C-more micro

Quick Start Guide

3505 HUTCHINSON ROAD
CUMMING, GA 30040-5860

C-more 3" Micro-Graphic Panels, Accessories & Replacement Parts

Touch Screen
EA1-S3ML, EA1-S3MLW*
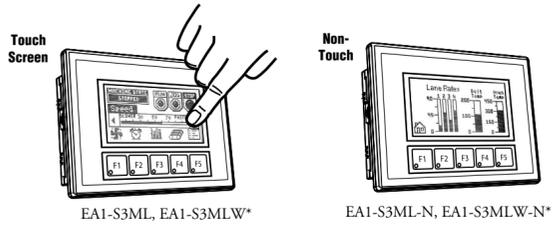
Non-Touch
EA1-S3ML-N, EA1-S3MLW-N*

*NOTE: C-more Micro-Graphic panels with the letter "W" in the part number designate units with 5 selectable background colors of White, Pink1, Pink2, Pink3 and Red. Part numbers without the letter "W" are provided with 5 selectable background colors of Green, Red, Amber, Yellow and Lime.

NOTE: Software and Firmware Version 1.5 or later is required with models EA1-S3MLW and EA1-S3MLW-N. Available for free download at www.automationdirect.com.

Hardware Version
R04 1 2 3 4 5

Product Package Label
Product Label
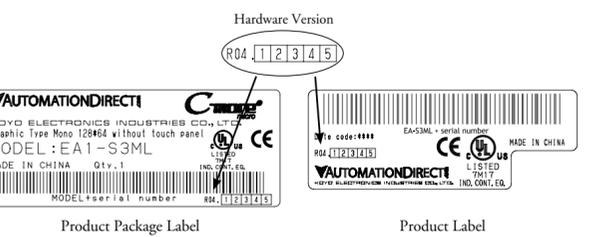
NOTE: C-more 3" Micro-Graphic panels with hardware version R04 and higher must use firmware version 3.20 or higher

General Description

C-more Micro-Graphic 3.1-inch Panels have an STN LCD, 128 x 64 dot monochrome display. Models EA1-S3ML and EA1-S3ML-N have 5 selectable backlight colors (green, red, amber, yellow and lime). Models EA1-S3MLW and EA1-S3MLW-N have 5 selectable backlight colors (white, pink1, pink2, pink3 and red). The panels have 5 user-defined functions keys with LED indicators. The panels can display up to 10 lines by 32 characters of static text and up to 10 lines by 21 characters of dynamic text with embedded variables and phrases mixed with graphics. Power is supplied to the panel through the serial communication port connection when used with most AutomationDirect PLC's having a RJ12 communication port. Either EA-MG-SP1 (power supply with serial port option module) or EA-MG-P1 is required when connecting to third party PLC's. Rated UL for use on a flat surface of Type 1, 4X enclosure (for indoor use only).

Other features include:
• 768 KB memory
• Built in RJ12 serial communications port
• Adjustable contrast
• 2 optional keypad bezels, 8-button or 20-button
• 2 optional DC Power Adapters, one includes 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 LED blinking
• Up to 999 screens, limited only by memory usage
• 0 to 50 °C (32 to 122 °F) operating temperature range
• UL, cUL & CE agency approvals (see below for details)
• 2-year warranty from date of purchase

Full specifications including dimensional drawings for the panels are shown on the reverse side.

Programming Software & Programming Cable (sold separately)

Programming Software
EA-MG-PGMSW

USB to RS232 Programming Cable Assembly
EA-MG-PGM-CBL
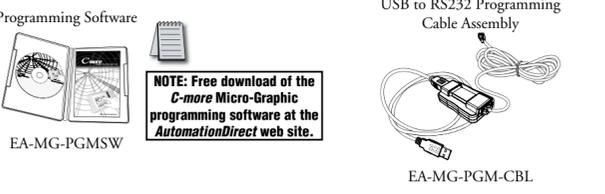
NOTE: Free download of the C-more Micro-Graphic programming software at the AutomationDirect web site.

Agency Approvals

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

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Safety Information

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 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.

Before you begin...

