64, and Windows fonts			
Electrical:				
	USB Bus Power (Programming)	High Power Mode		
 Input Voltage Range 	5.0 VDC (4.75 – 5.25 VDC)	12/24 VDC (10.2 – 26.4 VDC)		
 Input Power 	Supplied from a PC USB.	Supplied from an external 12-24 VDC class 2 power source		
 Power Consumption 	2W	4.5 W		
 Recommended Fuse 	No fuse required when directly connected to a PC with recommended cable.	Type AGC fast acting glass fuse, 750 mA, 250 VAC, ADC p/n AGC-75		
 Max.Inrush Current 	4.5 A for 800 μs	8 A for 800 µs		
 Acceptable External Power Drop Duration 	Maximu	m 1 ms		
Environmental:				
Operating Temperature	0 to 50 °C (32 to 122 °F) Maximum surrounding air temperature rating: 50 °C			
 Storage Temperature 	-20 to +60 °C (-4 to +140 °F)			
 Humidity 	5–95% RH (no	n-condensing)		
Environmental Air	For use in Pollution D	5		
 Vibration 	IEC60068-2-6 (Test Fc), 5-9 Hz: 3.5 mm amplitude, 9-150 Hz: 1.0G, sweeping, at a rate of 1 octave/min. (±10%), 10 sweep cycles per axis on each of 3 mutually perpendicular axes			
Shock	IEC60068-2-27 (Test Ea), 15 G peak, 11 ms duration, three shocks in each direction per axis, on 3 mutually perpendicular axes (total of 18 shocks)			
• Noise Immunity	NEMA ICS3-304 (EN61131-2) RFI, (145MHz, 440Mhz 10W @ 10cm) Impulse 1000V @ 1µS pulse EN61000-4-2 (ESD), EN61000-4-3 (RFI), EN61000-4-4 (FTB), EN61000-4-5 (Serge) EN61000-4-6 (Conducted), EN61000-4-8 (Power frequency magnetic field immunity)			
Enclosure	For use on a flat surface of Type 1, 4X enclosure (Indoor use only)			
 Agency Approvals 	CE (EN61131-2), UL508, CUL Canadian C22.2 No. 142-M95, UL File E157382, CSA File 234884			
Physical:				
• Dimensions	4.311" (W) x 4.362" (H) x 2.035" (D) [109.5 m 4.362" (W) x 4.311" (H) x 2.035" (D) [109.5	m x 110.8 mm x 51.7 mm] (Landscape Mode) mm x 110.8 mm x 51.7 mm] (Portrait Mode)		
 Enclosure Mounting Thickness Range 	0.04" – 0.2" [1 – 5 mm]			
Mounting Clip Screw Torque Range	21 – 28 oz-in [0.15 – 0.2 Nm]			
Weight	14.99 oz. (425 g)			

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EA1-T6CL Specifications

Specifications					
Description:	320 x 240 dots LCD display (Landscape Mode), Five user defined keypad function buttons, and five user defined LED's				
Display:					
• Туре	5.7" TFT Color LC	CD, graphical characters			
 Resolution 	320 (W) x 240 (H) 240 (W) x 320 (H	dots (Landscape Mode) H) dots (Portrait Mode)			
• Color		'68 colors			
 Display Brightness 	USB Bus Power (Programming)	High Power Mode			
(Reference)	45 nits (typ)	270 nits (typ)			
 Viewing Area Size 	4.574" (W) x 3.483"	(H) [116.2 mm x 87.4 mm]			
 Active Area Size 	4.535" (W) x 3.400"	(H) [115.2 mm x 86.4 mm]			
 Brightness 	Adjusted from the panel's I	built-in configuration setup menu			
 Viewing Angle (landscape mode) 	3, 9 o'clock a 6 o'clock ax 12 o'clock ax	xis -> 50 degrees is -> 50 degrees xis -> 45 degrees			
Backlight:					
• Туре		LED			
• Color	White				
 User Replaceable 	No				
Touch Screen:					
•Туре	Analog touch panel, single touch*				
 Operation 	82 gram force [0.8 N] maximum				
• Life	Minimum of 1,000,000 cycles				
Features:					
 User Memory 	3276 kBytes				
 Number of Screens 	Up to 999 – limited by project memory usage				
 Beep (Internal) 	Yes				
 Keypad Function Buttons 	Five user defined function key buttons with the ability to custom label with an overlay. Minimum of 500,000 cycles				
 Keypad Function Button LEDs 	Each function key button includes a red LED that can be user programmed.				
 Programming Port 	USB Type B (USB 2.0) full speed mode 12 Mbps)			
 Serial Communications 	15-pin D-sub serial communic	ations port (RS-232, RS-485 / 422).			
 Expansion Connection 		Bezels, EA-MG6-BZ2 & EA-MG6-BZ2P			
*Note: The Touchscreen is designed to respond to a single touch. If it is touched at multiple points at the same time, an unexpected object may be activated.					

Specification table continued at the top of the next page.

EA1-T6CL Specifications (cont'd)

Specifications (cont'd)				
Screen Objects:	Screen Objects:			
Functional Devices	• Functional Devices Push Button, Switch, Indicator Button, Indicator Light, Graphic Indicator Light, Numeric Display, Numeric Entry, Inc/Dec Value, Bar Graph, Bitmap Button, Static Bitmap, Dynamic Bitmap, Recipe Button, Static Text, Lookup Text, Dynamic Text, Screen Change Push Button Screen Selector, Adjust Contrast, Function, Key Configuration Object, Real Time Graphics Line Graph, Analog Meter.			
 Static Shapes 	Lines, Rectangles,	Circles and Frames		
 Displayable Fonts 	Fixed fonts: 4x6, 6x6, 6x6B, 6x8, 8x1 32x16, 32x32, 32x64	6, 8x32, 8x64, 16x16, 16x32, 16x64, , and Windows fonts		
Electrical:	-			
	USB Bus Power (Programming)	High Power Mode		
 Input Voltage Range 	5.0 VDC (4.75 – 5.25 VDC)	12/24 VDC (10.2 – 26.4 VDC)		
 Input Power 	Supplied from a PC USB.	Supplied from an external 12-24 VDC class 2 power source		
 Power Consumption 	2W	6.5 W		
 Recommended Fuse 	No fuse required when directly connected to a PC with recommended cable.	Type AGC fast acting glass fuse, 750 mA, 250 VAC, ADC p/n AGC-75		
 Max.Inrush Current 	4.5 A for 800 μs	13 A for 800 µs		
 Acceptable External Power Drop Duration 	Maximu	m 1 ms		
Environmental:				
Operating Temperature	0 to 50 °C (32 to 122 °F) Maximum surrounding air temperature rating: 50 °C			
 Storage Temperature 	-20 to +60 °C (-4 to +140 °F)			
 Humidity 	5–95% RH (non-condensing)			
 Environmental Air 	For use in Pollution Degree 2 environment			
 Vibration 	IEC60068-2-6 (Test Fc), 5-9 Hz: 3.5 mm amplitude, 9-150 Hz: 1.0G, sweeping, at a rate of 1 octave/min. $(\pm 10\%)$, 10 sweep cycles per axis on each of 3 mutually perpendicular axes			
 Shock 	IEC60068-2-27 (Test Ea), 15 G peak, 11 ms duration, three shocks in each direction per axis, on 3 mutually perpendicular axes (total of 18 shocks)			
 Noise Immunity 	NEMA ICS3-304 (EN61131-2) RFI, (145MHz, 440Mhz 10W @ 10cm) Impulse 1000V @ 1µS pulse EN61000-4-2 (ESD), EN61000-4-3 (RFI), EN61000-4-4 (FTB), EN61000-4-5 (Serge) EN61000-4-6 (Conducted), EN61000-4-8 (Power frequency magnetic field immunity)			
 Enclosure 	For use on a flat surface of Type 1, 4X enclosure (Indoor use only)			
 Agency Approvals 	CE (EN61131-2), UL508, CUL Canadian C22.2 No. 142-M95, UL File E157382 CSA 234884			
Physical:				
• Dimensions	6.850" (W) x 5.331" (H) x 2.130" (D) [174.0 mm x 135.4 mm x 54.1 mm] (Landscape Mode) 5.331" (W) x 6.850" (H) x 2.130" (D) [135.4 mm x 174.0 mm x 54.1 mm] (Portrait Mode)			
 Enclosure Mounting Thickness Range 	0.04" – 0.2"	0.04" – 0.2" [1 – 5 mm]		
 Mounting Clip Screw Torque Range 	21 – 28 oz-in [0.15 – 0.2 Nm]		
Weight	29.63 oz. (840 g)			

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EA1-T4CL Panel Dimensions

Panel Dimensions

Units: Inches [mm]



CPAS

Enclosure Thickness



Mounting Clip Screw Torque



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EA1-T6CL Panel Dimensions



2

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2

Communications Port



VICPAS

RS-232/422/485

Chemical Compatibility

The *C-more* Micro-Graphic panels and accessory bezels are made of three materials that may be exposed to elements outside of the enclosure. The structural hard plastic of the panels and accessory bezels is ABS plastic. The gasket is silicone rubber. The overlay sheet for all 3" panels, 4" panels and accessory bezels is PET. For EA1-S6ML and EA1-S6MLW panels, the panel overlay sheet from original manufacture until January 2013 is PC. For EA1-S6ML and EA1-S6MLW panels with a manufacture date January 2013 and later, the panel overlay sheet is PET. For EA1-T6CL panels, the panel overlay sheet from original manufacture until February 2013 is PC. For EA1-T6CL panels with a manufacture date February 2013 and later, the panel overlay sheet is PET.



CHAPTER 3

ACCESSORIES

In this Chapter...

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20-Button Landscape (Horizontal) Keypad Bezel for 6-inch Panels	3-6
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D-SUB 15-pin 90-degree Communication Port Adapter	3-12
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Clear Screen Overlay	3-13

Accessories

Micro-Graphic Programming Software & Programming Cable		
Part Number		Description
EA-MG-PGMSW		C-more Micro-Graphic panel Windows-based configuration software. Requires Windows 2000 with Service Pack 4, XP Home or Professional with Service Pack 2, Windows Vista or Windows 7. Requires USB port connection from PC to touch panel. Includes CD-ROM. Programming cable sold separately. Downloadable version available from the Web site at no charge. Software Help Files included in download.
USB-CBL-AB6		Standard USB 2.0 cable with Standard-A plug to Standard-B plug, suitable for all USB devices. 6 ft. (1.8 m) cable shown as example. Maximum cable length is 15 ft (4.5 m).

	Micro-Graphic Panel Accessory for 4-inch Panel		
Part Number		Description	
EA-4-COV2		Optional clear screen overlay used to protect <i>C-more</i> 4" Micro-Graphic displays from minor scratches and wear. Package contains 3 clear screen overlays.	

	Micro-Graphic Panel Accessories for 6-inch Panels		
Part Number	-	Description	
EA-MG6-BZ2		For Landscape (Horizontal) Mounted Panels. 20-button keypad bezel with numeric keypad for <i>C-more</i> 6" Micro-Graphic panels, 4 arrow adjust keys, and ESCAPE, MENU, CLEAR and ENTER buttons. Helps to reduce screen wear in heavy-duty applications where operators can use the keypad to enter numeric data. Designed for easy drop-in of the Micro-Graphic panels.	
EA-MG6-BZ2P		For Portait (Vertical) Mounted Panels. 21-button keypad bezel with numeric keypad for <i>C-more</i> 6" Micro-Graphic panels, 4 arrow adjust keys, and ESCAPE, MENU, CLEAR and (2) ENTER buttons. Helps to reduce screen wear in heavy-duty applications where operators can use the keypad to enter numeric data. Designed for easy drop-in of the Micro-Graphic panels.	
EA-6-COV2		Optional clear screen overlay used to protect <i>C-more</i> Micro-Graphic displays from minor scratches and wear. Package contains 3 clear screen overlays.	



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C-more Micro-Graphic Programming Software

C-more[®] Micro-Graphic Programming Software is a spin-off of its powerful sibling *C-more* Touch Panel programming software. It offers very high end features designed to reduce your configuration time. Simply drag and drop the objects from the object bar (right side of screen) onto the the screen construction area. Then



configure your PLC tags and click on the objects you wish to use. Use the built-in simulator to review your work on your PC before ever downloading your project!



NOTE: Software and Firmware Version 3.0 or later is required with model EA1-T4CL. Version 2.5 or later is required with model EA1-T6CL. Available for free download at **www.automationdirect.com**.

Thumbnail project preview pane

Helps keep track of multi-screen projects.

Built-in user object/screen libraries

Save time by re-using your custom objects and screens.

Scrolling object selection window

Lets you find the object you want fast. Just drag and drop it on the screen.

Scrolling help window

Gives you helpful information on each object

Built-in project simulator

- Runs your project on your PC
- Test all of your screens before downloading
- Time savings pays for the panel

PC Requirements:

Following are the minimum system requirements for running *C-more* Micro-Graphic Programming Software, EA-MG-PGMSW, on a PC:

- Operating System Windows® XP Home / Professional Edition Service Pack 2, Windows® 2000 with Service Pack 4, Windows® Vista (32 and 64 bit), Windows® 7 (32 and 64 bit), Windows 8 (32 and 64 bit)
- Keyboard and Mouse or compatible pointing device
- Super VGA color video adapter and monitor with at least 800 x 600 pixels resolution (1024 x 768 pixels recommended) 64K color minimum
- 150 MB free hard-disk space
- 128 MB free RAM (512 MB recommended); 512 MB free RAM (1GB recommended) for Vista
- CD-ROM or DVD drive for installing software from the CD, or internet access to download free programming software
- USB port for project transfer from software to touch panel



Micro-Graphic Programming Software (cont'd)

C-more Micro-Graphic Panel Objects			
Object	Graphic	Object	Graphic
The Line object, just like with drawing tools, allows the user to insert a straight line drawing into a project. When a Line is inserted into a project, a window opens to allow the user to setup all available parameters for the Line object. Some of the uses for Line Objects include but are not limited to adding callouts, pointers, or indicators.		The Graphic Indicator Light object is a more enhanced version of the "Indicator Light Object" that allows the user to choose more detailed graphics to display the status of a tag. This object is an electronic version of a typical Indicator Light normally found on industrial control panels. The Indicator Light can be configured to display the status of the assigned Discrete Tag Name.	ö X A
The Rectangle object, just like with drawing tools, allows the user to insert a drawing of a Rectangle as well as other geometric shapes into a project. When this object is inserted into a project, a window opens to allow the user to setup all available parameters for the Rectangle object.		The Numeric Display consists of a frame that displays a real-time numeric value according to the value of data received from an assigned Tag Name. The Numeric Display supports numeric Signed Decimal, Unsigned Decimal, BCD, and Floating Point data types with up to 11 digits, including decimal point. User Defined Alpha Numeric Prefix and Suffix values are also supported.	1234512345
The Circle object, just like with drawing tools, allows the user to insert a drawing of a Circle or ellipse shape into a project. When this object is inserted into a project, a window opens to allow the user to setup all available parameters for the Circle object.		The Numeric Entry object is used to enter a value from your Panel to a PLC Register. This object, when selected, opens a Numeric Keypad that allows the user to enter a new value that will be written to the assigned Tag Name. The Numeric Entry supports numeric Signed Decimal, Unsigned Decimal, BCD, and Floating Point data types with up to 11 digits, including decimal points. User Defined Alpha Numeric Prefix and Suffix values are also supported.	1234512345
The Frame object allows the user to insert a Frame to the project that can be used to Frame other objects. Some of the uses for Frame object include but are not limited to graphically separating objects for different operations that may appear on one screen and emphasizing pushbuttons or other objects that may require more attention by the operator.		The Increment/Decrement Value object is used to add or subtract a value by pressing a button on the Panel. Basically the object uses two Tags, one to read a value from and another to write a modified value to. The Increment/Decrement Value supports numeric Signed Decimal, Unsigned Decimal, BCD, and Floating Point data types with up to 11 digits, including decimal points. The Increment and decrement values are also user selectable.	
The Pushbutton object is available from the Button Category of the Object List window. The Pushbutton object is an electronic version of a typical Pushbutton normally found on control panels. The Pushbutton object can be used to activate or deactivate components assigned to a Discrete Tag Name.	On	The Real Time Graph object displays the value stored in up to eight PLC tags, over a history of up to 24 points each. One point is added at each refresh.	188 4 50
The Switch object is an electronic version of a typical Switch that normally can be found on control panels. The Switch object can be used to activate or deactivate components assigned to a Discrete Tag Name.		The Line Graph object displays the values of up to 24 PLC address points. Up to eight address arrays can be displayed. The line is drawn in its entirety at each refresh.	180 4 50
The Radio Button object is an electronic version of a set of buttons that have a similar appearance to the classic radio tuning buttons. The Radio Button allows a minumum of two buttons and a maximum of eight buttons. The operation of Radio Buttons only allows one button to be On at a time.	$ \begin{array}{c} 0n \\ \#1 \end{array} $	The Analog Meter object is used to display the current value of a Tag Name.	2000 2000 2000 2000 2000 2000 2000 200
The Indicator Button object is available from the Button Category of the Object List window. The Indicator Button object is an electronic version of a typical Indicator Button normally found on control panels. The Indicator Button is a combination of a Pushbutton and an Indicator Light. The Indicator Button can be used to activate or deactivate components assigned to a Discrete Tag Name.		The Bar Graph object is used to monitor up to two assigned Tag Names continuously. This object has various appearances depending upon the relative value of the tags. The Bar Graph can be used to create digital versions of level, current, and flow meters to name a few samples, or gauges that measure speed and other measurable data.	99999 5000 0
The Tri-State Switch Object consists of a set of three Pushbuttons that allow to configure the first button to the left as a Reset that turns the other two buttons Off, and configure the other two buttons with individual Discrete Tag Names.	But But But	The Bitmap Button object offers the ability to use a Bitmap graphic to perform the functions of a Button. This allows users to create their own graphics and implement them within the software project. The Bitmap Button object can be used to activate or deactivate components assigned to a Discrete Tag Name.	
The Indicator Light object is an electronic version of a typical Indicator Light normally found on industrial control panels. The Indicator Light can be configured to display the status of the assigned Discrete Tag Name.		The Static Bitmap offers the ability to display a Bitmap graphic on any screen. The Static Bitmap does not change state. Refer to the Dynamic Bitmap Object if you require the graphic object to change state based on a Tag Value in your PLC. The dialog box for a "Static Bitmap" object allows you to "read from disk" and select a graphic file for import. Graphics must be in one of the following formats: .BMP IWMF .JPG .JPEG	

C-more Micro-Graphic Panel Objects continued at top of next page.

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Micro-Graphic Programming Software (cont'd)

C-more Micro-Graphic Panel Objects			
Object	Graphic	Object	Graphic
The Dynamic Bitmap object offers the ability to make an object using two different Bitmap graphics that will display one graphic when the Tag is On and a different graphic when the Tag is Off. Use your own bitmap designs or use some of the bitmaps provided with the software that are located in the User Graphic Library.	Auto Auto	The Scroll Text object is available from the Text Category of the Object List window. The Scroll Text object is an electronic version of a marquee. It is similar to the Static Text Object. If the text in the object does not fit in the window, it will scroll from right to left across the window. The Scroll Text object does not require a Tag Name assignment. The Scroll Text Object has a maximum character limit of 128 characters.	ScrollText
The Multi-State Bitmap (version 2.50 and later) displays one of up to 16 images based on the status of a tag value assigned to each image. It can be used to create animation.	W	The Screen Change Pushbutton object is available from the Control Category of the Object List window. The Screen Change Pushbutton object is a pushbutton that can be configured to activate another screen in the project. This object may be edited to various colors and sizes. Users can configure the button to activate the Power-Up screen, Forward Screen, Previous Screen, or any one of the project screens.	Screen
Recipe objects make it easy to make a large number of tag changes with the push of a single button. Create Recipes with up to 99 entries, and multiple sets of values. Then just push a button to load an entire set of values into the group of recipe tags.	DECIDE	The Screen Selector object is available from the Control Category of the Object List window. This object is an enhanced version of the Screen Change pushbutton in that it offers many more features and defaults with data from screens in the project. This helps to save time by not having to create Screen change buttons for each screen. This object may be edited to various colors and sizes.	
The Static Text object is used to display a Frame with a personalized Message. This Frame and Message can be placed on any screen and any location within the screen.		The Adjust Contrast object is used to allow the operator to adjust the Panel Display Contrast. The default Display setting often works in most applications, however lighting may vary based on the location of each application. In these cases the operator can use this object to make adjustments. The current display setting value will appear on the top of the button and will change as the arrow keys are pressed. This button can be modified to various sizes.	
The Lookup Text object is used to display a Frame with a personalized Message. This Frame and Message can be placed on any screen and any location within the screen. The object is always displayed like a sign but is configured to display only the message prompted by an assigned Tag Name. Messages are retrieved from a Message Database which is configured by the user with text defined by the user. The Lookup Text Object will scroll text up to 128 characters.	LOOK UP TEXT	The Function object is used to assign the panels function key buttons to a particular action as well as assigning the control of the LED On/Off status. When a button has been assigned as a shift button, the then F1 through F5 will become F6 through F10. The Function Object buttons will activate when the hardware button is pressed or when the object is pressed on the screen. The object size is restricted so that the keys will line up with the hardware function keys on the panel.	P1 P2 F8 74 P1
The Dynamic Text object is used to display text that is retrieved from data stored in a Tag. The Tag Name is assigned to registers in the PLC in that contain set character data. The data can be stored in the PLC in ASCII format and may include information such as machine numbers, locations, part numbers, and such. The Message can be configured to be visible (Trigger) when an associated Tag Name is On or Off. This object can be placed on any screen and any location within the screen. The Dynamic Text Object will scroll text up to 40 characters.	DynamicText		

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3-5

20-Button Landscape (Horizontal) Keypad Bezel for 6-inch Panels

The 20-button keypad bezel is designed to be used with the *C-more* 6" Micro-Graphic panels. The keypad includes four directional arrow cursor buttons, a full numeric keypad, and one each of an ESCAPE, MENU, CLEAR and ENTER button. The keypad is intended to be used with the numeric entry object to allow changing of a value, and can also be used to navigate & select screen objects. The numeric buttons can be used to enter a new value, or use the cursor left and right buttons to select a digit and the cursor up and down buttons to change the value, along with the ENTER and CLEAR buttons. It can also be used to access and navigate the screen selector feature. The keypad bezel is designed for easy drop-in of a *C-more* 6" Micro-Graphic panel. No panel configuration is required.



20-Button Keypad Bezel continued at top of next page.

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20-Button Landscape (Horizontal) Keypad Bezel for 6-inch Panels (cont'd)

20-Button Keypad Bezel Specifications			
Part Number:	EA-MG6-BZ2		
General:	eneral:		
 Micro-Graphic Panels Supported 	EA1-S6ML, EA1-S6MLW, EA1-T6CL		
Connection	Connects with expansion connector on the rear of the <i>C-more</i> 6" Micro-Graphic panel.		
 Power Consumption 	None		
 Keypad Button Life 	Minimum of 500,000 cycles		
e Engloquire Mounting	(8) mounting clips, EA-MG-BZ2-BRK, included.		
Enclosure Mounting	Note: The <i>C-more</i> 6" Micro-Graphic panel is installed into the keypad bezel using the (4) mounting clips, EA-MG-BZ2-BRK, that are supplied with the panel.		
Environmental:			
Operating Temperature	0 to 50 °C (32 to 122 °F) Maximum surrounding air temperature rating: 50 °C		
 Storage Temperature 	-20 to 60 °C (-4 to 140 °F)		
• Humidity	5 to 95 % RH (non-condensing)		
 Environmental air 	For use in Pollution Degree 2 environment		
• Vibration	IEC60068-2-6 (Test Fc), 5-9 Hz: 3.5 mm amplitude, 9-150 Hz: 1.0G, sweeping, at a rate of 1 octave/min. (\pm 10%), 10 sweep cycles per axis on each of 3 mutually perpendicular axes		
• Shock	IEC60068-2-27 (Test Ea), 15 G peak, 11 ms duration, three shocks in each direction per axis, on 3 mutually perpendicular axes (total of 18 shocks)		
 Noise Immunity 	NEMA ICS3-304 RFI, (145 MHz, 440 Mhz 10 W @ 10 cm) Impulse 1000 V @ 1 μs pulse		
 Enclosure 	For use on a flat surface of Type 1, 4X enclosure (Indoor use only)		
Agency Approvals	CE (EN61131-2), UL508, CUL Canadian C22.2 No. 142-M95, UL File E157382		
Physical:			
• Dimensions	10.000" (W) x 6.394" (H) x 2.488" (D) [254.0 mm x 162.4 mm x 63.2 mm]		
• Weight	26.1 oz. [740 g]		



20-Button Keypad Bezel continued at top of next page.



20-Button Horizontal (Landscape) Keypad Bezel for 6-inch Panels (cont'd)

Panel and 20-Button Keypad Bezel Assembly





NOTE: Mounting clips for the panel and keypad bezels are included with the respective product.

21-Button Portrait (Vertical) Keypad Bezel for 6-inch Panels

The 21-button keypad bezel is designed to be used with the *C-more* 6" Micro-Graphic panels. The keypad includes four directional arrow cursor buttons, a full numeric keypad, and one each of an ESCAPE, MENU, CLEAR and two ENTER buttons. The keypad is intended to be used with the numeric entry object to allow changing of a value, and can also be used to navigate & select screen objects. The numeric buttons can be used to enter a new value, or use the cursor left and right buttons to select a digit and the cursor up and down buttons to change the value, along with the ENTER and CLEAR buttons. It can also be used to access and navigate the screen selector feature. The keypad bezel is designed for easy drop-in of a



21-Button Keypad Bezel continued at top of next page.

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21-Button Vertical (Portrait) Keypad Bezel for 6-inch Panels (cont'd)

21-Button Keypad Bezel Specifications			
Part Number:	EA-MG6-BZ2P		
General:	General:		
 Micro-Graphic Panels Supported 	EA1-S6ML, EA1-S6MLW, EA1-T6CL		
 Connection 	Connects with expansion connector on the rear of the <i>C-more</i> 6" Micro-Graphic panel.		
 Power Consumption 	None		
 Keypad Button Life 	Minimum of 500,000 cycles		
	(8) mounting clips, EA-MG-BZ2-BRK, included.		
Enclosure Mounting	Note: The <i>C-more</i> 6" Micro-Graphic panel is installed into the keypad bezel using the (4) mounting clips, EA-MG-BZ2-BRK, that are supplied with the panel.		
Environmental:			
Operating Temperature	0 to 50 °C (32 to 122 °F) Maximum surrounding air temperature rating: 50 °C		
Storage Temperature	-20 to 60 °C (-4 to 140 °F)		
Humidity	5 to 95 % RH (non-condensing)		
 Environmental air 	For use in Pollution Degree 2 environment		
Vibration	IEC60068-2-6 (Test Fc), 5-9 Hz: 3.5 mm amplitude, 9-150 Hz: 1.0G, sweeping, at a rate of 1 octave/min. (±10%), 10 sweep cycles per axis on each of 3 mutually perpendicular axes		
• Shock	IEC60068-2-27 (Test Ea), 15 G peak, 11 ms duration, three shocks in each direction per axis, on 3 mutually perpendicular axes (total of 18 shocks)		
 Noise Immunity 	NEMA ICS3-304 RFI, (145 MHz, 440 Mhz 10 W @ 10 cm) Impulse 1000 V @ 1 μs pulse		
 Enclosure 	For use on a flat surface of Type 1, 4X enclosure (Indoor use only)		
Agency Approvals	CE (EN61131-2), UL508, CUL Canadian C22.2 No. 142-M95, UL File E157382		
Physical:			
• Dimensions	6.394" (W) x 10.000" (H) x 2.488" (D) [162.4 mm x 254.0 mm x 63.2 mm]		
• Weight	26.1 oz. [740 g]		
C-more 6" Micro Graphic Panel			

C-more 6" Micro Graphic Panel installed in a 21 button Keypad bezel EA-MG6-BZ2P



21-Button Keypad Bezel continued at top of next page.

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21-Button Vertical (Portrait) Keypad Bezel for 6-inch Panels (cont'd)

CPAS

Panel and 21-Button Keypad Bezel Assembly





NOTE: Mounting clips for the panel and keypad bezels are included with the respective product.



D-SUB 15-pin 90-degree Communication Port Adapter

The EA-ADPTR-4 adapter plugs into the 15-pin serial port on the rear of the *C-more* Micro panel to allow a PLC communication cable to be plugged in at a 90 degree angle to reduce panel depth requirements. 15-pin straight through pin-out. UL Recognized.



D-SUB 15-pin to Terminal Block Adapter

The EA-COMCON-3 adapter plugs into the 15-pin serial port on the rear of the *C-more* Micro panel to allow wire terminal connections for an RS-422/RS-485/DH-485 PLC communication cable. UL Recognized.



3

Clear Screen Overlay

Optional clear screen overlays are used to protect *C-more* Micro-Graphic displays from minor scratches and wear. Package contains three clear screen overlays.

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carefully removed. If your panel is not clear, the protective sheet may not have been removed.

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Introduction	4-3
Panel Cutout Dimensions	4-4
Wiring Guidelines	4-5

Safety Guidelines

NOTE: Products with CE marks perform their required functions safely and adhere to relevant standards as specified by CE directives provided they are used according to their intended purpose and that the instructions in this manual are adhered to. The protection provided by the equipment may be impaired if this equipment is used in a manner not specified in this manual. A listing of our international affiliates is available on our Web site: http://www.automationdirect.com



WARNING: Providing a safe operating environment for personnel and equipment is your responsibility and should be your primary goal during system planning and installation. Automation systems can fail and may result in situations that can cause serious injury to personnel or damage to equipment. Do not rely on the automation system alone to provide a safe operating environment. You should use external electromechanical devices, such as relays or limit switches, that are independent of the PLC application to provide protection for any part of the system that may cause personal injury or damage. Every automation application is different, so there may be special requirements for your particular application. Make sure you follow all national, state, and local government requirements for the proper installation and use of your equipment.

Plan for Safety

The best way to provide a safe operating environment is to make personnel and equipment safety part of the planning process. You should examine *every* aspect of the system to determine which areas are critical to operator or machine safety. If you are not familiar with control system installation practices, or your company does not have established installation guidelines, you should obtain additional information from the following sources.

• NEMA — The National Electrical Manufacturers Association, located in Washington, D.C. publishes many different documents that discuss standards for industrial control systems. You can order these publications directly from NEMA. Some of these include:

ICS 1, General Standards for Industrial Control and Systems

ICS 3, Industrial Systems

ICS 6, Enclosures for Industrial Control Systems

- NEC The National Electrical Code provides regulations concerning the installation and use of various types of electrical equipment. Copies of the NEC Handbook can often be obtained from your local electrical equipment distributor or your local library.
- Local and State Agencies many local governments and state governments have additional requirements above and beyond those described in the NEC Handbook. Check with your local Electrical Inspector or Fire Marshall office for information.



Introduction

The installation and wiring of *C-more* Micro-Graphic panels require selecting an appropriate location for the panel, laying out the cutout dimensions on the surface of the control cabinet that the panel will be mounted through, securing the panel with the provided mounting clips, tightening the screws to the appropriate torque rating to assure the gasket is sealing correctly, and finally connecting the appropriate power source to the panel.

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NOTE: Each **C-more** Micro-Graphic panel is provided with a cutout template to simplify marking the proper cutout size on the surface of the control cabinet that the panel will be mounted through. The keypad bezels are also provided with an appropriate cutout template for mounting convenience.

The *C-more* 4" and 6" Micro-Graphic panels include four mounting clips. They are fitted to the panel by inserting two tabs into mating slots on the panel and then sliding the clip into a narrower slot to secure it in place.

If using a 6" panel with a Keypad Bezel, then install the panel into the keypad bezel and secure with the mounting clips that are provided with the panel to seal the panel gasket. Create a cutout in the enclosure that the assembled panel and keypad bezel will be mounted through and secure the assembly with the mounting clips that are provided with the keypad bezel. See **Chapter 3: Accessories** for additional details.

Mounting Clips EA-MG-BZ2-BRK





NOTE: The 4" Micro-graphic panel (EA1-T4CL), **C-more** 6" Micro-Graphic panels (EA1-T6CL, EA1-S6ML & EA1-S6MLW), 20-Button Keypad Bezel (EA-MG6-BZ2) and 21-Button Keypad Bezel (EA-MG6-BZ2P) use the same type of mounting clip (EA-MG-BZ2-BRK).

Panel Cutout Dimensions

The *C-more* 4" and 6" Micro-Graphic panels are mounted into a cutout through the control cabinet and secured with four (4) mounting clips. The mounting clips are provided with the panel. There are slots on each side of the panel's long dimension that the two tabs on each mounting clip will match. The mounting clips are held in place by inserting the tabs into the "T" shaped holes (slots) and then moving the mounting clip toward the rear of the panel to keep it in place. Next tighten the mounting clip screws to pull the rear of the panel's bezel to the control cabinet's mounting surface. The screws need to be tightened to the torque rating shown in the illustration below so that the gasket is compressed to form the proper seal between the panel and cabinet surface.



NOTE: In all installations, a 1.2" [30mm] minimum clearance is required inside an enclosure for proper ventilation of the **C-more** Micro-Graphic panel.

MOUNTING CLIP

Enclosure Mounting Thickness Ranges and Mounting Bracket Screw Torque



Wiring Guidelines

WARNING: To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes. Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call us at 1-800-633-0405 or 770-844-4200. This publication is based on information that was available at the time it was printed. At Automationdirect.com® we constantly strive to improve our products and services, so we reserve the right to make changes to the products and/or publications at any time without notice and without obligation. This publication may also discuss features that may not be available in certain revisions of the product.

Providing Power to the C-more Color Micro-Graphic Panel

- 1.) During operation, the panel is powered by a minimum 1 Amp 12 24 VDC class 2 power source. Recommended power supplies are AutomationDirect part number PSC-12-015 or PSC-24-030.
- 2.) The *C-more* Color Micro-Graphic panel can be powered during programming from the PC through a USB Programming Cable such as USB-CBL-AB6. When powered from the PC, the panel will operate in Low-Power mode and the screen brightness is diminished.

Panel Powered from an external DC Power Supply – Wiring Diagram



Tightening Torque	
Power supply wire connection	1.7 lb-in (0.2 Nm)

Required Wire Specification		
Supported temperature	Over 60 °C	
Wire Material	Copper	
Wire Size	16 - 22 AWG	

NOTE: Recommended DC power supply, AutomationDirect Part No. PSC-12-015 or PSC-24-030.



NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness





System Setup Screens

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Introduction

The *C-more*[®] Micro-Graphic panels include a series of built-in System Setup Screens that allow the user to view detailed information about the panel, adjust features, test various functions of the panel, clear memory, and reset all values and conditions back to the original factory defaults.

The following is presented to give the user a detailed step by step look at:

- How to access the System Setup Screens
- What adjustments and features are available
- When and why the feature may need to be adjusted or used
- · How to adjust and/or interrupt the features

The System Setup Screens are split into three categories to make it easy for the user to view information, make adjustments, or test the panel. The three Setup Menu selections are:

Information

Here you will find the panel model number, detailed information about the panel's available memory and usage, the protocol being used by the panel, if an optional keypad bezel is installed and version information for the firmware and boot loader.

Setting

This is the area for adjusting the brightness of the display, enabling or disabling the internal beeper, calibrating the touch panel, clearing the user memory, resetting all of the settings back to the factory defaults, and setting the loading screen hourglass icon delay time or disabling the display of the hourglass icon.

The Setting factory default values are:

- Brightness value of 10
- The internal audible beeper enabled
- Forced touch panel calibration
- User program cleared from memory
- Hourglass icon delay of 350 ms.
- Horizontal display area orientation

Test Menu

The test menu includes options to initiate communication tests of the serial port, to test communications with the PLC, to test operation of the panel's beeper and to test the touch panel surface. Refer to the serial port loop back test section of this chapter for details on loop back connector wiring.



Accessing the System Setup Screens

To access the **Setup Menu** of the panel **System Setup Screens**, press the panel's BAK [F1] and ENT [F5] function keys simultaneously for three (3) seconds as shown below. The **System Setup Screens' Setup Menu** will be displayed as shown at the bottom of this page.

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Press both the F1 and F5 function keys simultaneously for 3 seconds to bring up the System Setup Screens' Setup Menu.





EA1-T6CL Portrait Mode



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VICPAS HWI Parts Center

System Setup Screens Flowchart



Setup Menu



To navigate the different selections under the Setup Menu, use the function keys BAK [F1] to return to the project screen or previous screen, UP [F3] to cursor up, DWN [F4] to cursor down, and ENT [F5] to enter a selection.

Pressing ENT [F5] with **Information** highlighted will take you to the **Information** menu screen. See page 5-6.



Pressing ENT [F5] with **Setting** highlighted will take you to the **Setting** menu screen. See page 5-7.



Pressing ENT [F5] with **Test Menu** highlighted will take you to the **Test Menu** screen. See page 5-15.



Pressing ENT [F5] with Exit highlighted will allow the used to decided whether to Exit or not Exit the System Setup Screens. See page 5-18.

Information Menu



Pressing ENT [F5] with Memory highlighted will show the total memory available, memory usage and free memory available for the project.





Pressing ENT [F5] with **Protocol** highlighted will show the PLC Protocol that has been assigned to the panel and the protocol version.