Minimum items required to create a working system:
• C-more Micro-Graphic panel
• C-more Micro-Graphic Programming Software EA-MG-PGMSW (Downloadable version available from the AutomationDirect web site at no charge.)
• C-more Micro-Graphic USB to RS232 Programming Cable Assembly EA-MG-PGM-CBL, used to connect between a PC and the Micro-Graphic panel's built-in serial port
• Power source – either powered from the RJ12 serial communications port on most AutomationDirect PLCs, or C-more DC Power Adapter EA-MG-P1, or Serial Port with DC Power Adapter EA-MG-SP1
• Personal computer – to run the C-more Micro-Graphic programming software
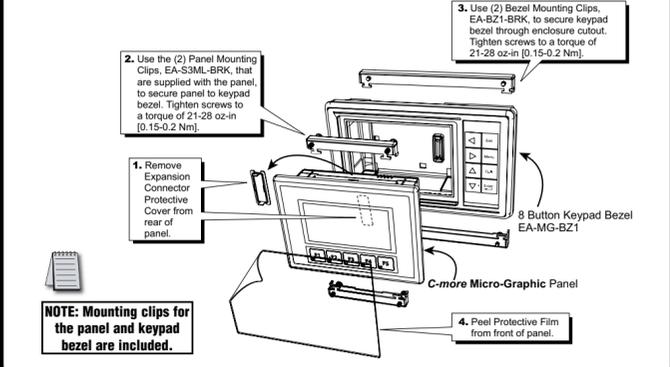• Communications Cable (serial) – to connect the C-more Micro-Graphic panel to your controller

1 Unpack and Inspect

• Unpack the C-more Micro-Graphic panel from its shipping carton. Included in the carton are the following:
  • C-more Micro-Graphic panel
  • cutout template
  • mounting clips (EA-MG-S3ML-BRK)
  • gasket (EA-MG-S3ML-GSK)
  • blank function key label insert (EA-MG-S3ML-FKL)
  • Quick Start Guide (EA1-MG-QSG)
• Unpack any accessories that have been ordered, such as: Keypad Bezel, DC Power Adapter, programming cable, communications cable, etc.
• Inspect all equipment for completeness. If anything is missing or damaged, immediately call the AutomationDirect returns department @ 1-800-633-0405.

Function Key Label Insert
Mounting Clips
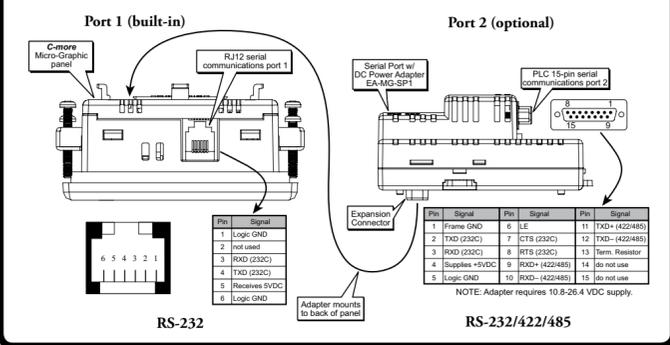Cutout Template
C-more Micro-Graphic Panel
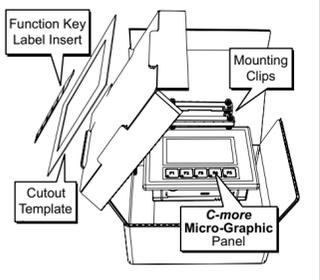
2 Install Optional Hardware Accessories (sold separately)

Below is an example of a C-more Micro-Graphic panel being assembled with an optional 8-button Keypad Bezel.

3. Use (2) Bezel Mounting Clips, EA-BZ1-BRK, to secure keypad bezel through enclosure cutout. Tighten screws to a torque of 21-28 oz-in [0.15-0.2 Nm].

2. Use the (2) Panel Mounting Clips, EA-S3ML-BRK, that are supplied with the panel, to secure panel to keypad bezel. Tighten screws to a torque of 21-28 oz-in [0.15-0.2 Nm].

1. Remove Expansion Connector Protective Cover from rear of panel.

8 Button Keypad Bezel EA-MG-BZ1

C-more Micro-Graphic Panel

NOTE: Mounting clips for the panel and keypad bezel are included.