Pressing ENT [F5] with Extensions highlighted will show if an optional keypad bezel is installed on the panel. The example here shows the EA-MG6-BZ2.





Pressing ENT [F5] with Versions highlighted will show the panel model, firmware and boot loader versions.*



NOTE: Software and Firmware Version 3.0 or later is required with model EA1-T4CL. Version 2.5 or later is required with model EA1-T6CL. Available for free download at **www.automationdirect.com**.

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Setting Menu



Use the UP [F3] and DWN [F4] function keys to scroll through the list of settings. The BAK [F1] function key will return you to the previous screen. Use the ENT [F5] function key to make your selection once you have the setting highlighted.

The Setting screen includes the following:

Brightness - page 5-7 Touch/Key Beep – page 5-8 Calibration – page 5-9 Clear User Memory – page 5-10 Reset to Factory Default – page 5-10 Hourglass – page 5-11 Rotation – page 5-12

Setting – Brightness



With **Brightness** highlighted, press ENT [F5] to bring up the screen showing the current value. The default is 10. The contrast can be adjusted between 1 and 16, with 1 being the least contrast and 16 being the greatest.





NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.

Setting - Touch/Key Beep



With Touch/Key Beep highlighted, press ENT [F5] to show the current value for the internal beeper. The default is ON. The UP [F3] and DWN [F4] function keys can be used to toggle between the ON and OFF state for the beeper (enable or disable). Use the APL [F5] function key to apply the selection.





NOTE: Loading a project to the panel will override whatever selection is chosen for the beeper from the System Setup Screens' Beep on/off selection screen. The Beep on/off choice can be changed through the System Setup Screens **after** a project is loaded.



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Setting – Calibration



With Calibration highlighted, press ENT [F5] to bring up the first calibration screen as shown on the right. Touch the "cross" in the upper left corner as accurately as you can. When the screen is touched, the cross will move to each corner and finally to the center of the screen. If the touch points are within the built-in calibration tolerance, the final screen will allow you to either save and quit from the calibration procedure, or allow you to retry. If the points that were touched are not within the calibration tolerance, you will be returned to the first calibration screen and will need to start over.







Setting – Clear User Memory



With Clear User Memory highlighted, press ENT [F5]. You will be given the choice to either proceed with clearing the user memory by pressing [F5] for YES or allowed to cancel by pressing [F1] for NO.



Setting - Reset to Factory Default



With Reset to Factory Default highlighted, press ENT [F5]. Press [F5] to restore all settings to factory defaults and clear user memory. Press [F1] to cancel.



Factory default values can also be reset by pressing F2 and F4 while cycling power to the panel. The Factory Default values are:

- Brightness value of 10
- The internal audible beeper enabled
- Forced touch panel calibration
- User program cleared from memory
- Hourglass icon delay of 350 ms.
- Horizontal orientation



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NOTE: User memory is cleared when factory defaults are reset. Use the C-more Micro-Graphic programming software to read the program from the panel iand save a backup copy.
VICPAS HMI Parts Center

Setting – Hourglass



The Hourglass selection listed under the Setting menu can be used to either disable the display of the hourglass icon or set the amount of delay time (0 ms to 1000 ms) desired before it is displayed.

With Hourglass highlighted, press ENT [F5]. The UP [F3] and DWN [F4] function keys scroll through the selections. Use the APL [F5] function key to apply the selection.

Explanation: An hourglass icon is displayed on the panel anytime a new screen is being loaded until communication is established with the new screen. If communication is established before the delay has timed out, no hourglass will be displayed. The hourglass icon can also be disabled from being displayed.





Hourglass Icon



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Setting – Rotation



With Rotation highlighted, press ENT [F5] to show the current orientation. Press UP [F3] and DWN [F4] to toggle between the portrait (vertical) and landscape (horizontal) orientation. Use the APL [F5] function button to apply the selection.







Note: Loading a project to the panel will override the orientation choosen from the System Setup Screens' Rotation selection screen. The selected orientation is displayed only when in the System Setup Screens.





Test Menu



Use the UP [F3] and DWN [F4] function keys to scroll through the list of tests. The BAK [F1] function key will return you to the previous screen. Use the ENT [F5] function key to make your selection once you have the test highlighted.

Serial Port - Loop Back Test - page 5-14

PLC Enquiry Test - page 5-15

Buzzer Test - page 5-15

Touch Panel Test - page 5-16

Test Menu – Serial Port - Loop Back Test







With Serial Port - Loop Back Test highlighted, press ENT [F5] to bring up the screen shown to the right. At this point, either connect the RS-232 loop back connector or the RS-422/485 loop backconnector, depending on which type of communications connection is being used, and press ENT [F5] to start the test. If the test is passing, the Receive Counts will equal the Bytes Sent. If the serial port is not working, then the Error Counts will equal the Bytes Sent. The RTS/CTS signals will also show either pass or fail as shown to the right. The test will continue until the BAK [F1] key is pressed.







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Test Menu – PLC Enquiry Test





With PLC Enquiry Test highlighted, press ENT [F5] to bring up the screen shown to the right. If the PLC is connected to the panel, press ENT [F5] to start the test. Four data tests will be performed and indicated as either Test Passed or Test Failed as shown on this page. The BAK [F1] key can be pressed to cancel the test and/or returned to the previous screen.

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Test Menu – Buzzer Test



With **Buzzer Test** selection highlighted, press ENT [F5] to run the test on the internal audible beeper. The beeper will sequence up the scale through eight notes and then start over. The BAK [F1] key can be pressed to cancel the test.



NOTE: The beeper tone is not selectable. The beeper function can not be turned on or off from this screen, refer to the Setting menu.



NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.



Test Menu - Touch Panel Test



With Touch Panel Test highlighted, press ENT [F5] to bring up the screen shown to the right. Touch any area of the screen to visualize the active area of the touch screen. If the touch panel area is working properly, the screen will blacken at the area touched. Use this test to identify any area that is not responding properly. Press any key [F1 to F5] to return to the Test Menu.



Test Menu - Display Test



With **Display Test** highlighted, press ENT [F5] to bring up the screen shown to the right. After a few seconds a scrolling RGB color test will begin. Use this test to identify any area that is displaying colors incorrectly. Press any key [F1 to F5] to return to the Test Menu.





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Exit



With Exit highlighted, press ENT [F5] to bring up the screen shown to the left. You will be given the choice to either proceed with exiting the System Setup Screens by pressing [F5] for YES or allowed to cancel by pressing [F1] for NO. You will be returned to the project screen if answering YES.

If there is no user program loaded into the panel, then a NO USER PROGRAM message as shown to the left will be displayed.







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RS-485A Multi-Drop Wiring Diagram Example	6-36

Introduction

The *C-more*[®] Color Micro-Graphic panels are capable of communicating with AutomationDirect Productivity Series, Do-more, CLICK, SOLO, GS Drives and the entire *Direct*LOGIC family of PLCs. The panel is capable of communicating using RS232, RS422 or RS485 on Port2.

The *C-more*[®] Micro-Graphic panel communicates using the following cables.

- EA-2CBL connects to Productivity Series, Do-more, CLICK, DL05, DL105, DL205, DL350, DL450, H2-WINPLC phone jack: RJ12 15 pin D-sub.
- EA-2CBL-1 connects to D2-250, D250-1, D2-260, DL06 VGA connector: 15-pin HD 15 pin D-sub.

The panel also has the ability to communicate with Allen-Bradley PLCs that support the Allen-Bradley DF1 and DH485 protocols. Use Port2 with the following cables to connect the panel to a majority of Allen-Bradley PLCs.

- EA-MLOGIX-CBL connects to AB MicroLogix 1000, 1100, 1200 1400 & 1500: 15-pin D-sub 8-pin DIN
- EA-SLC-232-CBL connects to AB SLC 5/03, /04, /05, ControlLogix, CompactLogix, FlexLogix: 15-pin D-sub 9-pin Dshell female
- EA-PLC5-232-CBL connects to AB PLC5: 15-pin Dshell 25-pin Dshell
- EA-DH485-CBL connects to AB MicroLogix, SLC500, and any PLC using AB AIC device: 15-pin Dshell RJ45 8-pin

The PLC Compatibility and Connection Chart tables on the following pages list the various PLCs and protocols that can be configured. Other third party PLCs include GE, Mitsubishi, Omron, Modicon and Siemens. The rest of this chapter shows the pin to pin connections of available cables plus wiring diagrams to construct cables.



NOTE: Refer to the Compatability and Connection Charts beginning on page 6-7 for a listing of PLC connections for the C-more Micro-Graphic panel.



NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.



Introduction (cont'd)

Available PLC Protocols

PLC Drivers
Serial - port2 only
AutomationDirect Productivity Series
AutomationDirect CLICK
AutomationDirect Do-more
AutomationDirect K-sequence
AutomationDirect DirectNET
AutomationDirect Modbus
AutomationDirect SOLO
AutomationDirect GS Drives
Modicon Modbus RTU
Entivity Modbus RTU
Allen-Bradley DF1 Full Duplex
Allen-Bradley DF1 Half Duplex
Allen-Bradley PLC5 DF1
Allen-Bradley DH485
GE SNPX (90/30, 90/70, Micro 90, VersaMax Micro)
Mitsubishi FX
Mitsubishi Q, QnA
Omron Host Link (C200 Adapter, C500)
Omron FINS Serial (CJ1, CS1)
Siemens PPI (S7-200 CPU)

The panel can also be connected to more than one PLC by using RS-422 or RS-485 wired in a multi-drop configuration. See the example wiring diagrams at the end of this chapter for details.

If you have difficulty determining whether the particular PLC and/or protocol you are using will work with *C-more* Micro-Graphic panels, please contact our technical support group at 770-844-4200.

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C-more Micro-Graphic Communication Ports



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DirectLOGIC PLCs Password Protection

NOTE: DirectLOGIC PLCs support multi-level password protection of the ladder program. This allows password protection while not locking the communication port to an operator interface. The multilevel password can be invoked by creating a password with an upper case "A" followed by any variation of seven numeric characters (e.g. A1234567). Please refer to the specific PLC user manual for further details.

Compatibility and Connection Charts

The following pages include charts that list the recommended cables and/or manufactured devices that can be used to make up the communications link between several different controllers and the *C-more* Micro-Graphic panel. Port2 is a 15-pin D-sub communication port that supports RS-232, RS-485 and RS-422. An external class 2, 1 Amp @ 12-24 VDC external power source is required.



Note: Recommended DC power supply to power the **C-more** Micro-Graphic Panel, **AutomationDirect** Part No. PSC-24-015 or PSC-24-030.

The chart also refers to wiring diagrams that can be used to construct cables for connecting the PLC's port to the panel's port. The user constructed cable diagrams start on page 6-24.

AutomationDirect Controllers

AutomationDirect Productivity Series, CLICK, Do-more, DirectLogic, SOLO Temperature Controller and GS Drives

Drivers specific to these AutomationDirect control devices make it convienient to communicate with the *C-more* Micro-Graphic panels and simplify configuring objects with controller addresses.

RS-422A/RS-485A Communications

When using the RS-422A/RS-485A communications capabilities of the *C-more* Micro-Graphic Serial Port (Port 2), the termination resistor is placed between the **RXD**– and **RXD**+ terminals on the PLC side of the connection between the touch panel and PLC. The Termination Resistor value is based on the characteristic impedance of the cable being used. To enable the built-in 120 Ohm Termination Resistor, jumper pin 13 (termination resistor) to pin 9 (**RXD**+) on the *C-more* Micro-Graphic 15-pin PLC communications port.

Allen-Bradley

As stated in this chapter's introduction, the panel also has the ability to communicate with Allen-Bradley PLCs that support the Allen-Bradley DF1 and DH485 protocols. The chart for the various Allen-Bradley PLCs includes recommended cables.

GE, Mitsubishi, Omron, Modicon and Siemens

Other 3rd party PLCs can be used with the *C-more* Micro-Graphic panel. These PLCs are listed in a chart and various wiring diagrams are shown to allow connectivity.

Example

How to use the Compatibility and Connection Charts

- 1.) Find the Controller or PLC Family being used.
- 2.) Find the particular Controller or PLC model in the Controller family.
- 3.) Determine the cable and other components, manufactured or user constructed, are required.

1	2			
	Compatibility & Connection Chart			
	Controller		C-more Micro-	Graphic Panel
			Panel to PLC Cabling Co Specific Port and P	omponents Required for rotocol being used.
			External DC F	Power Supply
Family	CPU	PLC Port & Type	DB 15-pir	nel's Port2 n - female
			Protocol(s) Supported	Components & Network Type
CLICK	all versions	Port1 <u>RJ12 - 6 pin</u> Port2 RJ12 - 6 pin	AutomationDirect Modbus (CLICK)	EA-2CBL RS-232
	Analog CPUs	Port3 Terminal block - 3 pin		* See Diagram 16 RS-485
Productivity3000	all versions	RS-232 RJ12 - 6 pin RS-232 Port Terminal block - 3 pin	AutomationDirect Productivity3000 Serial (P3-550)	EA-2CBL RS-232 * See Diagram 17 RS-485
	all versions	Port 1 RJ12 - 6 pin Port 2 RJ12 - 6 pin	K-sequence, <i>Direct</i> NET, Modbus RTU	EA-2CBL RS-232
DirectLOGIC DL05	D0-DCM	Port 1 RJ12 - 6 pin Port 2 DB15HD	K-sequence, Direct NET, Modbus RTU	EA-2CBL RS-232 EA-2CBL-1 RS-232 * See Diagram 1 RS-422
		(female)	Modbus RTU	* See Diagram 2 RS-485 Modbus only

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AutomationDirect CLICK PLC, ProductivitySeries, Do-more, SOLO Temperature Controller and GS Drives

Panel Powered via external power supply, Port2 Communications

Compatibility & Connection Chart				
Controller C-more Micro-Graphic Panel				
			Panel to PLC Cabling C Specific Port and F	omponents Required for Protocol being used.
Family	CPU	PLC Port & Type	Using par	Power Supply nel's Port2 n - female Components & Network Type
CLICK	all versions	Port1 RJ12 - 6 pin Port2 RJ12 - 6 pin	AutomationDirect Modbus (CLICK)	EA-2CBL RS-232
	Analog CPUs	Port3 Terminal block - 3 pin	, , , , , , , , , , , , , , , , , , ,	* See Diagram 16 RS-485
Productivity Series	all versions	RS-232 RJ12 - 6 pin RS-232 Port Terminal block - 3 pin	AutomationDirect Productivity3000 Serial (P3-550)	EA-2CBL RS-232 * See Diagram 17 RS-485
Do-more	all versions	Port2 RJ12 - 6 pin	AutomationDirect Do-more Serial	EA-2CBL RS-232
SOLO Temperature Controller	all versions	Data terminals	AutomationDirect SOLO Temperature Controller	* See Diagram 20 RS-485
GS Drives	all versions	Port RJ12 - 6 pin	AutomationDirect GS Drives	* See Diagrams 18 and 19 RS-485
Note: Wiring Diagrams for user constructed cables start on page 6-24.				

AutomationDirect *Direct*LOGIC DL05, DL06, D0-DCM Module & DL105 PLCs Panel Powered via external power supply, Port2 Communications

Compatibility & Connection Chart					
	Controller		C-more Micro-	Graphic Panel	
		_	Panel to PLC Cabling Co Specific Port and P	omponents Required for rotocol being used.	
	0011	DIO David & Tama		Power Supply	
Family	CPU	PLC Port & Type	DB 15-pir	iel's Port2 1 - female	
			Protocol(s) Supported	Components & Network Type	
	all versions	Port 1 <u>RJ12 - 6 pin</u> Port 2 RJ12 - 6 pin	K-sequence, Direct NET, Modbus RTU	EA-2CBL RS-232	
DirectLOGIC DL05	D0-DCM	Port 1 RJ12 - 6 pin Port 2 DB15HD	K-sequence, <i>Direct</i> NET, Modbus RTU	EA-2CBL RS-232 EA-2CBL-1 RS-232 * See Diagram 1 RS-422	
		(female)	Modbus RTU	* See Diagram 2 RS-485 Modbus only	
	all versions	Port 1 RJ12 - 6 pin Port 2 DB15HD	K-sequence, Direct NET, Modbus RTU	EA-2CBL RS-232 EA-2CBL-1 RS-232 * See Diagram 1 RS-422	
<i>Direct</i> LOGIC		(female)		Modbus RTU	* See Diagram 2 RS-485 Modbus only
DL06	D0-DCM	Port 1 RJ12 - 6 pin Port 2 DB15HD	K-sequence, Direct NET, Modbus RTU	EA-2CBL RS-232 EA-2CBL-1 RS-232 * See Diagram 1 RS-422	
		DB15HD (female)	Modbus RTU	* See Diagram 2 RS-485 Modbus only	
Note: Wiring Diagra	ms for user construct	ed cables start on page	6-24.		

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DirectLOGIC DL205 PLCs, D2-DCM Module and WINPLC Panel Powered via external power supply, Port2 Communications

		ompatibility & Conne		Compatibility & Connection Chart				
	Controller		<i>C-more</i> Micro	-Graphic Panel				
			Panel to PLC Cabling C Specific Port and F	omponents Required for Protocol being used.				
			External DC	Power Supply				
Family	CPU	PLC Port & Type	DB 15-pi	nel's Port2 in - female				
			Protocol(s) Supported	Components & Network Type				
DirectLOGIC DL105	all versions	Port 1 RJ12 - 6 pin	K-sequence	EA-2CBL RS-232				
	D2-230	Port 1 RJ12 - 6 pin	K-sequence	EA-2CBL RS-232				
	D2-240	Port 1 RJ12 - 6 pin	K-sequence K-sequence, <i>Direct</i> NET	EA-2CBL RS-232				
	D2-240	Port 2 RJ12 - 6 pin						
		Port 1 RJ12 - 6 pin		EA-2CBL RS-232				
	D2-250-1	D-1 Port 2 Direct NET, DB15HD (female) K-sequence, Direct NET, Modbus RTU	EA-2CBL-1 RS-232					
			* See Diagram 1 RS-422					
DirectLOGIC DL205		Port 1 RJ12 - 6 pin	K-sequence,	EA-2CBL RS-232				
	D2-260	Dart 0	<i>Direct</i> NET, Modbus RTU	EA-2CBL-1 RS-232				
	<i>DL</i> 200	Port 2 DB15HD		* See Diagram 1 RS-422				
		(female)	Modbus RTU	* See Diagram 2 RS-485 Modbus opty				
-	D2-DCM	Port 1 DB 25 pin	Direct NET	Modbus only EA-4CBL-2 RS-232				
	DZ-DOW	(female)		* See Diagram 5 RS-422				
-	WINPLC	Port 1 RJ12 - 6 pin	Modbus RTU	EA-2CBL RS-232				

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DirectLOGIC DL305 PLCs and D3-DCM Module Panel Powered via external power supply, Port2 Communications

Compatibility & Connection Chart				
	Controller		C-more Micro	Graphic Panel
			Panel to PLC Cabling Co Specific Port and P	omponents Required for rotocol being used.
	_		External DC I	Power Supply
Family	CPU PLC Port & Type	Using par	nel's Port2	
		_		n - female
			Protocol(s)	Components &
			Supported	Network Type
D3-330 or D3-340 D3-340 D3-340	D3-232-DCU DB 25 pin (female)	DirectNET	EA-4CBL-2 RS-232	
	D3-340	D3-422-DCU DB 25 pin (female)	<i>Direct</i> NET	* See Diagram 5 RS-422
	D2 040	Port 1 RJ11 - 4 pin	<i>Direct</i> NET	EA-3CBL
	D3-340	Port 2 RJ11 - 4 pin	Direct NET, Modbus RTU	RS-232
DL305	DL305	Port 1 RJ12 - 6 pin	K-sequence, <i>Direct</i> NET	EA-2CBL RS-232
		Port 2 DB 25 pin	K-sequence, Direct NET.	EA-4CBL-2 RS-232
		(female)	Modbus RTU	* See Diagram 3 RS-422
	D3-DCM	Port 1 DB 25 pin	DirectNFT	EA-4CBL-2 RS-232
	D3-350 only	(female)	DIFEGUNET	* See Diagram 5 RS-422
Note: Wiring Diagra	ms for user construct	ed cables start on page (6-24.	

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DirectLOGIC DL405 PLCs and D4-DCM Module, SOLO and GS Drives Panel Powered via external power supply, Port2 Communications

er PLC Port & Type Port 0 DB 15 pin (female) Port 1 DB 25 pin (female) Port 0 DB 15 pin (female) Port 0 DB 15 pin (female)	Panel to PLC Cabling (Specific Port and External DC Using pa	D-Graphic Panel Components Required for Protocol being used. Power Supply anel's Port2 in - female Components & Network Type EA-4CBL-1 RS-232 EA-4CBL-2 RS-232
Port 0 DB 15 pin (female) Port 1 DB 25 pin (female) Port 0	Specific Port and External DC Using pa DB 15-p Protocol(s) Supported K-sequence K-sequence,	Protocol being used. Power Supply Inel's Port2 In - female Components & Network Type EA-4CBL-1 RS-232 EA-4CBL-2 RS-232
Port 0 DB 15 pin (female) Port 1 DB 25 pin (female) Port 0	Using pa DB 15-p Protocol(s) Supported K-sequence K-sequence,	inel's Port2 in - female Components & Network Type EA-4CBL-1 RS-232 EA-4CBL-2 RS-232
Port 0 DB 15 pin (female) Port 1 DB 25 pin (female) Port 0	DB 15-p Protocol(s) Supported K-sequence K-sequence,	in - female Components & Network Type EA-4CBL-1 RS-232 EA-4CBL-2 RS-232
DB 15 pin (female) Port 1 DB 25 pin (female) Port 0	Supported K-sequence K-sequence,	Network Type EA-4CBL-1 RS-232 EA-4CBL-2 RS-232
DB 15 pin (female) Port 1 DB 25 pin (female) Port 0	K-sequence,	RS-232 EA-4CBL-2 RS-232
Port 1 DB 25 pin (female) Port 0		RS-232
Port 0		* See Diagram 3
(female)	K-sequence	RS-422 EA-4CBL-1 RS-232
Port 1 DB 25 pin (female)	K-sequence, Direct NET	EA-4CBL-2 RS-232 * See Diagram 3 RS-422
Port 0 DB 15 pin (female)	K-sequence	EA-4CBL-1 RS-232
Port 1 DB 25 pin (female)	K-sequence, Direct NET, Modbus RTU	EA-4CBL-2 RS-232 * See Diagram 3 RS-422
Port 3 DB 25 pin (female)	K-sequence, Direct NET, Modbus RTU	* See Diagram 4 RS-422
Port 2 RJ12 - 6 pin	K-sequence, <i>Direct</i> NET	EA-2CBL RS-232
	<i>Direct</i> NET	EA-4CBL-2 RS-232 * See Diagram 5 RS-422
)	DB 25 pin (female) Port 2 RJ12 - 6 pin Port 1 DB 25 pin	Port 3 K-sequence, DB 25 pin DirectNET, (female) Modbus RTU Port 2 K-sequence, RJ12 - 6 pin DirectNET Port 1



Allen-Bradley PLCs Panel Powered via external power supply, Port2 Communications

	Controller		C-more Micro	-Graphic Panel
			Panel to PLC Cabling Compo Specific Port and Protoc	
			External DC Power Supply	Power Supply
Family	CPU	PLC Port & Type	e Powered from an external 24 VD	
			Using par	nel's Port2
			91	n - female
			Protocol(s)	Components &
			Supported	Network Type
		8-pin	DF1 Full Duplex,	EA-MLOGIX-CBL
Allen-Bradley	1000, 1100,	mini-din port	DF1 Half Duplex	RS-232
MicroLogix	1200, 1400, 1500	RJ45 8-pin phone plug	DH485/AIC/AIC+	EA-DH485-CBL RS-232
	5/03, 5/04,	9-pin	DF1 Full Duplex,	EA-SLC-232-CBL
Allen-Bradley	5/05	D-sub port	DF1 Half Duplex	RS-232
SLC500	5/01, 5/02, 5/03	RJ45 8-pin phone plug	DH485/AIC/AIC+	EA-DH485-CBL RS-232
Allen-Bradley		9-pin	DF1 Full Duplex,	EA-SLC-232-CBL
ControlLogix	all	D-sub port	DF1 Half Duplex	RS-232
Allen-Bradley		9-pin	DF1 Full Duplex.	EA-SLC-232-CBL
CompactLogix	all	D-sub port	DF1 Half Duplex,	RS-232
Allen-Bradley	all	9-pin	DF1 Full Duplex,	EA-SLC-232-CBL
FlexLogix	an	D-sub port	DF1 Half Duplex	RS-232
Allen-Bradley PLC5	all	25-pin D-sub port	DF1 Full Duplex	EA-PLC5-232-CBL RS-232 * See Diagram 15 RS-422

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GE, Mitsubishi, Omron, Modicon and Siemens PLCs Panel Powered via external power supply, Port2 Communications

Family 9 GE	Controller CPU 0/30, 90/70 Micro 90, VersaMax Micro	PLC Port & Type 15-pin D-sub port RJ45 Port 1 15-pin	C-more Micro- Panel to PLC Cabling Cc Specific Port and P External DC F Powered from an ext Using pan DB 15-pir Protocol(s) Supported	Power Supply ernal 24 VDC source el's Port2 1 - female Components & Network Type EA-90-30-CBL RS-422 * See Diagram 11
9 GE	0/30, 90/70 Micro 90, VersaMax	15-pin D-sub port RJ45 Port 1	External DC F Powered from an ext Using pan DB 15-pir Protocol(s) Supported	Power Supply ernal 24 VDC source el's Port2 i - female Components & Network Type EA-90-30-CBL RS-422 * See Diagram 11
9 GE	0/30, 90/70 Micro 90, VersaMax	15-pin D-sub port RJ45 Port 1	Using pan DB 15-pir Protocol(s) Supported	el's Port2 <u>o female</u> Components & <u>Network Type</u> EA-90-30-CBL RS-422 * See Diagram 11
GE	Micro 90, VersaMax	D-sub port RJ45 Port 1	DB 15-pir Protocol(s) Supported	<u>a - female</u> Components & <u>Network Type</u> EA-90-30-CBL RS-422 * See Diagram 11
GE	Micro 90, VersaMax	D-sub port RJ45 Port 1	Protocol(s) Supported	Components & Network Type EA-90-30-CBL RS-422 * See Diagram 11
GE	Micro 90, VersaMax	D-sub port RJ45 Port 1	SNPX	RS-422 * See Diagram 11
	VersaMax	Port 1	SNPX	
		15-nin		RS-232
		D-sub port Port 2		EA-90-30-CBL RS-422
	Melsec	25-pin D-sub port	-sub port CPU Direct	EA-MITSU-CBL RS-422
Mitsubishi	FX Series	8-pin mini-din port		EA-MITSU-CBL-1 RS-422
Miloubisiii	Q / QnA	9-pin D-sub port	Q / QnA	* See Diagram 13 RS-232C
		6-pin mini-din port		* See Diagram 14 RS-232C
	00 (Adapter), C500	25-pin D-sub port	Host Link	EA-OMRON-CBL RS-232
Omron	CJ1, CS1, CQM1, CPM1, CPM2 C200 CPU	9-pin D-sub port	Host Link FINS	* See Diagram 6 & 7 RS-232
Modicon	984 CPU, Quantum 113 CPU, AEG Modicon Aicro Series 110 CPU	varies	Modbus RTU	* See Diagram 8, 9 & 10 RS-232
Siemens	S7-200 CPU	9-pin D-sub port 0 or 1	PPI	* See Diagram 12 RS-485

Cables from AutomationDirect

Cable Description	Cable Part No.
AutomationDirect Productivity Series, Do-more, CLICK, <i>Direct</i> LOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WinPLC (RS-232C)	EA-2CBL
<i>Direct</i> LOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C).	EA-2CBL-1
DirectLOGIC PLC RJ-11 port, D3-340 (RS-232C).	EA-3CBL
DirectLOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C).	EA-4CBL-1
<i>Direct</i> LOGIC PLC 25-pin D-sub port, DL405, D3-350, DL305 DCU and all DCM's (RS-232C).	EA-4CBL-2
Allen-Bradley MicroLogix 1000, 1100, 1200, 1200, 1400 & 1500 (RS-232C)	EA-MLOGIX-CBL
Allen-Bradley SLC 5-03/04/05, ControlLogix, CompactLogix, FlexLogix DF1 port (RS-232C)	EA-SLC-232-CBL
Allen-Bradley PLC-5 DF1 port (RS-232C)	EA-PLC5-232-CBL
Allen-Bradley SLC 5-01/02/03, DH485 port	EA-DH485-CBL
GE 90/30, 90/70, Micro 90, Versamax Micro (Port2) 15-pin D-sub port (RS-422A)	EA-90-30-CBL
MITSUBISHI FX Series 25-pin port (RS-422A)	EA-MITSU-CBL
MITSUBISHI FX Series 8-pin mini-DIN (RS-422A)	EA-MITSU-CBL-1
OMRON Host Link (C200 Adapter, C500) (RS-232C)	EA-OMRON-CBL

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Cables from AutomationDirect (cont'd)



Part No. EA-2CBL



Part No. EA-4CBL-1



Part No. EA-2CBL-1



Part No. EA-4CBL-2



rt No. EA-3CBL





Part No. EA-MLOGIX-CBL



Part No. EA-SLC-232-CBL



Part No. EA-PLC5-232-CBL



Part No. EA-DH485-CBL



Part No. EA-90-30-CBL



Part No. EA-MITSU-CBL



Part No. EA-MITSU-CBL-1



Part No. EA-OMRON-CBL

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Cables from AutomationDirect – Wiring Diagrams

The following series of wiring diagrams show the connectors and wiring details for the communication cables that are used between the *C-more* Micro-Graphic panels and various PLCs. Part numbers are included with the pre-made cables that can be purchased from *AutomationDirect*. The information presented will allow the user to construct their own cables if so desired.

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CLICK & Direct LOGIC:

```
EA-2CBL
```



Direct LOGIC: EA-2CBL-1 DirectLogic PLC (VGA style) 15-pin HD port: To C-more Micro-Graphic To PLC D2-250, D2-250-1, D2-260, DL06 Serial Port2 15-Pin HD Port RS-232C (p/n EA-2CBL-1) Wiring Diagram 15-pin 15-pin HD D-sub D-sub → RXD TXD ← (male) (male) 8 = do not use 15 = do not use 8 = do not use 15 = do not use 14 = do not use RXD ≤ 3 → TXD 7 = do not use 7 = Sig GND 1500000 0 14 = do not use 5 0000000 6 = do not use r 13 = do not use 6 = donot use 13 = do not use GND ← ⊕ 5 = CTS 12 = do not use 5 = Logic GND 12 = do not use RTS $< \frac{4}{3}$ 4 = RTS 11 = do not use 4 = do not use 11 = do not use ° 1 3 = RXD° 6 10 = do not use cts <5 0 3 = RXD (232C) 10 = do not use 2 = TXD 9 = do not use 2 = TXD (232C) 9 = do not use 1 = +5 VDC - N/C 1 = Frame GND <u>1</u>→ //// shield HD = High Density Note: Use the above wiring diagram if you need to make your own cable. We recommend using 22 AWG shielded cable.

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Direct LOGIC:

EA-4CBL-1



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Direct LOGIC:







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Allen-Bradley:





EA-SLC-232-CBL



EA-PLC5-232-CBL



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Allen-Bradley:

EA-DH485-CBL



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Allen-Bradley:







shield

Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect p/n L19853 shielded cable or equivalent.

2 = do not use

<u>1</u>> ////

1 = Frame GND

9 = RD+ (RS422)

6 = do not use

5 = do not use

1 = do not use

4 = Signal GND

3 = SD+ (RS422) 2 = RD+ (RS422)

18 = do not use

17 = do not use

14 = do not use

16 = SD- (RS422) 15 = RD- (RS422)

GND

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Omron:

EA-OMRON-CBL



6

User Constructed Cables – Wiring Diagrams

Diagram 1

User Constructed



Diagram 2

User Constructed





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NOTE: The RS-422 and RS-485 wiring diagrams shown above are not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-34 if more than one PLC will be connected to a panel.

User Constructed Cables – Wiring Diagrams (cont'd)

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Diagram 3





Diagram 4

User Constructed





NOTE: The RS-422 wiring diagram shown above is not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-34 if more than one PLC will be connected to a panel.



User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 5

User Constructed



NOTE: The RS-422 wiring diagram shown above is not for multi-drop networks involving connecting more than one PLC to a panel. Refer to the wiring diagram examples starting on page 6-34 if more than one PLC will be connected to a panel.

Diagram 6

User Constructed





User Constructed Cables – Wiring Diagrams (cont'd)

Diagram 7





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Diagram 8

User Constructed



6



Diagram 9



Diagram 10

User Constructed

User Constructed



0


User Constructed



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Diagram 14

User Constructed



6-30

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Diagram 15

User Constructed



Diagram 16

User Constructed







Diagram 18

User Constructed





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Diagram 19

User Constructed



Diagram 20

User Constructed



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RS-422A Multi-Drop Wiring Diagram Example



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RS-422A Multi-Drop Wiring Diagram Example (cont'd)

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RS-485A Multi-Drop Wiring Diagram Example





* Termination resistors required at both ends of the network to match the impedance of the cable

(between 100 and 500 ohms).

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Typical RS-485 Multi-Drop Wiring Diagram

using DirectLogic pin numbers to illustrate

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RS-485A Multi-Drop Wiring Diagram Example (cont'd)

ICPAS



using DirectLogic pin numbers to illustrate

network receive data signals to match the impedance of the cable (between 100 and 500 ohms). Jumper pin 13 to 9 on the **C-more** 6" Micro-Graphic Serial Port2 15-pin connector to place the 120Ω internal resistor into the network. If the cable impedance is different, then use an external resistor matched to the cable

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MAINTENANCE

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CHAPTER

Maintenance



Although the *C-more*[®] Micro-Graphic panels require very little maintenance, setting up a routine maintenance schedule will ensure the longevity of the product in your application. The following are some suggestions of items to include in a preventive maintenance list or

schedule. Most of these items should be scheduled quarterly or bi-annually.

Project Backup

During a routine preventive maintenance schedule is a good time to make sure that there is an up-to-date backup of the application project.

Check Operating Environment

Make sure the *C-more* Micro-Graphic panel is operating in the proper temperature range: (0 to 50 $^{\circ}$ C (32 to 122 $^{\circ}$ F)).

Make sure the *C-more* Micro-Graphic panel is operating within the specified humidity range: (5–95% RH, non-condensing).

Make sure the operating environment is free of corrosive vapors and gasses.





Check Operating Voltage

Check the input voltage that is powering the *C-more* Micro-Graphic panel to make sure it is within the appropriate range.

24 VDC: The acceptable voltage range to the panel is 10.2-26.4 VDC (6.5W @ 10.2 VDC (630mA)).



NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.



Check Transmit and Receive Indicators

During a routine maintenance check is a good time to take a quick look at the status indicators on the back of the *C-more* Micro-Graphic panel. There should be activity on both the TxD and RxD LED indicators when connected serially to a PLC or control device and data is being updated on the screen.

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Check Physical Conditions

Make sure that harmful chemicals are not being used around the *C-more* Micro-Graphic panel. Look for any deterioration of the panel's bezel and front display area. See **Chapter 2: Specifications** for identification of the materials on the face of the panels and accessory bezels.

Check the mounting gasket to make sure it is sealing properly and has not deteriorated. Replace the mounting gasket if there are any signs of deterioration, or if there is any evidence that moisture/liquids have penetrated to the inside of the enclosure where the panel is mounted. Information on replacement gaskets can be found in **Chapter 9: Replacement Parts**.

Check to make sure that none of the cooling vents around the inside section of the *C-more* Micro-Graphic panel are clogged with dust or debris. Also make sure that there is clearance around the panel as shown in Chapter 4: Installation and Wiring.

Run Tests under the System Setup Screens

Use the *C-more* Micro-Graphic panel's System Setup Screens to test communication port, PLC connectivity, the internal beeper and touch screen operation. See **Chapter 5: System Setup Screens** for additional details.



Serial Port - Loop Back Test - Performs a test to verify either the RS-232 or the RS485/422 serial communications functionality from the 15-pin connector (Port 2) on the panel is operating correctly. A loop back connector inserted into the port is required for proper testing. Wiring diagrams to build RS-232 and RS-485/422 loop back connectors are shown below.



PLC Enquiry Test - Tests the communications with the selected PLC protocol between the panel and a connected PLC.

Buzzer Test - Use this option to test the internal audible beeper of the panel.

Touch Panel Test - Tests the response of the touch screen area to contact. This test is used to make sure the touch screen area is responding properly.



Check Settings under the System Setup Screens

Use the *C-more* Micro-Graphic panel's System Setup Screens to check the various settings such as the beep and orientation. See **Chapter 5: System Setup Screens** for additional details.

Beep - Used to enable or disable the internal audible beeper. the default is beep on.

Calibration - Used to calibrate the touch screen on the panel.

Cleaning the Display Screen

The display screen should be cleaned periodically by wiping it with a lint free damp cloth using a mild soap solution. Dry the surface when finished with a lint free cloth. Do not use cleaning solvents (ammonia, alcohol, acetone, etc.) which may damage the plastic housing and touch screen.