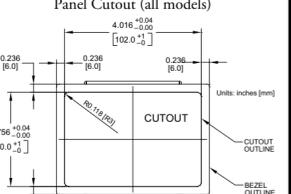4. Peel Protective Film from front of panel.

3 Become Familiar with Available Communication Ports

The C-more Micro-Graphic panels include a built-in RJ12 serial communications port (RS-232) used to communicate with a PC during project development and later as a PLC communications interface. There is also an optional EA-MG-SP1 Serial Port with DC Power Adapter that can provide RS-232, RS-422 or RS-485 communications to a PLC.

Port 1 (built-in)

C-more Micro-Graphic panel
RJ12 serial communications port 1

Pin	Signal
1	Logic GND
2	not used
3	RXD (232C)
4	TXD (232C)
5	Receives 5VDC
6	Logic GND

RS-232

Port 2 (optional)

Serial Port w/ DC Power Adapter EA-MG-SP1
PLC 15-pin serial communications port 2

Expansion Connector
Adapter mounts to back of panel

Pin	Signal	Pin	Signal	Pin	Signal
1	Frame GND	6	LE	11	TXD+ (422/485)
2	RXD (232C)	7	CTS (232C)	12	TXD– (422/485)
3	TXD (232C)	8	RTS (232C)	13	Term. Resistor
4	Supplies +5VDC	9	RXD+ (422/485)	14	do not use
5	Logic GND	10	RXD– (422/485)	15	do not use

NOTE: Adapter requires 10.8-26.4 VDC supply.

RS-232/422/485

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4 Install C-more Micro-Graphic Panel

The C-more Micro-Graphic panel can be mounted through a cutout in an enclosure by using the template provided with the panel, or using the dimensions shown to the right. Cutout dimensions for the 8-button and 20-button keypad bezel options are shown on the reverse side. The keypad bezels also include a template. The enclosure mounting thickness range for the panels and the keypad bezels is 0.04"–0.2" [1–5 mm]. Mounting screw torque is 21-28 oz-in [0.15-0.2 Nm].

Panel Cutout (all models)
Units: inches [mm]
CUTOUT
BEZEL OUTLINE
CUTOUT OUTLINE
MOUNTING CLIP (2) places

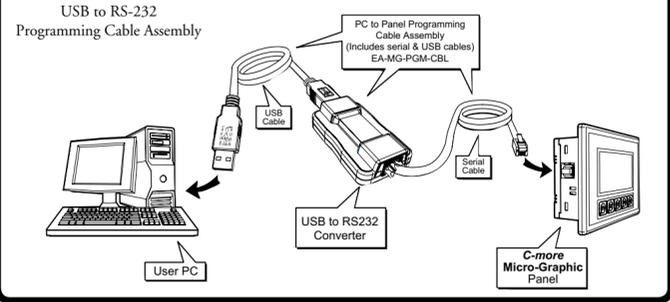### 5 Install the Software and Develop a Project

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 or 64 bit), Windows® 7 (32 or 64 bit) or Windows 8 (32 or 64 bit)
• Keyboard and Mouse or compatible pointing device
• Super VGA color video adapter and monitor with at least 800 x 600 pixels color minimum (1024 x 768 pixels recommended) 64K color minimum
• 150 MB free hard-disk space
• CD-ROM or DVD drive for installing software from the CD, or internet access to download free programming software
• USB port to use with an EA-MG-PGM-CBL, USB to RS232 Programming Cable Assembly for project transfer from the programming software to the panel

Insert the supplied CD-ROM into the PC's CD-ROM drive 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 @ 770-844-4200.
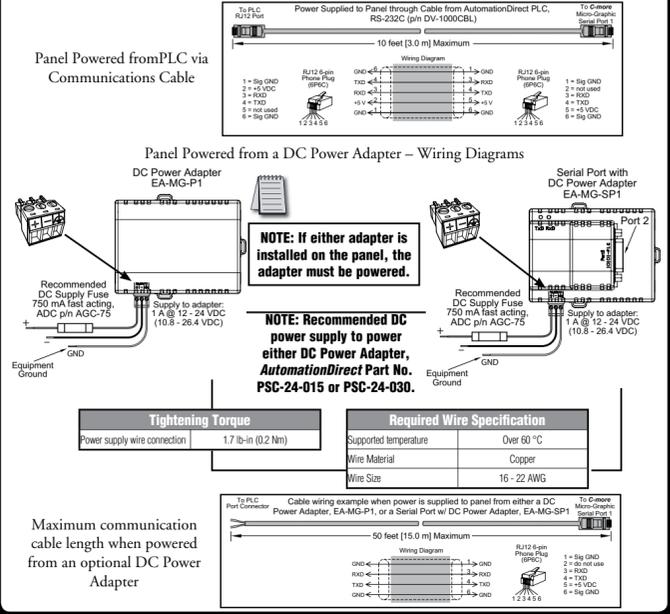
6 Connect C-more Micro-Graphic Panel to Computer