The longevity of the touch screen can be increased by the use of the EA-4-COV2 or EA-6-COV2 clear screen overlay. See Chapter 3: Accessories for additional information on the screen overlay.

To prevent damage to the touch screen, avoid touching the screen with sharp objects, striking the screen with a hard object, using abrasives on the screen, or using excessive force when pressing the touch screen.

Check Project Functionality

During routine maintenance is a good time to check the functionality of your application, making sure that various areas on different screens do what they were designed to do. An outline or specification for the application is a useful tool for testing the various aspects of your application. As a starting point, you may want to run through all the screens to make sure they are accessible if the project allows this.

If there are any trouble-shooting procedures programmed into the *C-more* Micro-Graphic panel application, now is a good time to also check these aids.

Checks from the C-more Micro-Graphic Programming Software

If you have a PC available with the *C-more* Micro-Graphic Programming Software, EA-MG-PGMSW, installed, and the panel is connected to the PC, you can check the status of the panel from the **Panel Information** window.

The **Panel Information** window shown below will indicate the panel type, if a keypad bezel has been installed, the total memory, memory used, free memory, firmware version, mask ROM version, and the PLC protocol selected for its serial communication ports. The programming software can also be used to update the panel's firmware to the latest version.

General Inform	ation	Memory
Туре:	EA1-T6CL	Total: 3276800 byte
Option1:	NONE	Used: 28260 byte
Option2:	NONE	Free: 3262446 byte
Revision		Protocol
Firmware:	2.31.0.4	Protocol: AutomationDirect Modbus (CLICK)
Mask Rom:	V1.00	Driver Rev.: 2.31.0.4
		ro Panel must be active for the software to communicate with the
Mask Rom:		



Notes:

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Troubleshooting



The following are some problems that may be encountered during the installation and operation of your *C-more*[®] Micro-Graphic panel. We have made some suggestions on what to check in order to correct the problem.

C-more Micro-Graphic Panel does not Power up

1. Powered from 5 VDC:

a. If the panel's display is blank, not responding, and the panel is powered from the PC via the USB programming cable, power the panel from a 12-24 VDC power source.

2. Powered from 12-24 VDC:

a. If the panel's display is blank, not responding, and the panel is powered from a 12-24 VDC power source, check the incoming DC voltage level to the adapter with a voltmeter. The DC voltage level to the adapter should be in the range of 10.2-26.4 VDC.
b. If the incoming DC voltage is zero, check any fusing that may be in the circuit. If the

b. If the incoming DC voltage is zero, check any fusing that may be in the circuit. If the fuse is open, determine cause and replace.

Display is Blank

- 1. If the panel's display is blank, but the panel has power, check the TxD and RxD indicators on the back side of the panel while the panel is communicating with the PLC. The LED indicators should be on or flashing at a fast rate. Indicator activity shows that the panel is communicating with the PLC.
- **2.** If there is communication activity, but the display is still blank, there is the possibility the program in the PLC is controlling the display. press the F1 and F5 keys simultaneously for 3 seconds. The panel will change to the System Setup Screen menu even if the screen is being forced to display a blank screen by the PLC program.
- **3.** If the setup screen displays, check the PLC program. The screen will be in the off state if a 0 has been placed in the current screen tag.





NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.



Display is Dim



NOTE: When the panel is powered through Port1 from a connected PC, the screen brightness is diminished because the panel is running in **Low-Power Mode**. Connect an external 12-24 VDC power source when the panel is installed in its application for full brightness.





- 1. Press the F1 and F5 keys simultaneously for 3 seconds and the panel will bring up the the System Setup Screen menu.
- 2. Select the Setting menu, and then select item 1: Brightness. The default value is 10.
- **3.** Adjust the current value from 1 to 16 and the panel's brightness should become greater as the value moves toward 16 and it should become less as the value moves toward 1. The observed brightness does not change when the panel is powered through Port1 from the PC.
- 4. If this does not happen, then the panel may need to be replaced. See note above.

No User Program

- 1. If the panel is displaying the message "No User Program" after it is powered up, then there is no project downloaded into the panel.
- 2. Using the EA-MG-PGMSW *C-more* Micro-Graphic Programming Software, download your project to the panel.



Lost Firmware - 'Update Mode' Screen Displayed

If the *C-more* Micro-Graphic panel's firmware becomes corrupted or for some reason is lost from the panel's memory, the panel will display the **Update Mode** screen as shown below. This can happen if communication between the PC and the panel is interupted during a firmware update. To resolve the problem, try the following steps in the order shown:

- 1.) Cycle power to the panel.
- 2.) If the problem persists, update the firmware to the panel using the **Update Firmware** utility under the **Panel** pull down menu in the EA-MG-PGMSW Programming Software.
- 3.) If the problem persists, depress function keys F1 and F5 while cycling power to the panel. The panel should come up in the **Update Mode** screen as shown below. Perform Step 2 again.
- 4.) If there is still a problem, call Tech Support @ 770-844-4200 in the U.S.A.



Updating Firmware

The panel firmware version must match both the programming software version and the version that the program was saved as. For example, if a version needs to be updated to take advantage of new functionality or product line additions follow these steps:

- 1.) Create a backup copy of the project on the PC. From the *C-more* Micro-Graphic programming software, read the project from the panel and save to a desired location.
- 2.) Update the programming software on the PC.
- 3.) Cycle power to the panel.
- 4.) Update the firmware to the panel using the **Update Firmware** utility under the **Panel** pull down menu in the EA-MG-PGMSW Programming Software.
- 5.) Open the project in the updated programming software. Save the project. Transfer the project to the panel.



NOTE: Software and Firmware Version 3.0 or later is required with model EA1-T4CL. Version 2.5 or later is required with model EA1-T6CL. Available for free download at **www.automationdirect.com**.





No Communications between Panel and PC (Personal Computer)

There are three possible causes that prevent transferring the project to the *C-more* Micro-Graphic panel.



- 1. Panel not on setup screen (press F1 and F5) Press and hold the F1 and F5 buttons simultaneously for three seconds to enter the setup screen.
- 2. Cable not connected Double check the programming cable to make sure the panel is correctly connected to the USB port on the PC.





NOTE: The panel has an internal USB to serial converter at Port1. When the device is properly installed and the USB programming cable connects the panel to the PLC, the port will be identified as a serial communications port with an assigned COM port number.

No communications between panel and PC continued top of next page.





No Communications between Panel and PC (Personal Computer) (cont'd)

NOTE: The panel has an internal USB to serial converter at Port1. When the device is properly installed and the USB programming cable connects the panel to the PLC, the port will be identified as a serial communications port with an assigned COM port number.

3. Not using the correct COM port assigned to the USB connection - If the C-more Micro-

Step 3	X	Graphic panel is on the setup screen and the cable connection is correct, then check the PC COM
Transfer		port setting.
COM PORT: COM4	Transfer	

If you are unsure which COM port the *C-more* Micro-Graphic programming cable is connected to, click on the **Device Manager** button. This will open Windows ® **Device Manager**.

In the **Device Manager** window, view the active ports by clicking the + button beside the Ports (COM & LPT) menu item. The *C-more* Micro-Graphic panel uses a USB driver called **C-more Micro**.

ransfer			_
COM PORT:	COM1	~	Transfer
	Device Ma	ager	

🚇 Device Manager 📃 💽	
File Action View Help	
+ - 10 🖆 👙 😢 🖪 🔫 🎗	5 8
B8715H1 B8715H1 Disk drives Diskly adapters DVD/CD-ROM drives DE ATA/ATAPI controllers Human Interface Devices Dick drives Dick drives Dick drives Mice and other pointing devices Monitors Network adapters Ports (COM & LPT) Communications Port (LOT1) ECP Printer Port (LPT1) Processors Osund, video and game controllers	

COM4 is the USB port used in this example. If you cannot find the C-more Micro Comm Port under Ports (COM & LPT) in **Device Manager**, the USB driver may not be correctly installed or the driver has a problem. Follow these steps to re-install the driver:

- 1. Uninstall the *C-more* Micro-Graphic programming software.
- 2. Unplug the cable between the PC and the *C-more* Micro-Graphic panel.
- **3.** Re-install the *C-more* Micro-Graphic programming software. Make sure the install USB driver checkbox is selected.
- 4. If you have selected the correct COM port and the error still occurs, try connecting the programming cable to a different USB port on the PC and try again.
- 5. If the problem persists, call Technical Support at (770) 844-4200, available from 9:00 A.M. to 6:00 P.M. Eastern Time.

No Communications between Panel and PLC

The *C-more* Micro-Graphic panel communicates with a designated PLC or controlling device through the panel's RS-232 / RS-485 / RS-422 communications port (Port2).

1. Check the Txd and Rxd status indicators of Port2. The indicator LED's should be on or flashing at a fast rate. If there is activity on the LED indicators, then the panel and PLC are communicating.



NOTE: For communications to be present between the panel and PLC, the panel must contain a project requesting data from the PLC.



If there is no activity on one or both TxD and RxD LED status indicators, then it should be suspected that either:

1. The communication settings are incorrect - Open Panel Manager in the C-more Micro-Graphic programming software and verify that the correct panel Comm. Port is selected. Verify that the correct PLC protocol is selected and properly configured.

PLC Protocol:	AutomationDirect K-Sequence (DL05/06/105/205/350/405)	~
O Direct Conr	AutomationDirect K-Sequence (DL05/06/105/205/350/405) AutomationDirect DirectNet (DL05/06/105/205/350/405) AutomationDirect Modbus (DL05/06/205/350/405) AutomationDirect DirectNet (DL330/340) Modicon Modbus RTU	
Statio	Allen-Bradley DF1 Full Duplex (MicroLogix) Allen-Bradey DF1 Full Duplex (SLC500) Allen-Bradey DF1 Full Duplex (PLC5) Allen-Bradley DF1 Half Duplex (MicroLogix/SLC500) Allen-Bradley DH495 (MicroLogix/SLC500/AIC) Entivity Modbus RTU (H2-WinPLC) GE 90/30 SNPX	

- 2. The cable is bad and needs to be replaced Try a proven cable.
- **3.** Test panel serial port. See Chapter 5, Serial Port Loop Back Test. If possible switch the panel with a panel that is communicating properly.
- 4. The serial port on the PLC is defective.



NOTE: Electrical noise, pulse generating wiring and/or improper grounding can also cause problems with communications. Refer to the Electrical Noise Problems section in this chapter for additional help if electrical noise is suspected. Selecting a lower communication rate in Panel Manager may help the panel resist noise.

Panel & PLC Error Codes

The *C-more* Micro-Graphic panel includes built-in PLC communication protocol diagnostics that monitor the exchange of data between the panel and the PLC. The diagnostics look for the proper exchange of data, correct handshaking signals, addressing errors, incorrect data bytes, wrong packet format, etc. The diagnostics also monitor and display any of the errors that the designated PLC generates if there is a problem with the PLC's communications. The PLC generated errors are interpreted by the *C-more* Micro-Graphic programming software and are displayed across the top of the panel's display embedded as a hexadecimal value in error code P499.

If a *C-more* Micro-Graphic communication error does occur, the error message will be displayed in the upper left of the panel's display screen along with the error code number. The error code with error message will blink off and on.



NOTE: See Appendix A: Panel & PLC Error Code Tables for a complete list of all error codes.







C-more Micro-Graphic Panel Runtime Errors

The *C-more* Micro-Graphic panel includes built-in diagnostics that check for proper operation of the panel when it is running a project that has been transferred to its memory. Faults detected while the panel is running will produce a "Runtime" error. These errors are displayed in a popup window in the center of the panel's display.

Troubleshooting a Panel Runtime Error:

Follow these steps to troubleshoot a panel runtime error.

- 1. Check the panel cable connections.
- 2. Cycle power at the panel.
- 3. Resend the project.
- 4. If the error still occurs, reset the panel back to factory default. Refer to Chapter 5 for details.



NOTE: User memory is cleared when factory defaults are reset. Use the **C-more** Micro-Graphic programming software to read the program from the panel and save a backup copy.

Panel Errors

If more than one panel error occurs, each error message will display sequentially for three seconds with a two second delay between each message.

When only one panel error is active, that message will display continuously until it is no longer active.

Micro-Graphic Panel Errors			
Error Code	Error Message	Possible Solutions	
R001	PC software tool Timeout	Check cables and connections. Cycle power at the panel. See Chapter 8 for Electrical Noise Problems.	
R002	CRC Error occurred during project transfer from PC.	Check the area for sources of noise: electrical motors, transformers, etc. Check for proper grounding. Resend the project.	
R003	Project Check Sum Error. Resend Project file to Panel.		
R004	Protocol Module Check Sum Error. Resend Project File to Panel	Cycle power. Resend the project.	
R005	Panel Check Sum Error. Panel Info (Not Project) will be initialized.	From the Setup Menu screen, reset panel options.	
R006	SW Ver. Mismatch. Use software Ver.xx.xx.	Update to current version programming software and panel firmware.	
R100	Option module detected without external power	EA-MG-SP1 or EA-MG-P1 optional power adapter module is installed on a C-more 3" Micro-Graphic panel without a 12-24 VDC power source. Provide 12-24 VDC power to the optional module.	
R101	Unsupported module detected	EA-MG-SP1 or EA-MG-P1 optional power adapter module for a C-more 3" Micro-Graphic panel is installed on a C-more 6" Micro-Graphic panel. Remove the EA-MG-SP1 or EA-MG-P1.	
R102	External power fail. Reconnect USB cable.	The panel was powered in High Power mode (24 VDC power supply). The 24 VDC power has been lost and the panel is now running on USB bus power. Either re-establish the 24 VDC power connection or remove all power connections and then reconnect the USB cable for the panel to run in Low-Power mode via the USB connection.	

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Reset to Factory Default

Factory default values can be reset by pressing F2 and F4 while cycling power to the panel. The Factory Default values are:

- Brightness value of 10
- The internal audible beeper enabled
- · Forced touch panel calibration
- User program cleared from memory
- Hourglass icon delay of 350 ms.
- Horizontal orientation



NOTE: User memory is cleared when factory defaults are reset. Use the C-more Micro-Graphic programming software to read the program from the panel iand save a backup copy.

Electrical Noise Problems

Most noise problems result from improper grounding of the system. A good earth ground can be the single most effective way to correct noise problems. If a ground is not available, install a ground rod as close to the system as possible. Ensure all ground wires are single point grounds and are not daisy chained from one device to another. Ground metal enclosures around the system. A loose wire can act as a large antenna, introducing noise into the system. Therefore, tighten all connections in your system. Loose ground wires are more susceptible to noise than the other wires in your system. Review **Chapter 4: Installation & Wiring** if you have questions regarding how to ground the touch panel.

Electrical noise can enter the system through the power source for the touch panel. Installing a properly wired isolation transformer (neutral grounded) for all AC sources can help the problem, but only if wired correctly. DC sources should be well-grounded good quality supplies.

Never run communication cables or low-voltage power wiring close to high voltage wiring or pulse generating wiring that controls such devices as solenoids, servos, VFDs, etc.

Selecting a lower communication rate in Panel Manager may help the panel better handle noise.





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Replacement Parts Overview

Part Number	Description
EA-MG-BZ2-BRK	Replacement mounting clip for <i>C-more</i> 4" and 6" Micro-Graphic panel and keypad bezels (pk of 8)
EA-MG-DC-CON	Replacement adapter DC power connector (pk of 5)
EA-MG4-GSK	Replacement mounting gasket for <i>C-more</i> 4" Micro- Graphic panels
EA-MG6-S6ML-GSK	Replacement mounting gasket for <i>C-more</i> 6" Micro- Graphic panels
EA-MG6-BZ2-GSK	Replacement mounting gasket for <i>C-more</i> 6" Micro-Graphic keypad bezels EA-MG6-BZ2(P)
EA-MG4-FKL	Replacement function key label insert for <i>C-more</i> 4" Micro-Graphic panels (pk of 4; 3 blank, 1 F1-F5)
EA-MG-S6ML-FKL	Replacement function key label insert for <i>C-more</i> 6" Micro-Graphic panels (pk of 5; 3 blank, 1 F1-F5 for landscape, 1 F1-F5 for portrait)
EA-4-COV2	4" Clear Screen Overlay (pk of 3)
EA-6-COV2	6" Clear Screen Overlay (pk of 3)

6" Function Keys Label Inserts

Replacement Parts

EA-MG6-S6ML-FKL **Mounting Clips** EA-MG-BZ2-BRK (pk of 5; 3 blank, 1 F1-F5 for landscape, 1 F1-F5 for portrait) 4" Function Keys Label Inserts (pk of 8) EA-MG4-FKL Keypad Bezel Gasket **DC Power Connector** EA-MG6-BZ2-GSK **EA-MG-DC-CON** (pk of 5) (pk of 4; 3 blank, Panel Gaskets 1 F1-F5) EA-MG4-GSK and **Clear Screen Overlays** EA-MG6-S6ML-GSK EA-4-COV2 and EA-6-COV2 (pk of 3)

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Customizing the Function Keys Insert Label



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PANEL & PLC ERROR CODE TABLES

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Introduction

The *C-more*[®] Micro-Graphic panels are capable of communicating over RS232, RS422 and RS485 serial networks. They communicate with Productivity Series PAC's, Do-more PLC's, CLICK PLC's, all controllers in the *Direct* LOGIC family of PLCs utilizing various protocols, and certain 3rd party PLCs. For a complete list of the supported PLCs and protocols, see the PLC Drivers table in Chapter 6: PLC Communications.

As with any network communications, errors may occur. To simplify identification of the possible cause of the error, we have provided tables listing these errors. If a *C-more* Micro-Graphic panel communications error, or other related data exchange error does occur, the error message will appear across the top of the display screen as shown in the example below. A complete table of the panel generated errors, with their respective error codes, error messages, and the possible causes of the error follows.

The *C-more* Micro-Graphic panel also monitors any errors that are generated by the PLC that is connected to it. If any of the PLC generated errors are detected, they are displayed across the top of the panel's display embedded as a hexadecimal value in error code P499. An explanation of how the specific PLC error is identified in the panel error code P499 is shown preceeding the specific manufacturer's PLC error tables. How the hexadecimal error code value is interpreted is slightly different between manufacturers, so it is important to check the explanation at the beginning of each manufacturer's tables. Since these errors are generated by the PLC, refer to the PLC manufacturers documentation for further explanation.

If you have difficulty determining the cause of the error, please refer to Chapter 8: Troubleshooting for some troubleshooting tips or contact our technical support group at 770-844-4200.



C-more Micro-Graphic Panel Error Example

C-more Micro-Graphic Panel Error Code Table

The following table includes all of the error codes and error messages that the panel will display if the listed cause is detected. All of these errors involve problems that could result with the panel communicating with the connected PLC. Be aware that not all of the panel errors are used with each type of PLC that can be connected to the panel.

	C-more Micro-Graphic Panel Error Table				
Error Code	Error Message	Cause			
P001	PLC Com Time Out	A timeout occurred after sending a request to the PLC.			
P002	NAK Received	A negative acknowledgement (NAK) control code has been generated during a read/write request.			
P003	EOT Received	An end of transmission has been sent by PLC in response to a read/write/setbit request.			
P004	STX is Not Found	A Start of Text (STX) control code was not found in the data packet received from the PLC.			
P005	ETX/ETB NotFound	Neither an End of Text (ETX) nor an End of Transmission Block (ETB) control code was found in the data packet received from the PLC.			
P006	LRC Not Match	There was an incorrect Longitudinal Redundancy Check (LRC) control code in the communications packet received from the PLC. This is an indication that the data in the packet is corrupted.			
P007	CRC Not Match	There was an incorrect Cyclic Redundancy Check (CRC) control code in the communications packet received from the PLC. This is an indication that the data in the packet is corrupted.			
P008	Address NotMatch	The address value returned in the data packet from the PLC is incorrect.			
P009	Re.INV.FUN.Code	The function code returned in the data packet from the PLC is incorrect.			
P010	DataSizeNotMatch	There are an incorrect number of bytes found in the data packet returned from the PLC.			
P011	INV.Val.FUN.Code	There is an invalid value in the function code.			
P012	INVALID COMMAND	There was an invalid command sent to the PLC that wasn't recognized by the PLC.			
P013	ENQ Received	If the data packet does not include a negative acknowledgement (NAK - 0x15 value) in the defined packet field, then an enquiry (ENQ) control code error will be displayed.			
P014	TransID NotMatch	This error will be displayed if after checking the Transaction ID Byte in the data packet, there is no match to what was requested.			
P015	Device Not Found	A PLC device designated as Device could not be found.			
P016	DataByte Com.Err	The data part of the packet received contains 0 bytes of data.			
P017	Out of Add.Range	The touch panel requested a file number larger than 255.			
P019	Parity Error	Parity error occurred.			
P020	Can'tOpenS.Port	Can't open serial port			
P021	PLC# Not Match	PLC Number does not match			
P022	Can't Reset DCB	Unable to reset the Data Communications Bit			
P023	Not Connected	Cable not connected properly			
P024	No Other Dev.	Cannot detect other devices			
P025	PollingListErr.	Panel not in polling list			
P026	PLC Conn. Time Out	PLC Connection Time Out			
P027	Memory Error	Memory Type Incorrect			
P028	No Response	PLC failed to Respond: %PLC Node#%??			

C-more Micro-Graphic Panel Error Code Table continues on the next page.

C-more Micro-Graphic Panel Error Code Table (cont'd)

C-more Micro-Graphic Panel Error Table (cont'd)				
Error Code	Error Message	Cause		
		A PLC generated error code with a hexadecimal value of XXXX has been returned from the PLC. * See the explanation for error code P499 proceeding each set of PLC error code tables.		
P500	Can'tWriteS.Port	Data cannot be written to the Serial port. Data was sent to the PLC via the Serial Port. If this error shows on the Panel, it indicates a Hardware Problem.		
P700	RD.Buff.MEM Full	There was an error while allocating memory for the read buffer. When this error is displayed, a memory leak may have occurred.		
P701	INV.PLC Address	Request to inaccessible memory from the HMI layer to the PLC protocol layer. This error is an indication that there is a problem in the HMI layer.		
P702	INV.FUN.Code	A Read/Write/SetBit request has been sent to an invalid memory area. This error is an indication that there is a problem in the HMI layer.		
P703	WRT.PLC.ReadOnly	A PLC Write request was made to the PLC's Read-Only memory area. This error is an indication that there is a problem in the HMI layer or the PLC protocol layer.		

Modbus Protocols Error Code P499 Explanation

The following table lists the errors that can be generated by the Modbus protocols:

AutomationDirect CLICK

AutomationDirect DirectLOGIC - Modbus (Koyo)

Modicon Modbus RTU

Entivity Modbus RTU

NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** Micro-Graphic panel, and displayed on the panel's screen as a hexadecimal value in panel error code P499, if active.

PLC Error Codes Modbus Protocols				
Panel Error Code P499 Hex Value	Name	Meaning		
0x0001	ILLEGAL FUNCTION	The function code received in the query is not an allowable action for the server (or slave). This may be because the function code is only applicable to newer devices and was not implemented in the unit selected. It could also indicate that the server (or slave) is in the wrong state to process a request of this type, for example because it is unconfigured and is being asked to return registered values.		
0x0002	ILLEGAL DATA	The data address received in the query is not an allowable address for the server (or slave). More specifically, the combination of reference number and transfer length is invalid. For a controller with 100 registers, the PDU addresses the first register as 0, and the last one as 99. If a request is submitted with a starting register address of 96 and a quantity of registers of 4, then the request will successfully operate (address-wise at least) on registers 96, 97, 98, 99. If a request is submitted with a starting register of 96 and a quantity of registers of 5, then the request will fail with Exception code 0x02 "lilegal Data Address" since it attempts to operate on registers 96, 97, 98, 99 and 100, and there is no register with address 100.		
0x0003	ILLEGAL DATA VALUE	A value contained in the query data field is not an allowable value for server (or slave). This indicates a fault in the structure of the remainder of a complex request, such as that the implied length is incorrect. It specifically does NOT mean that a data item submitted for storage in a register has a value outside the expectation of the application program, since the Modbus protocol is unaware of the significance of any particular value of any particular register.		
0x0004	SLAVE DEVICE FAILURE	An unrecoverable error occurred while the server (or slave) was attempting to perform the requested action.		



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Productivity3000 Error Code P499 Explanation



NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** touch panel, and displayed on the touch panel's screen as a hexadecimal value in panel error code PLC-499 message, if active. Please refer to the PLC manufacturer's documentation for additional information.

PLC Error Codes for Productivity3000	
Panel Error Code P499 Hex Value	Meaning
0x0001	The function code received in the query is not an allowable action for the server (or slave). This may be because the function code is only applicable to newer devices and was not implemented in the unit selected. It could also indicate that the server (or slave) is in the wrong state to process a request of this type, for example because it is unconfigured and is being asked to return registered values.
0x0002	Address out of range. Check to make sure that the <i>C-more</i> Micro Graphic tag and System ID match the Productivity3000 Programming Software Tag Name and System ID. The project file in the Productivity3000 system and the imported CSV into <i>C-more</i> Micro Graphic must be in sync with each other.
0x0003	A value contained in the query data field is not an allowable value for the server (or slave). This indicates a fault in the structure of the remainder of a complex request, such as that the implied length is incorrect. It specifically does NOT mean that a data item submitted for storage in a register has a value outside the expectation of the application program, since the Modbus protocol is unaware of the significance of any particular value of any particular register.
0x0004	An unrecoverable error occurred while the server (or slave) was attempting to perform the requested action.

Do-more Error Code P499 Explanation

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NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** Micro-Graphic panel, and displayed on the panel's screen as a hexadecimal value in panel error code P499, if active.

	PLC Errors for Do-more		
Error Code	Description	Resolution	
0x01	Unknown Command	Occurs when a message has been corrupted or protocol version is mismatched. Check versions and update appropriately. If versions are correct, check cabling, routing and switches for bad packets.	
0x02	Out of Sessions	Too many devices connected to the CPU. Reduce the number of devices connected.	
0x03	Illegal Operation	Occurs when permission level is not sufficient for the operation performed by the panel. Increase the permission level to correct the problem.	
0x04	Invalid Session	Session number does match for sending device. Re-establish connection by power cycling or sending updated project.	
0x05	Out of Range	Invalid address exists. Ensure that address range is expanded and load configuration to the CPU.	
0x06	Invalid Argument	Occurs when message cannot be parsed correctly. Could occur from noise or faulty wiring.	
0x07	Program Update Active	Wait until program update is complete.	
0x08	No Token	Occurs when client attempts to update the project without first acquiring the program update token.	
0x09	Program Update Inhibited	Occurs when client attempts to update the project while ST21 is true. This allows the customer to use the program to prevent the project from being updated.	
0x0A	System Configuration Update Active	Wait until System Configuration update is complete to continue communications.	
0x0B	Invalid Mode	Ensure that the switch on the CPU is in Term mode.	
0x0C	Mode Change Active	Occurs when a PLC mode change is attempted while a mode change is in progress. In some cases it takes several scans for a mode change.	
0x0D	Mode Locked	Occurs when mode change is attempted and keyswitch is not in Term.	
0x0E	Invalid Password	Enter Do-more password in Password field of <i>C-more</i> Micro Panel Manager for this device.	
0x0F	Resource Locked	Occurs when trying to update a tag that is forced. Force must be removed in order to update the tag.	
0x010	Doc Update Active	Occurs when someone attempts to access the documentation file while it is being written back to ROM.	
0x011	Invalid Driver	Occurs when attempting to read driver data from a driver that doesn't exist.	
0x012	Invalid Driver Data	Occurs when attempting to read a driver data type that isn't valid.	
0x013	Shared RAM write failed	Occurs when attempting to read or write to a module's shared RAM and it fails. Usually occurs when the module has gone bad.	



DirectLOGIC Error Code P499 Explanation

The P499 error code is used to show any errors that are generated by the connected PLC. The P499 error message includes a four digit hexadecimal value displayed at the end of the message. This value can be found in the specific PLC's error tables to determine the cause of the error. The possible PLC generated error codes for the various *Direct* LOGIC communication protocols breakdown into a four digit hexadecimal value.



Direct LOGIC PLC Error Code Displayed Example:

DirectLOGIC – K-Sequence PLC Error Code Table

The following table lists the errors that can be generated by the *Direct*LOGIC PLC when using the K-Sequence protocol.



NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** Micro-Graphic panel, and displayed on the panel's screen as a hexadecimal value in panel error code P499, if active. Please refer to the PLC users manual for additional information.

PLC Error Codes for <i>Direct</i> LOGIC – K-Sequence	
Panel Error Code P499 Hex Value	Description
01F8	Error setting value.
020D	Error in key mode.
0210	Password protected.

DirectLOGIC – DirectNET PLC Error Codes

There are no PLC generated errors that occur when using the *Direct*NET protocol.

Allen-Bradley Error Code P499 Explanation

The P499 error code is used to show any errors that are generated by the connected PLC. The P499 error message includes a four digit hexadecimal value displayed at the end of the message. This value can be looked up in the specific PLC's error tables to determine the cause of the error. The possible PLC generated error codes for the Allen-Bradley DF1 and DH485 communication protocol is represented by a hexadecimal value as shown in the following diagram. Please note that the error code is broken down into three sections. It is possible for more than one type of PLC error to be displayed in this value.



Allen-Bradley PLC Error Code Displayed Example

Error Recieved = P499: Recv. Err Code 3200

Remote = 0x3000 = Remote node host is missing, disconnected or shut down.

Local - 0x0200 = Cannot Guarantee Delivery; Link Layer. The remote node specified does not ACK Command

EXT STS = 0000 = None







Allen-Bradley DF1 Protocol – PLC Error Code Tables

The following PLC error tables cover possible errors that are detected by the panel from Allen-Bradley PLCs using the DF1 protocol. This includes full and half duplex communications for the MicroLogix 1000, 1100. 1200, 1400 & 1500, SLC 5/03, /04, /05, ControlLogix, CompactLogix and FlexLogix, and full duplex communications for the PLC5.



NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** Micro-Graphic panel, and displayed on the panel's screen as a hexadecimal value in panel error code P499, if active. Please refer to the PLC users manual for additional information.

PLC	PLC Errors for Allen-Bradley DF1 Protocol, Remote STS Errors (4-7 bits)	
Panel Error Code P499 Hex Value	Description	
0x0	Success; no error.	
0x10	Illegal command or format.	
0x20	Host has a problem and will not communicate.	
0x30	Remote node host is missing, disconnected, or shut down.	
0x40	Host could not complete function due to hardware fault.	
0x50	Addressing problem or memory protect rungs.	
0x60	Function not allowed due to command protection selection.	
0x70	Processor is in Program Mode.	
0x80	Compatibility mode file missing or communication zone problem.	
0x90	Remote node cannot buffer command.	
0xA0	Wait ACK (1775 KA buffer full).	
0xB0	Remote node problem due to download.	
0xC0	Wait ACK (1775 KA buffer full).	
0xD0	not used	
0xE0	not used	
OxFO	Error code in the EXT STS byte. See the error code table on the next page.	

PLC Errors for Allen-Bradley DF1 Protocol, Local STS Errors (0-3 bits)	
Panel Error Code P499 Hex Value	Description
0x0	Success; no error.
0x1	DST node is out of buffer space.
0x2	Cannot guarantee delivery; link layer. (The remote node specified does not ACK command.)
0x3	Duplicate token holder detected.
0x4	Local port is disconnected.
0x5	Application layer timed out waiting for response.
0x6	Duplicate node detected.
0x7	Station is offline.
0x8	Hardware fault.

PLC generated error code for the Allen-Bradley DF1 Protocol continue on the next page.

Allen-Bradley DF1 Protocol – PLC Error Code Tables (cont'd)

PLC Errors for Allen-Bradley DF1 Protocol, EXT STS Command Code for F0 Command		
Panel Error Code P499 Hex Value	Description	
0x0	not used	
0x1	A field has an illegal value.	
0x2	Fewer levels specified in address than minimum for any address.	
0x3	More levels specified in address than system supports.	
0x4	Symbol not found.	
0x5	Symbol is of improper format.	
0x6	Address does not point to something usable.	
0x7	File is wrong size.	
0x8	Cannot complete request; situation has changed since start of the command.	
0x9	Data or file size is too large.	
0xA	Transaction size plus word address is too large.	
0xB	Access denied; improper privilege.	
0xC	Condition cannot be generated; resource is not available.	
0xD	Condition already exists; resource is readily available.	
0xE	Command cannot be executed.	
0xF	Histogram overflow.	
0x10	No access.	
0x11	Illegal data type.	
0x12	Invalid parameter or invalid data.	
0x13	Address reference exists to deleted area.	
0x14	Command execution failure for unknown reason;	
-	possible PLC 3 histogram overflow.	
0x15	Data conversion error.	
0x16	Scanner not able to communicate with 1771 rack adapter.	
0x17	Type mismatch.	
0x18	1771 module response was not valid.	
0x19	Duplicated label.	
0x22	Remote rack fault.	
0x23	Timeout.	
0x24	Unknown error.	
0x1A	File is open; another node owns it.	
0x1B	Another node is the program owner.	
0x1C	Reserved	
0x1D	Reserved	
0x1E	Data table element protection violation.	
0x1F	Temporary internal problem.	

Allen-Bradley DH485 Protocol – PLC Error Code Tables

The following PLC error code tables cover possible errors that are detected by the panel from Allen-Bradley PLCs using the DH485 protocol. This includes all MicroLogix and SLC500 PLCs, and any communication connection using an Allen-Bradley AIC device using the DH485 protocol.



NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** Micro-Graphic panel, and displayed on the panel's screen as a hexadecimal value in panel error code P499, if active. Please refer to the PLC users manual for additional information.

PLC I	PLC Errors for Allen-Bradley DH485 Protocol, Remote STS Errors (4-7 bits)		
Panel Error Code P499 Hex Value	Description		
0x0	Success; no error.		
0x10	Illegal command or format.		
0x20	Host has a problem and will not communicate.		
0x30	Remote node host is missing, disconnected, or shut down.		
0x40	Host could not complete function due to hardware fault.		
0x50	Addressing problem or memory protect rungs.		
0x60	Function not allowed due to command protection selection.		
0x70	Processor is in Program Mode.		
0x80	Compatibility mode file missing or communication zone problem.		
0x90	Remote node cannot buffer command.		
0xA0	Wait ACK (1775 KA buffer full).		
0xB0	Remote node problem due to download.		
0xC0	Wait ACK (1775 KA buffer full).		
0xD0	not used		
0xE0	not used		
OxFO	Error code in the EXT STS byte. See the error code table on the next page.		

PLC Errors for Allen-Bradley DH485 Protocol, Local STS Errors (0-3 bits)	
Panel Error Code P499 Hex Value	Description
0x0	Success; no error.
0x1	DST node is out of buffer space.
0x2	Cannot guarantee delivery; link layer. (The remote node specified does not ACK command.)
0x3	Duplicate token holder detected.
0x4	Local port is disconnected.
0x5	Application layer timed out waiting for response.
0x6	Duplicate node detected.
0x7	Station is offline.
0x8	Hardware fault.

PLC generated error codes for the Allen-Bradley DH485 protocol continue on the next page.

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Allen-Bradley DH485 Protocol – PLC Error Code Tables (cont'd)

PLC Errors for Allen-Bradley DH485 Protocol, EXT STS Command Code for FO Command	
Panel Error Code P499 Hex Value	Description
0x7	Insufficient memory module size (0000h is returned).
0xB	Access denied; privilege violation.
0xC	Resource not available or cannot do.
0xE	CMD cannot be executed.
0x12	Invalid parameter.
0x14	Failure during processing.
0x19	Duplicate label.
0x1A	File open by another node + owner's local node address, 1 byte.
0x1B	Program owned by another node + program owner's local node address, 1 byte.

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GE Error Code P499 Explanation

The P499 error code is used to show any errors that are generated by the connected PLC. The P499 error message includes a four digit hexadecimal value displayed at the end of the message. This value can be looked up in the specific PLC's error tables to determine the cause of the error. The possible PLC generated error codes for the GE 90-30, 90-70, Micro 90 and VersaMax Micro SNPX communication protocols breakdown into a four digit hexadecimal value.



GE Error Code P499 Message Example:

GE SNPX Protocol – PLC Error Code Tables

The following table lists the errors that can be generated by the GE 90-30, 90-70 and VersaMax PLC when using the SNPX protocol.

NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** Micro-Graphic panel, and displayed on the panel's screen as a hexadecimal value in panel error code P499, if active. Please refer to the PLC users manual for additional information.