Use an EA-MG-PGM-CBL, USB to RS-232 Programming Cable Assembly, from a USB port type A on the project development PC, through the supplied converter, to the RJ12 RS-232 programming/PLC serial communications port on the C-more Micro-Graphic panel as shown below.

USB to RS-232 Programming Cable Assembly
PC to Panel Programming Cable Assembly (Includes serial & USB cables) EA-MG-PGM-CBL
USB Cable
Serial Cable
USB to RS232 Converter
User PC
C-more Micro-Graphic Panel

7 Provide Power to the C-more Micro-Graphic Panel

• The C-more Micro-Graphic panel is powered during programming from the PC through the USB to RS-232 Programming Cable Assembly, EA-MG-PGM-CBL.
• During operation, the C-more Micro-Graphic panel can be powered from most AutomationDirect PLC RJ12 serial communications port by using the DV-1000CBL communications cable, or a DV-1000CBL communications cable with a FA-15HD 15-pin HD DSub/RJ12 Adapter connected to a DirectLOGIC PLC's 15-pin HD communications port (DL06, D2-250-1 & D2-260 PLCs).
• The panel can also be powered by installing either the EA-MG-P1 DC Power Adapter, or the EA-MG-SP1 Serial Port with DC Power Adapter to the back of the panel and supply the adapter from a 1 Amp @ 12-24 VDC power source.

Panel Powered from PLC via Communications Cable

Power Supplied to Panel through Comm Port from AutomationDirect PLC, RS-232C (pin DV-1000CBL)

Panel Powered from a DC Power Adapter – Wiring Diagrams

DC Power Adapter EA-MG-P1
Serial Port with DC Power Adapter EA-MG-SP1

NOTE: If either adapter is installed on the panel, the adapter must be powered.

NOTE: Recommended DC power supply to power either DC Power Adapter, AutomationDirect Part No. PSC-24-015 or PSC-24-030.

Recommended DC Supply Fuse 750 mA fast acting, ADC p/n AGC-75
Supply to adapter: 1 A @ 12 - 24 VDC (10.8 - 26.4 VDC)

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

Maximum communication cable length when powered from an optional DC Power Adapter

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8 Choose Micro-Graphic Panel to PLC Protocols & Cables
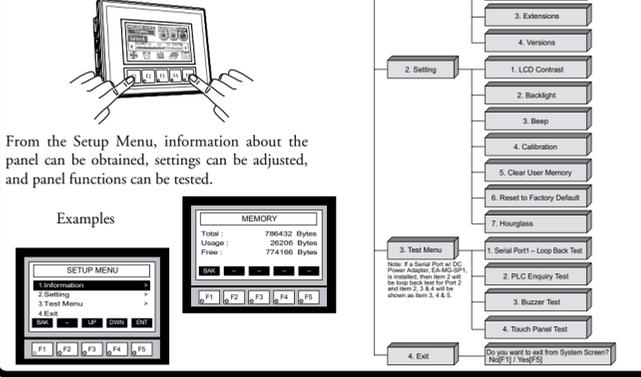
PLC Drivers	
Serial - port1 or port2	Serial - port2 only
AutomationDirect Productivity Series	Allen-Bradley DF1 Full Duplex
AutomationDirect Do-more	Allen-Bradley DF1 Half Duplex
AutomationDirect CLICK	Allen-Bradley PLC5 DF1
AutomationDirect K-sequence	Allen-Bradley DH485
AutomationDirect DirectNET	GE SNPX (90/30, 90/70, Micro 90, VersaMax Micro)
AutomationDirect SOLO	Mitsubishi FX
AutomationDirect GS Drives	Mitsubishi Q and QnA
AutomationDirect Modbus	Omron Host Link (C200 Adapter, C500)
Modicon Modbus RTU	Omron FINS Serial (CJ1, CS1)
Entivity Modbus RTU	Siemens PPI (S7-200 CPU)
	AutomationDirect SOLO Temperature Controller
	AutomationDirect GS Drives

NOTE: For the latest list of available PLC drivers and PLC cables go to www.automationdirect.com.

Cable Description	Cable Part No.	Cable Description	Cable Part No.
Cables for direct connect to panel's serial port 1 (Panel powered from PLC serial port.)		**Cables used with optional serial port 2 (3" Panel powered from optional Serial Port w/ DC Power Adapter, EA-MG-SP1.)**	
AutomationDirect Productivity Series, Do-more, CLICK, DirectLOGIC PLC RJ-12 port, DL05, DL205, D3-350, D4-450 & H2-WinPLC (RS-232C).	DV-1000CBL	AutomationDirect Productivity Series, Do-more, CLICK, DirectLOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & H2-WinPLC (RS-232C).	EA-2CBL
DirectLOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C).	D4-1000CBL	DirectLOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C).	EA-2CBL-1
DirectLOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C). Use with DV-1000CBL cable.	FA-15HD	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
DirectLOGIC PLC 15-pin D-sub port, DL405 (RS-232C).	FA-CABKIT	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 & 1500 (RS-232C).	EA-MLOGIX-CBL
Cables for direct connect to panel's serial port 1 (Panel powered from either optional DC Power Adapter, EA-MG-P1, or Serial Port w/ DC Power Adapter, EA-MG-SP1)		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 (RS-232C).	EA-DH485-CBL
GE 90/30, 90/70, Micro 90, VersaMax Micro(Port 2) 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		
DirectLOGIC PLC RJ-11 port, D3-340 (RS-232C).	OP-3CBL-1	OMRON Host Link (C200 Adapter, C500) (RS-232C).	EA-OMRON-CBL

9 Accessing the C-more Micro-Graphic Panel Setup Screens

To access the Setup Menu of the panel's setup screens, press the the F1 and 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.

Examples

SETUP MENU
1. Information
2. Setting
3. Test Menu
4. Exit

MEMORY
Total : 786432 Bytes
Usage : 26206 Bytes
Free : 774166 Bytes

Setup Menu
Menu flow Chart
1. Information — 1. Memory / 2. Protocol / 3. Extensions / 4. Versions
2. Setting — 1. LCD Contrast / 2. Backlight / 3. Beep / 4. Calibration / 5. Clear User Memory / 6. Reset to Factory Default / 7. Hourglass
3. Test Menu — 1. Serial Port1 – Loop Back Test / 2. PLC Enquiry Test / 3. Buzzer Test / 4. Touch Panel Test
4. Exit

10 Connect C-more 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 RJ12 serial communications port (RS-232) or by using the optional EA-MG-SP1 Serial Port with DC Power Adapter, the panel can be connected to the PLC from the adapter's 15-pin serial communications port with either RS-232, RS-422 or RS-485 communications.

CLICK PLC
C-more 3 Inch Micro-Graphic Panel
DV-1000CBL serial cable

Example of panel's Port 1 connected to a CLICK PLC

DL06 PLC
C-more to DirectLOGIC VGA 15-pin port serial cable EA-2CBL-1
C-more Micro-Graphic Panel

Example of panel's optional Port 2 connected to a DL06 PLC
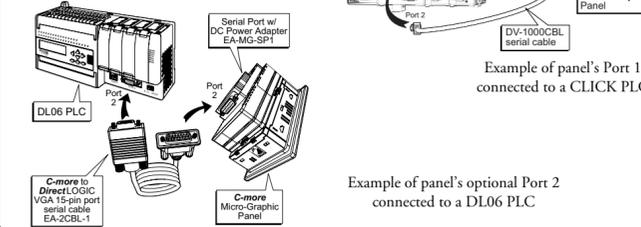
Additional Help and Support

• For product support, specifications, and installation troubleshooting, a Hardware User Manual can be downloaded from the On-line Documentation area of the AutomationDirect web site or purchased through the AutomationDirect Sales team @ 1-800-633-0405 as part number EA1-MG-USER-M.
• For software programming help, refer to the C-more Micro-Graphic Programming Software on-line embedded help.
• Refer to demos of the product at: www.CmoreMicro.com/software/software_demo.html
• For additional technical support and questions, call our Technical Support team @ 1-800-633-0405 or 770-844-4200.