	PLC Errors for GE SNPX Protocol (Major)		
Panel Error Code P499 Hex Value	Description		
No error	Successful completion. (This is the expected completion value in the COMMREQ Status Word.)		
0x0002	Insufficient Privilege. For Series 90-70 PLC, the minor error code contains the privilege level required for the service request.		
0x0004	Protocol Sequence Error. The CPU has received a message that is out of order.		
0x0005	Service Request Error, the minor error code contains the specific error code.		
0x0006	Illegal Mailbox Type. Service request mailbox type is either undefined or unexpected.		
0x0007	The PLC CPU's Service Request Queue is full. The master should retry later. It is recommended that the master wait a minimum of 10 msec before sending another service request.		
0x000A	SNP DOS Driver Error. The minor error code contains the specific error code.		
0x000B	Illegal Service Request. The requested service is either not defined or not supported. (This value is returned in lieu of the actual 01h value passed in the SNP error message, to avoid confusion with the normal successful COMMREQ completion.)		
0x000C	Local SNP/SNP-X Error. An error occurred within the SNP task in the CMM module in this PLC. This error may occur in either an SNP master or an SNP slave. The minor error code contains the specific error code.		
0x000D	Remote SNP Error. An error occurred within the SNP slave task in the CMM module in the remote PLC. The minor error code contains the specific error code.		
0x000E	Autodial Error. An error occurred while attempting to send a command string to an attached external modem. The minor error code contains the specific error code.		
0x000F	SNP-X slave error. An error occurred within the SNPX task in the remote slave device. The minor error code contains the specific error code.		
0x0013	Port configurator error.		
0x0050	Problem with sending mail to the slave Service Request task. (Series 90-70 PLC CPUs only)		
0x0051	Problem with getting mail from the slave Service Request task. (Series 90-70 PLC CPUs only)		
0x0055	Slave SNP task timed out before receiving an SRP response. (Series 90-70 PLC CPUs only)		
0×0056	Slave SNP task could not find the requested datagram connection. (Series 90-70 PLC CPUs only)		
0x0057	Slave SNP task encountered an error in trying to write the datagram. (Series 90-70 PLC CPUs only)		
0x0058	Slave SNP task encountered an error in trying to update the datagram. (Series 90-70 PLC CPUs only)		

PLC generated error codes for the GE 90-30, 90-70 and VersaMax SNPX protocol continue on the next page.



PLC Errors for GE SNPX Protocol (Minor-Major) (cont'd)		
Panel Error Code P499 Hex Value	Description	
PLC Error 0x010C	WAIT-type COMMREQ is not permitted; must use NOW AIT-type.	
PLC Error 0x010E	Not used	
PLC Error 0x010F	The service request code in an X-Request message is unsupported or invalid at this time. This error may occur if an SNP-X communication session has not been success fully established at the slave device.	
PLC Error 0x020C	COMMREQ command is not supported.	
PLC Error 0x020E	The modem command string length exceeds 250 characters.	
PLC Error 0x020F	Insufficient privilege level in the slave PLC CPU for the requested SNP-X service. Password protection at PLC CPU may be preventing the requested service.	
PLC Error 0x0213	Unsupported COMMREQ. These errors are only generated when there is no protocol currently being run on a port, and the port receives a COMMREQ. (The port may be disabled or an error has occurred in processing a new configuration).	
PLC Error 0x030C	SNP communication is not active. Must initiate a new SNP communication by sending an Attach or Long Attach COMMREQ.	
PLC Error 0x030E	COMMREQ Data Block Length is too small. Output command string data is missing or incomplete.	
PLC Error 0x030F	Invalid slave memory type in X-Request message.	
PLC Error 0x0313	Invalid COMMREQ length.	
PLC Error 0x040C	SNP slave did not respond to Attach message from master.	
PLC Error 0x040E	Serial output timeout. The CMM module was unable to transmit the modem autodial output from the serial port. (May be due to missing CTS signal when the CMM is configured to use hardware flow control.)	
PLC Error 0x040F	Invalid slave memory address or range in X-Request message.	
PLC Error 0x0413	Invalid COMMREQ status word location.	
PLC Error 0x050C	Unable to write SNP Status Word to local PLC memory; may be due to invalid Status Word memory type or address.	
PLC Error 0x050E	Response was not received from modem. Check modem and cable.	
PLC Error 0x050F	Invalid data length in X-Request message. Data length must be non-zero, and may not exceed decimal 1000 bytes.	
PLC Error 0x0513	Invalid COMMREQ data.	
PLC Error 0x060C	Master device memory type is not valid in this PLC.	
PLC Error 0x060E	Modem responded with BUSY. Modem is unable to complete the requested connection. The remote modem is already in use; retry the connection request at a later time.	
PLC Error 0x060F	X-Buffer data length does not match the service request in X-Request message. The X-Buffer message length is obtained from the Next Message Length field in the X-Request message; the length of the data within the buffer message is always the message length.	
PLC Error 0x070C	Master device memory address or length is zero.	
PLC Error 0x070E	Modem responded with NO CARRIER. Modem is unable to complete the requested connection. Check the local and remote modems and the telephone line.	
PLC Error 0x070F	Queue Full indication from Service Request Processor in slave PLC CPU. The slave is temporarily unable to complete the service request. The master should try again later. It is recommended that the master wait at least 10 msec before repeating the X-Request.	

PLC generated error codes for the GE 90-30, 90-70 and VersaMax SNPX protocol continued on the next page.

PLC Errors for GE SNPX Protocol (Minor-Major) (cont'd)	
Panel Error Code P499 Hex Value	Description
0x080C	Unable to read or write master device memory locations specified in COMMREQ. Usually caused by invalid memory address for this PLC. SNP message exchange may have taken place.
0x080E	Modem responded with NO DIALTONE. Modem is unable to complete the requested connection. Check the modem connections and the telephone line.
0x080F	Service Request Processor response exceeds 1000 bytes; the SNP-X slave device cannot return the data in an X-Response message. (This error applies to CMM module only.)
0x090C	Master device memory data length exceeds maximum data size of CMM module (2048 bytes). Must use a smaller data length. Use multiple COMMREQs if total data length exceeds this maximum value.
0x090E	Modem responded with ERROR. Modem is unable to complete the requested command. Check the moden command string and modem.
0x0A0C	Slave device memory type is missing or not valid.
0x0A0E	Modem responded with RING, indicating that the modem is being called by another modem. Modem is unable to complete the requested command. Retry the modem command at a later time.
0x0B0C	Slave device memory address is missing or zero.
0x0B0E	An unknown response was received from the modem. Modem is unable to complete the requested command. Check the modem command string and modem. The modem response is expected to be either CONNECT or OK.
0x0C0C	COMMREQ Data Block Length is too small. (When expected COMMREQ length is 6 words or less. An improper length may cause other minor error codes 6-11.)
0x0D0C	Invalid Diagnostic Status Word (DSW) starting word or length.
0x0E0C	Invalid maximum SNP message data size. Must be an even value from 42 to 2048.
0x0F0C	Invalid Privilege Level. Must be 0 through 4 or -1.
0x100C	Invalid Fault Table selector. Must be 1 for I/O Fault Table, or 2 for PLC Fault Table.
0x100F	Unexpected Service Request Processor error. (This error applies to CMM module only; the unexpected SRP error code is saved in the Diagnostic Status Words in the CMM module.)
0x110C	Invalid Fault Table starting index. Must be 1-32 for I/O Fault Table, or 1-16 for PLC.
0x120C	Invalid fault count. Must be 1-32 for I/O Fault Table, or 1-16 for PLC Fault Table.
0x130C	Invalid Set PLC Date/Time mode. Must be 1-4.
0x140C	Invalid Set PLC Date/Time date, time, or day-of-week value.
0x150C	Unable to retrieve master device PLC time/date from PLC CPU.
0x150F	Requested service is not permitted in a Broadcast request. The master must direct the X-Request message to a specific SNP-X slave device.
0x160C	Invalid slave PLC type. Must be 0 for Series 90-70, or 1 for Series 90-30 or Series 90-20.
0x170C	Invalid datagram type. Must be 01h for normal datagram, or 81h (129) for permanent datagram.
0x180C	Missing or too many datagram point formats. Must be 1-32.
0x190C	Invalid datagram point format data.

PLC generated error codes for the GE 90-30, 90-70 and VersaMax SNPX protocol continue on the next page.

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PLC Errors for GE SNPX Protocol (Minor-Major) (cont'd)	
Panel Error Code P499 Hex Value	Description
0x1A0C	Datagram area size is too small to include data for all specified point formats.
0x1B0C	Invalid number of Control Program Names. Must be 1-8.
0x1C0C	SNP-X Request exceeds maximum data size (1000 bytes). Must use a smaller data length. Use multiple COMMREQs if necessary.
0x1D0C	Invalid SNP-X communication session type. Must be 0 for a single slave device, or 1 for multiple slave devices.
0x1E0C	Illegal destination SNP ID specified for SNP-X slave. Must be 0-7 ASCII characters, plus a terminating null character (00h). The Null SNP ID (eight bytes of 00h) may be used to specify any single device. The Broadcast SNP ID (eight bytes of FFh) may be use to specify all slave devices on the serial link.
0x1F0C	Destination SNP ID does not match SNP-X session type. The Broadcast SNP ID is not permitted in a single-slave SNP-X session. The Null SNP ID is not permitted in a multiple-slave SNP-X session.
0x200C	Inactivity timeout (T3'). The SNP slave has not received any new SNP messages within the configured T3' time interval.
0x200F	Invalid Message Type field in a received X-Request message. The message type of an X-Request message must be 58h = 'X'.
0x210C	A Parity error has occurred on an Attach, Attach Response, or Update Real-time Datagram message. Communications have not been established.
0x210F	Invalid Next Message Type or Next Message Length field in a received X Request message. If this request does not use a buffer (0-2 bytes of data), the Next Message Type must be zero. If this request will be followed with a buffer message (more than 2 byte.)), the Next Message Type must be 54h = 'T', and the Next Message Length must specify the length of the X-Buffer message. Valid X-Buffer message lengths are 9-1008 bytes (data length plus 8 bytes).
0x220C	A BCC (Block Check Code) error has occurred on an Attach, Attach Response, or Update Realtime Datagram message. Communications have not been established.
0x220F	Invalid Message Type field in a received X-Buffer message. The message type of an X-Buffer message must be 54h = 'T'.
0x230C	A Framing or Overrun serial error has occurred on an Attach, Attach Response, or Update Realtime Datagram message. Communications have not been established.
0x230F	Invalid Next Message Type field in a received X-Buffer message. Since an X-Buffer message is never followed by another message, the Next Message Type must always be zero.
0x240C	An invalid SNP message type was received when an Attach, Attach Response, or Update Realtime Datagram message was required. Communications have not been established.
0x250C	An invalid next message length value was specified in an Attach, Attach Response, or Update Realtime Datagram message. Communications have not been established.
0x260C	An unexpected SNP message type was received when an Attach, Attach Response, or Update Realtime Datagram was required. Communications have not been established.
0x270C	Another Break was received while SNP slave was waiting for an Attach or Update Realtime Datagram message.
0x280C	An SNP message has been sent and retried the maximum number of times. A maximum of two retries are permitted. A retry is caused by a NAK from from the remote SNP device.
0x290C	A received SNP message has been NAKed the maximum number of two times. The NAKed message may be retransmitted a maximum of two times.

 $\rm PLC$ generated error codes for the GE 90-30, 90-70 and VersaMax SNPX protocol continue on the next page.

PLC Errors for GE SNPX Protocol (Minor-Major) (cont'd)	
Panel Error Code P499 Hex Value	Description
0x2A0C	An unknown message was received when an acknowledge (ACK or NAK) was required.
0x2B0C	Sequence Error. An unexpected SNP message type was received.
0x2C0C	Received SNP message contains bad next message length value.
0x2D0C	Acknowledge timeout. An acknowledge (ACK or NAK) was not received within the configured T2 time interval. A slave device may generate this error if the master device has aborted after maximum response NAKs and does not NAK the next response retry.
0x2E0C	Response timeout. The SNP Master did not receive an SNP Response message within the configured T5' time interval.
0x2F0C	Buffer message timeout. An expected Text Buffer or Connection Data message was not received within the configured T5" time interval.
0x300C	Serial output timeout. The CMM module was unable to transmit a Break, an SNP message, or SNP acknowledge (ACK or NAK) from the serial port. (May be due to missing CTS signal when the CMM module is configured to use hardware flow control.)
0x310C	SNP slave did not receive a response from the Service Request Processor in the PLC CPU.
0x320C	COMMREQ timeout. The COMMREQ did not complete within the configured time interval.
0x330C	An SNP Request or Response was aborted prior to completion due to reception of a Break.
0x340C	PLC backplane communications error
0x350C	Invalid Piggyback Status data memory type or address. Communications have not been established.
0x360C	Invalid SNP Slave SNP ID. Must be a 0-7 ASCII characters, plus a terminating null character (00h). The Null SNP ID (eight bytes of 00h) may be used to specify any single slave device.
0x370C	The SNP master has received a response message containing an unexpected data length. Usually indicates a problem with the remote SNP slave device. May occur when Series 90-70 commands (Task Memory or Program Block Memory Read/Write) are issued to a Series 90-30 slave device.
0x380C	Response code in received SNP-X response message does not match expected value. (Response code must equal the request code +80h.)
0x390C	SNP-X Response message exceeds maximum data size (decimal 1000 bytes). Data in the Response is ignored.
0x400C	A parity error has occurred on an X-Attach Response message when establishing a new SNP-X communication session. Communications have not been established.
0x400D	The requested service is not supported by the SNP slave.
0x400F	Serial output timeout. The slave was unable to transmit an SNP-X message from the serial port. (May be due to missing CTS signal when the CMM module is configured to use hardware flow control.)

PLC generated error codes for the GE Fanuc 90-30, 90-70 and VersaMax SNPX protocol continue on the next page.

PLC Errors for GE SNPX Protocol (Minor-Major) (cont'd)	
Panel Error Code P499 Hex Value	Description
0x410C	A framing or overrun error has occurred on an X-Attach Response message when establishing a new SNP-X communication session. Communications have not been established.
0x410D	SNP slave on CMM module requires PLC CPU privilege level 2 to operate. The SNP slave has rejected a request to change to a higher or lower privilege level.
0x410F	An SNP-X request was aborted prior to completion due to reception of a Break.
0x420C	A BCC (Block Check Code) error has occurred on an X-Attach Response message when establishing a new SNP-X communication session. Communications have not been established.
0x420D	SNP Request or Response message exceeds maximum data length of the CMM module. (Total data length for Mailbox and all following Buffer messages is 2048 bytes.) The master must use a smaller data length. Use multiple requests if total data length exceeds the maximum value.
0x420F	An X-Buffer message was received containing greater than 1000 bytes of data. The data is ignored.
0x430C	An invalid message type was received when an X-Attach Response was required when establishing a new SNP-X communication session. Communications have not been established.
0x430D	Improper Write Datagram message format. Series 90-70 slave devices use a different format for this message than Series 90-30 or Series 90-20 slave devices. The master must use the proper message format for this SNP slave device. (The SNP master in the CMMmodule sends this message as part of the Establish Datagram COMMREQ command. The datagram has been partially established, but is not usable; the datagram should be cancelled by using the Datagram ID returned by the COMMREQ.)
0x430F	The SNP-X slave did not receive a response from the Service Request Processor in the PLC CPU.
0x440C	An invalid next message type value was detected in an X-Attach Response message when establishing a new SNP-X communication session. Communications have not been established.
0x440D	A datagram error occurred in a Series 90-70 slave device (dual-port error).
0x440F	PLC backplane communications error.
0x450C	An invalid response code was detected in an X-Attach Response message when establishing a new SNP-X communication session. Communications have not been established.
0x460C	An expected X-Attach Response message was not received within the response timeout interval when establishing a new SNP-X communication session. The master has retried the X-Attach message twice without receiving a response. Communications have not been established.
0x500C	A parity error has occurred on an X-Attach Response message when re-establishing an existing SNP-X communication session. Communications have not been established.
0x500F	A parity error has occurred in a received X-Attach message.
0x510C	A framing or overrun error has occurred on an X-Attach Response message when re-establishing an existing SNP-X communication session. Communications have not been established.
0x510F	A framing or overrun error has occurred in a received X-Attach message.
0x520C	A BCC (Block Check Code) error has occurred on an X-Attach Response message when re-establishing an existing SNP-X communication session. Communications have not been established.
0x520F	A BCC (Block Check Code) error has occurred in a received X-Attach message.

PLC generated error codes for the GE Fanuc 90-30, 90-70 and VersaMax SNPX protocol continue on the next page.

PLC Errors for GE SNPX Protocol (Minor-Major) (cont'd)	
Panel Error Code P499 Hex Value	Description
0x530C	An invalid message type was received when an X-Attach Response was required when re-establishing an existing SNP-X communication session. Communications have not been established.
0x530F	An invalid Message Type was received when an X-Attach message was required. (For an X-Attach message the message type must be 58h = 'T'.)
0x540C	An invalid Next Message Type value was detected in an X-Attach Response message when re-establishing an existing SNP-X communication session. Communications have not been established.
0x540F	An invalid Next Message Type value was detected in a received X-Attach message. (For an X-Attach message, the Next Message Length must be zero.)
0x550C	An invalid response code was detected in an X-Attach Response message when re-establishing an existing SNP-X communication session. Communications have not been established.
0x550F	An invalid request code was detected in a received X-Attach message.
0x560C	An expected X-Attach Response message was not received within the response timeout interval when re-establishing an existing SNP-X communication session. The master has retried the X-Attach message twice without receiving a response. Communications have not been established.
0x600C	A parity error has occurred on an X-Response message.
0x600F	A parity error has occurred in a received X-Request message.
0x610C	A framing or overrun error has occurred on an X-Response message.
0x610F	A framing or overrun error has occurred in a received X-Request message.
0x620C	A BCC (Block Check Code) error has occurred on an X-Response message.
0x620F	A BCC (Block Check Code) error has occurred in a received X-Request message.
0x630C	An invalid message type was received when an X-Response message was required.
0x640C	An invalid next message type value was detected in an X-Response message.
0x650C	An invalid response code was detected in an X-Response message.
0x660C	An expected X-Response message was not received within the response time.
0x700C	A parity error has occurred on an Intermediate Response message.
0x700F	A parity error has occurred in a received X-Buffer message.
0x710C	A framing or overrun error has occurred on an Intermediate Response message.
0x710F	A framing or overrun error has occurred in a received X-Buffer message.
0x720C	A BCC (Block Check Code) error has occurred on an Intermediate Response message.
0x720F	A BCC(Block Check Code) error has occurred in a received X-Buffer message.
0x730C	An invalid message type was received when an Intermediate Response message was required.
0x730F	An expected X-Buffer message was not received.
0x740C	An invalid next message type value was detected in an Intermediate Response message.
0x750C	An invalid response code was detected in an Intermediate Response message.
0x760C	An expected Intermediate Response message was not received within the response timeout interval.

PLC generated error codes for the GE Fanuc 90-30, 90-70 and VersaMax SNPX protocol continue on the next page.