Data Sheet: EA1-MG-QSG, Rev. T

EA1 - MG - QSG

C-more Micro-Graphic Panel Specifications

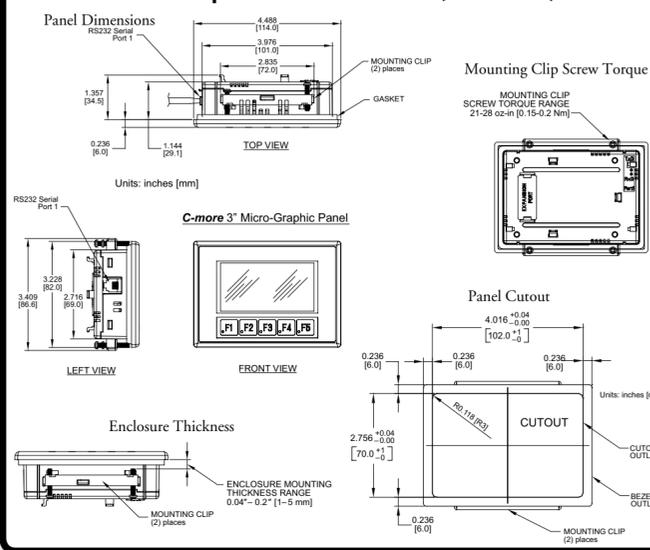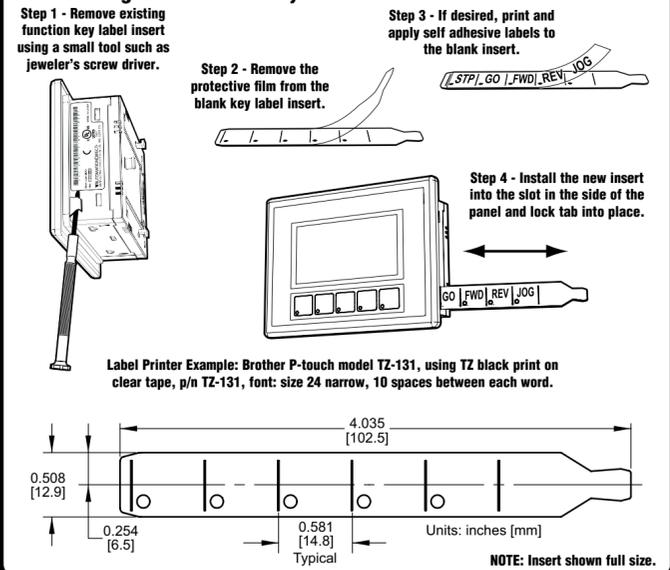| Specification	Model	3" STN Micro-Graphic Panel Touch Screen	3" STN Micro-Graphic Panel non Touch Screen
Part Number:		EA1-S3ML, EA1-S3MLW	EA1-S3ML-N, EA1-S3MLW-N
Description:		128 x 64 dots LCD display, five user defined keypad function buttons, and five user defined LED's	
Display:			
• Type		3.1" STN monochrome LCD, graphical characters	
• Resolution		128 (W) x 64 (H) dots	
• Color		2 colors (normal / inverse)	
• Viewing Area Size		2.789" (W) x 1.385" (H) [70.8 mm x 35.2 mm]	
• Active Area Size		2.670" (W) x 1.259" (H) [67.8 mm x 32.0 mm]	
• Contrast		Adjusted from the panel's built-in configuration setup menu	
• Viewing Angle		3, 9 o'clock axis –> 45 degrees / 6 o'clock axis –> 45 degrees / 12 o'clock axis –> 30 degrees	
Backlight:			
• Type		LED	
• Color		5 user defined colors: EA1-S3ML, EA1-S3ML-N – Red, Green, Amber, Lime, and Yellow; EA1-S3MLW, EA1-S3MLW-N – White, Pink1, Pink2, Pink3 and Red	
• User Replaceable		No	
Touch Screen:			
• Type		Analog resistive, single touch*	N/A
• Operation		51 gram force [0.5 N] maximum	N/A
• Life		Minimum of 1,000,000 cycles	N/A
Features:			
• User Memory			
• 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.	
• Serial Communications		Built-in RJ12 serial communications port (RS-232). Optional serial communications port (RS-232, RS-485/422) when using the optional EA-MG-SP1 Serial Port with DC Power Adapter.	
• Expansion Connection		Yes – used with optional Keypad Bezels, EA-MG-BZ1 & EA-MG-BZ2, and EA-MG-P1 DC Power Adapter, and EA-MG-SP1 Serial Port with DC Power Adapter.	
Screen Objects:			
• Functional Devices		Push Button, Switch, Indicator Button, 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, Function Keys Configuration Object, Line Graph, Realtime Graph, Bar Meter	
• Static Shapes		Lines, Rectangles, Circles and Frames	
• Displayable Fonts		Fixed fonts: 4x6 (only in static text), 6x6, 6x8, 8x16, 8x32, 16x16, 16x32, 32x16, 32x32, and Windows fonts	
Electrical:			
• Input Voltage Range		5.0 VDC (4.75 – 5.25 VDC)	
• Input Power		Supplied through the panel's RJ12 serial communications port connection when used with any AutomationDirect PLC having a RJ12 communication port. Can also be supplied from an external 12-24 VDC power source when using the optional EA-MG-P1 DC Power Adapter, or the optional EA-MG-SP1 Serial Port with DC Power Adapter	
• Power Consumption		1.05 W @ 5 VDC (210 mA)	
• Recommended Fuse		Type AGC fast acting glass fuse, 250 mA, 250 VAC, ADC p/n AGC-25. No fuse required when directly connected to a PLC CPU or PC with recommended cable.	
• Maximum Inrush Current		1 A for 500 µs	
• Acceptable External Power Drop Duration		Maximum 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. (±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 (for indoor use only)	
• Agency Approvals		CE (EN61131-2), UL508, CUL Canadian C22.2 No. 142-M95, UL File E157382, CSA file 234884	
Physical:			
• Dimensions		4.488" (W) x 3.228" (H) x 1.593" (D) [114.0 mm x 82.0 mm x 40.5 mm]	
• 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]	
• Depth from bezel rear with options Module		2.295" [58.3 mm]	
• Weight		5.82 oz. (165 g)	

*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.

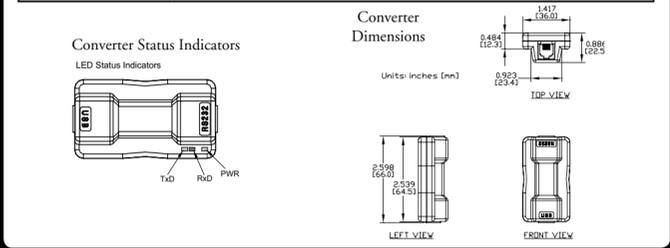## C-more 3" Micro-Graphic Panel Dimensions (all models)
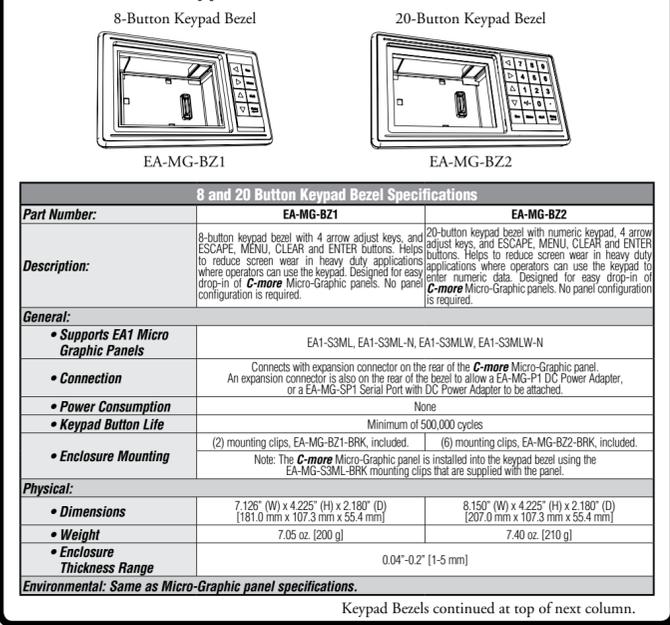

Customizing the Function Keys Label Insert

Step 1 - Remove existing function key label insert using a small tool such as jeweler's screw driver.