Panel Error Code P499 Hex Value Description 0x8D0A Bad DOS Version. Must have DOS 2.0, or later, to support the SNP DOS Driver. 0x8E0A PC Serial port configured for SNP Master driver is not open; no communication can take place. 0x8F0A Out-of-Sequence SNP message. SNP message type received was not the type expected. 0x900A Bad SNP BCC encountered. Transmission was aborted after maximum retries due to a bad Block Check Code. 0x910A Bad SNP communication. Transmission was aborted after maximum retries due to serial errors (that is, parity, overrun, or framing errors). 0x920A No SNP communication. Either communication has been lost or a communication session has not been established. 0xC105 Invalid block state transition. 0xC205 The OEM key is NULL (inactive). 0xC305 Text length does not match traffic type. 0xC405 Verify with FA Card or EEPROM failed. 0xC505 No task-level Rack/Slot configuration to read or delete. 0xC605 Control Program (CP) tasks exist but requestor not logged into main CP. 0xC705 Passwords are set to inactive and cannot be enabled or disabled. 0xC805 Login using non-zero buffer size required for block commands. 0xC805 A comm orwrite verify error occurred during save or restore	PLC Errors for GE SNPX Protocol (Minor-Major) (cont'd)	
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0xD605 Total datagram connection memory exceeded.	0xD605	
0xD705 Invalid datagram type specified.		
0xD805 Point length not allowed.	0xD805	
0xD905 Transfer type invalid for this Memory Type selector.		· · · · · · · · · · · · · · · · · · ·
0xDA05 Null pointer to data in Memory Type selector.		
0xDB05 Invalid Memory Type selector in datagram.	0xDB05	
0xDC05 Unable to find connection address.		
0xDD05 Unable to locate given datagram connection ID.		
0xDE05 Size of datagram connection invalid.		
0xDF05 Invalid datagram connection address.		

PLC generated error codes for the GE Fanuc 90-30, 90-70 and VersaMax SNPX protocol continue on the next page.

PLC Errors for GE SNPX Protocol (Minor-Major) (cont'd)	
Panel Error Code	Description
P499 Hex Value	Description
0xE005	Service in process cannot login.
0xE105	No I/O configuration to read or delete.
0xE205	IOS could not delete configuration, or bad type.
0xE305	CPU revision number does not match.
0xE405	Memory Type for this selector does not exist.
0xE505	DOS file area not formatted.
0xE605	CPU model number does not match.
0xE705	Configuration is not valid.
0xE805	No user memory is available to allocate.
0xE905	Memory Type selector not valid in context.
0xEA05	Not logged in to process service request.
0xEB05	Task unable to be deleted.
0xEC05	Task unable to be created.
0xED05	VME bus error encountered.
0xEE05	Could not return block sizes.
0xEF05	Programmer is already attached.
0xF005	Request only valid in stop mode.
0xF105	Request only valid from programmer.
0xF205	Invalid program cannot log in.
0xF305	I/O configuration mismatch.
0xF405	Invalid input parameter in request.
0xF505	Invalid password.
0xF605	Invalid sweep state to set.
0xF705	Required to log in to a task for service.
0xF805	Invalid Task Name referenced.
0xF905	Task address out of range.
0xFA05	Cannot replace I/O module.
0xFB05	Cannot clear I/O configuration.
0xFC05	I/O configuration is invalid.
0xFD05	Unable to perform auto configuration.
0xFE05	No privilege for attempted operation.
0xFF05	Service Request Error has been aborted.

A

Mitsubishi FX Protocol – PLC Error Codes

Only errors as listed in the *C-more* Micro-Graphic Panel Error Code Table shown on page A-3 can occur when using the Mitsubishi FX protocol, there are no PLC generated errors.

Mitsubishi Q / QnA Series – PLC Error Codes

The following table lists the errors that can be generated by the Mitsubisht Q / QnA Series PLC when using the Q / QnA protocol.



NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** Micro-Graphic panel, and displayed on the panel's screen as a hexadecimal value in panel error code P499, if active. Please refer to the PLC users manual for additional information.

PLC Error Codes for Mitsubishi Q / QnA and Q Series	
Panel Error Code P499 Hex Value	Description
0x4000	Serial communications checksum error. Check cable and grounding.
0x4001	Unsupported request sent to PLC.
0x4002	Unsupported request sent to PLC.
0x4003	Global request sent to PLC that cannot be executed.
0x4004	System protect switch is on and request was sent that cannot be executed. Also PLC, may still be booting up.
0x4005	Packet sent is too large according to size request in header.
0x4006	Serial communications could not be initialized.
0x4008	CPU busy or buffer full.
0x4010	Request cannot be serviced while CPU is running. CPU must be stopped.
0x4013	Request cannot be serviced while CPU is running. CPU must be stopped.
0x4021	Drive memory does not exist.
0x4022	File (ZR memory) does not exist.
0x4023	File (ZR memory) name and File (ZR memory) number do not match.
0x4024	File (ZR memory) inaccessible by user.
0x4025	File (ZR memory) is locked by another device.
0x4026	File (ZR memory) password required.
0x4027	Specified range is out of File (ZR memory) range.
0x4028	File (ZR memory) already exist.
0x4029	Specified File (ZR memory) capacity cannot be retrieved.
0x402A	Specified File (ZR memory) is abnormal.
0x402B	The requested data cannot be executed in the specified drive memory.
0x402C	The requested operation cannot be executed presently.
0x4030	The specified data type does not exist. Check the CPUs allowable data types.
0x4031	The specified address is out of range. The data type requested may need to be expanded in GX developer. The CPU may not allow this data type.
0x4032	Address qualification is incorrect.
0x4033	Cannot write to system area.
0x4034	Request cannot be executed because completion address for an instruction cannot be turned on.

PLC generated error codes for the Mitsubishi Q / QnA protocol continue on the next page.

Mitsubishi Q / QnA Series – PLC Error Codes (cont'd)

PLC Error Codes for Mitsubishi Q / QnA and Q Series	
Panel Error Code P499 Hex Value	Description
0x4040	Module doesn't support request.
0x4041	Request is out of module's range.
0x4042	Module cannot be accessed.
0x4043	Address for specified module is incorrect.
0x4044	Hardware problem exist for specified module.
0x4050	Request cannot be executed because memory card protect switch is on.
0x4051	Specified memory cannot be accessed.
0x4052	Specified memory attribute is read only and cannot be written to.
0x4053	Error occurred when writing to specified memory location.
0x4080	Request data error. Check cabling and electrical noise.
0x4082	Specified request is already being executed.
0x408B	The remote request cannot be performed.
0x40A0	A block number out of range was specified.
0x40A1	The number of blocks requested exceeds the range of the PLC.
0x40A2	A step number was specified out of range.
0x40A3	Step range limit exceeded.
0x40A4	Specified sequence step number is out of range.
0x40A5	Specified SFC device is out of range.
0x40A6	Block specification and step specification are incorrect.
0x4100	CPU module hardware fault.
0x4101	Serial communication connection incorrect.
0x4105	CPU module internal memory fault. Bad CPU.
0x4106	CPU is in initialization. Wait until CPU is booted up.
0x4107	Specified function not supported by this CPU. Check memory types for that CPU.
0x4110	Specified function not supported because CPU is in Stop. Put CPU in Run.
0x4111	System is not up yet. Wait until system is up before performing request.
0x4A01	The network number specified does not exist. Routing not supported in C-more.
0x4A02	Station number specified does not exist. Routing not supported in C-more.

Crimerio EA1-TCL-M Hardware User Manual, 2nd Ed. Rev. C, 08/18

Omron Error Code P499 Explanation

The P499 error code is used to show any errors that are generated by the connected PLC. The P499 error message includes a four digit hexadecimal value displayed at the end of the message. This value can be looked up in the specific PLC's error tables to determine the cause of the error. The possible PLC generated error codes for the Omron Host Link communication protocols breakdown into a four digit hexadecimal value.

Omron Error Code P499 Message Example:



Omron Host Link Protocol – PLC Error Code Table



The following table lists the errors that can be generated by the Omron PLC when using the Host Link protocol.



NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** Micro-Graphic panel, and displayed on the panel's screen as a hexadecimal value in panel error code P499, if active. Please refer to the PLC manufacturer's documentation for additional information.

PLC Error Codes for Omron Host Link	
Panel Error Code P499 Hex Value	Description
0x00	Normal Completion.
0x01	Not executable in RUN mode.
0x02	Not executable in MONITOR mode.
0x03	Not executable with PROM mounted.
0x04	Address over (data overflow).
0x0B	Not executable in PROGRAM mode.
0x0C	Not executable in DEBUG mode.
0x0D	Not executable in LOCAL mode.
0x10	Parity error.
0x11	Framing error.
0x12	Overrun.
0x13	FCS error.
0x14	Format error (parameter length error).
0x15	Entry number data error (parameter error, data code error, data length error).
0x16	Instruction not found.
0x18	Frame length error.
0x19	Not executable (due to Un-executable error clear, non-registration of I/O table, etc.).
0x20	I/O table generation impossible (unrecognized remote I/O unit, channel over, duplication of optical transmitting I/O unit).
0xA0	Abort due to parity error in transmit data under process.
0xA1	Abort due to framing error in transmit data under process.
0xA2	Abort due to overrun in transmit data under process.
0xA3	Abort due to FCS error in transmit data under process.
0xA4	Abort due to format error in transmit data under process.
0xA5	Abort due to frame length error in transmit data under process.
0xA8	Abort due to entry number data error in transmit data under process.
0xB0	Un-executable due to program area capacity other than 16k bytes.

Omron FINS Protocol – PLC Error Code Table

The following table lists the errors that can be generated by the Omron PLC when using the FINS protocol.



NOTE: The following errors can be generated from the designated PLC, are monitored by the **C-more** Micro-Graphic panel, and displayed on the panel's screen as a hexadecimal value in panel error code P499, if active. Please refer to the PLC manufacturer's documentation for additional information.

PLC Error Codes for Omron FINS	
Panel Error Code P499 Hex Value	Description
0x0000	Normal Completion.
0x0001	Service Canceled.
0x0101	Local Error: Local node not in network.
0x0102	Local Error: Token Timeout.
0x0103	Local Error: Retries Failed.
0x0104	Local Error: Too many send frames.
0x0105	Local Error: Node address range error.
0x0106	Local Error: Node Address Duplication.
0x0201	Destination Node Error: Destination Node not in network.
0x0202	Destination Node Error: Unit Missing.
0x0203	Destination Node Error: Third Node missing.
0x0204	Destination Node Error: Destination Node busy.
0x0205	Destination Node Error: Response Timeout.
0x0301	Controller Error: Communications Controller Error.
0x0302	Controller Error: CPU Unit Error.
0x0303	Controller Error: Controller Error.
0x0304	Controller Error: Unit number Error.
0x0401	Service Unsupported: Undefined Command.
0x0402	Service Unsupported: Not supported by Model/Version.
0x0501	Routing Table Error: Destination address setting error.
0x0502	Routing Table Error: No routing tables.
0x0503	Routing Table Error: Routing table error.
0x0504	Routing Table Error: Too many delays.
0x1001	Command Format Error: Command too long.
0x1002	Command Format Error: Command too short.
0x1003	Command Format Error: Elements/Data don't match.
0x1004	Command Format Error: Command format error.
0x1005	Command Format Error: Header Error.
0x1101	Parameter Error: Area classification missing.
0x1102	Parameter Error: Access Size Error.
0x1103	Parameter Error: Address range error.

PLC generated error codes for the Omron FINS protocol continue on the next page.

Omron FINS Protocol – PLC Error Code Table (cont'd)

PLC Error Codes for Omron FINS	
Panel Error Code P499 Hex Value	Description
0x1104	Parameter Error: Address range exceeded.
0x1106	Parameter Error: Program Missing.
0x1109	Parameter Error: Relational Error.
0x110A	Parameter Error: Duplicate Data Access.
0x110B	Parameter Error: Response too long.
0x110C	Parameter Error: Parameter Error.
0x2002	Read Not Possible: Protected.
0x2003	Read Not Possible: Table missing.
0x2004	Read Not Possible: Data missing.
0x2005	Read Not Possible: Program missing.
0x2006	Read Not Possible: File missing.
0x2007	Read Not Possible: Data mismatch.
0x2101	Write Not Possible: Read Only.
0x2102	Write Not Possible: Protected - cannot write data link table.
0x2103	Write Not Possible: Cannot register.
0x2105	Write Not Possible: Program missing.
0x2106	Write Not Possible: File missing.
0x2107	Write Not Possible: File name already exists.
0x2108	Write Not Possible: Cannot change.
0x2201	Not executable in current mode: Not possible during execution.
0x2202	Not executable in current mode: Not possible while running.
0x2203	Not executable in current mode: Wrong PLC mode (Program).
0x2204	Not executable in current mode: Wrong PLC mode (Debug).
0x2205	Not executable in current mode: Wrong PLC mode (Monitor).
0x2206	Not executable in current mode: Wrong PLC mode (Run).
0x2207	Not executable in current mode: Specified node not polling node.
0x2208	Not executable in current mode: Step cannot be executed.
0x2301	No such device: File device missing.
0x2302	No such device: Missing memory.
0x2303	No such device: Clock missing.
0x2401	Cannot Start/Stop: Table missing.
0x2502	Unit Error: Memory Error.
0x2503	Unit Error: I/O setting Error.
0x2504	Unit Error: Too many I/O points.
0x2505	Unit Error: CPU bus error.
0x2506	Unit Error: I/O Duplication.

PLC generated error codes for the Omron FINS protocol continue on the next page.

Omron FINS Protocol – PLC Error Code Table (cont'd)

PLC Error Codes for Omron FINS	
Panel Error Code P499 Hex Value	Description
0x2507	Unit Error: I/O bus error.
0x2509	Unit Error: SYSMAC BUS/2 error.
0x250A	Unit Error: CPU Bus Unit Error.
0x250D	Unit Error: SYSMAC BUS No. duplication.
0x250F	Unit Error: Memory Error.
0x2510	Unit Error: SYSMAC BUS terminator missing.
0x2601	Command Error: No protection.
0x2602	Command Error: Incorrect password.
0x2604	Command Error: Protected.
0x2605	Command Error: Service already executing.
0x2606	Command Error: Service stopped.
0x2607	Command Error: No execution right.
0x2608	Command Error: Settings not complete.
0x2609	Command Error: Necessary items not set.
0x260A	Command Error: Number already defined.
0x260B	Command Error: Error will not clear.
0x3001	Access Right Error: No access right.
0x4001	Abort: Service aborted.

Siemens Error Code P499 Explanation

The P499 error code is used to show any errors that are generated by the connected PLC. The P499 error message includes a four digit hexadecimal value displayed at the end of the message. This value can be looked up in the specific PLC's error tables to determine the cause of the error. The possible PLC generated error codes for the Siemens PPI communication protocols breakdown into a four digit hexadecimal value as shown in the following diagram.



Siemens Error Code P499 Message Example:





Siemens PPI Protocol – PLC Error Code Table

PLC PDU Header Errors for S7-200 PPI			
Panel Error Code P499 Hex Value	Description		
0x0001	Hardware Fault.		
0x0003	Object access not allowed.		
0x0004	Context not supported.		
0x0005	Address out of range.		
0x0006	Address out of range.		
0x0007	Write Data size mismatch.		
0x000A	Object does not exist.		
0x8000	Function being used.		
0x8001	Action is not allowed in current mode.		
0x8101	Hardware fault.		
0x8103	Access not allowed.		
0x8104	Function not supported.		
0x8105	Address invalid.		
0x8106	Data Type not supported.		
0x8107	Data Type is not consistent with size.		
0x810A	Object does not exist.		
0x8500	PDU Size is incorrect.		
0x8702	Address is invalid.		
0xD201	Block name syntax error.		
0xD202	Error with function parameter.		
0xD203	Error with block type.		
0xD204	No linked block.		
0xD205	Object already exists.		
0xD206	Object already exists.		
0xD207	Block already used in EPROM.		
0xD209	Block does not exist.		
0xD20E	No Block does not exist.		
0xD210	Block number incorrect.		





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Introduction

The runtime errors detected by the *C-more*® Micro-Graphic panel will display in a popup window in the center of the panel display. The most common cause for runtime errors is a bad serial connection during a project transfer or firmware update. To resolve the problem, try the following steps in the order shown:

- 1. Check that all connections are secure and cables are in good condition.
- 2. Cycle power to the panel.
- 3. Reset factory default system settings.
- 4. Transfer the project again.

Panel Errors

If more than one panel error occurs, each error message will display sequentially for three seconds with a two second delay between each message.

When only one panel error is active, that message will display continuously until it is no longer active.

Micro-Graphic Panel Errors					
Error Code	Error Message	Possible Solutions			
R001	PC software tool Timeout	Check cables and connections. Cycle power at the panel. See Chapter 8 for Electrical Noise Problems.			
R002	CRC Error occurred during project transfer from PC.	Check the area for sources of noise: electrical motors, transformers, etc. Check for proper grounding Resend the project.			
R003	Project Check Sum Error. Resend Project file to Panel.				
R004	Protocol Module Check Sum Error. Resend Project File to Panel	Cycle power. Resend the project.			
R005	Panel Check Sum Error. Panel Info (Not Project) will be initialized.	From the Setup Menu screen, reset panel options.			
R006	SW Ver. Mismatch. Use software Ver.xx.xx.	Update to current version programming software and panel firmware.			
R100	Option module detected without external power	EA-MG-SP1 or EA-MG-P1 optional power adapter module is installed on a C-more 3" Micro-Graphic panel without a 12-24 VDC power source. Provide 12-24 VDC power to the optional module.			
R101	Unsupported module detected	EA-MG-SP1 or EA-MG-P1 optional power adapter module for a C-more 3" Micro-Graphic panel is installed on a C-more 6" Micro-Graphic panel. Remove the EA-MG-SP1 or EA-MG-P1.			
R102	External power fail. Reconnect USB cable.	The panel was powered in High Power mode (24 VDC power supply.) The 24 VDC power has been lost and the panel is now running on USB bus power. Either re-establish the 24 VDC power connection or remove all power connections and then reconnect the USB cable for the panel to run in Low-Power mode via the USB connection.			



Panel Errors (cont'd)

Boot Loader Errors				
Error Code	Error Message	Possible Solutions		
B001	F/W and Product Model does NOT match.	Prior to version 2.0, the firmware file extension was *.mgs . Newer versions use *.ea1 . New panel models, in particular the 6 " monochrome and color panels require *.ea1 firmware. If you get error B001 , you have tried to upgrade firmware using a *.mgs firmware file to a panel that requires a *.ea1 file. To resolve the error, select the proper file and upgrade firmware.		
B002	F/W File Check Sum Error.	A file Check Sum Error occurs either when the firmware update was interrupted by loss of power or loss of communication signal OR when the panel flash memory has exhausted it's read/write life. To resolve the error, check to make sure all cables are secure. Check the power supply. Upgrade the firmware again.		
B003	CRC Error occurred during F/W transfer from PC.	A file CRC Error occurs either when the firmware update was interrupted by loss of power or loss of communication signal OR when the panel flash memory has exhausted it's read/write life. To resolve the error, check to make sure all cables are secure. Check the power supply. Upgrade the firmware again.		
B004	Must Use F/W Ver.3.20 or Newer.	Must use Ver.3.20 or newer firmware for this panel (Panel Hardware Revision 1 for EA1-S3ML* and EA1-S6ML*)		



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