Step 2 - Remove the protective film from the blank key label insert.

Step 3 - If desired, print and apply self adhesive labels to the blank insert.

Step 4 - Install the new insert into the slot in the side of the panel and lock tab into place.

Label Printer Example: Brother P-touch model TZ-131, using TZ black print on clear tape, p/n TZ-131, font: size 24 narrow, 10 spaces between each word.

4.035 [102.5] / 0.508 [12.9] / 0.254 [6.5] / 0.581 [14.8] Typical / Units: inches [mm]

NOTE: Insert shown full size.

USB to RS232 Programming Cable Assembly

USB to RS232 Converter Specifications

Part Number:	EA-MG-PGM-CBL
Description:	6-ft cable assembly to connect personal computer to any *C-more* Micro-Graphic panel for setup and programming. (Note: This cable assembly uses the PC's USB port and converts the signals to serial transmissions. The USB port supplies 5 VDC to the Micro-Graphic panel for configuration operation.) Assembly includes standard USB A-type connector to B-type connector cable, custom coriverter, and an RS232C cable (DV-1000CBL) with RJ12 modular connector on each end.
Hardware:	
• USB Interface	USB Specification Rev. 1.1, Connector: USB Type B jack to accept USB Type B cable plug
• Serial Interface	RS232 (EIA-232-E) Connector: RJ12 phone jack 6p to accept RJ12 cable plug
• Baud Rate	115.2 kbps Maximum
• Input Voltage	5 VDC (Supplied thru serial interface cable.)
• Power Consumption	50 mA (Does not include power to panel and/or bezel.)
Accessory Cables:	
• USB Cable	USB Type A plug to PC on one end, USB Type B plug to converter on other end, 0.30 m [1 foot] length (* Note)
• Serial Cable	DV-1000CBL cable with RJ12 phone plug connectors on both ends, 2.0 m [6.56 feet] length (* Note)
Physical:	
• Dimensions	2.559" (W) x 1.417" (H) x 0.886" (D) [65.0 mm x 36.0 mm x 22.5 mm]
• Weight	1.06 oz. [30 g]
Environmental: Same as C-more Micro-Graphic panel specifications.	

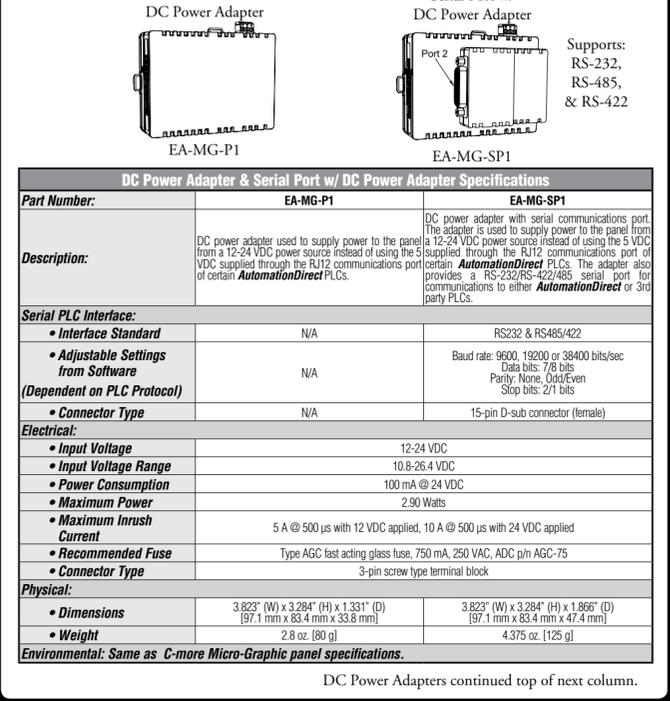*** Note: Maximum cable length for either the USB or serial cable should not exceed 2.0 m [6.56 feet] in length.**

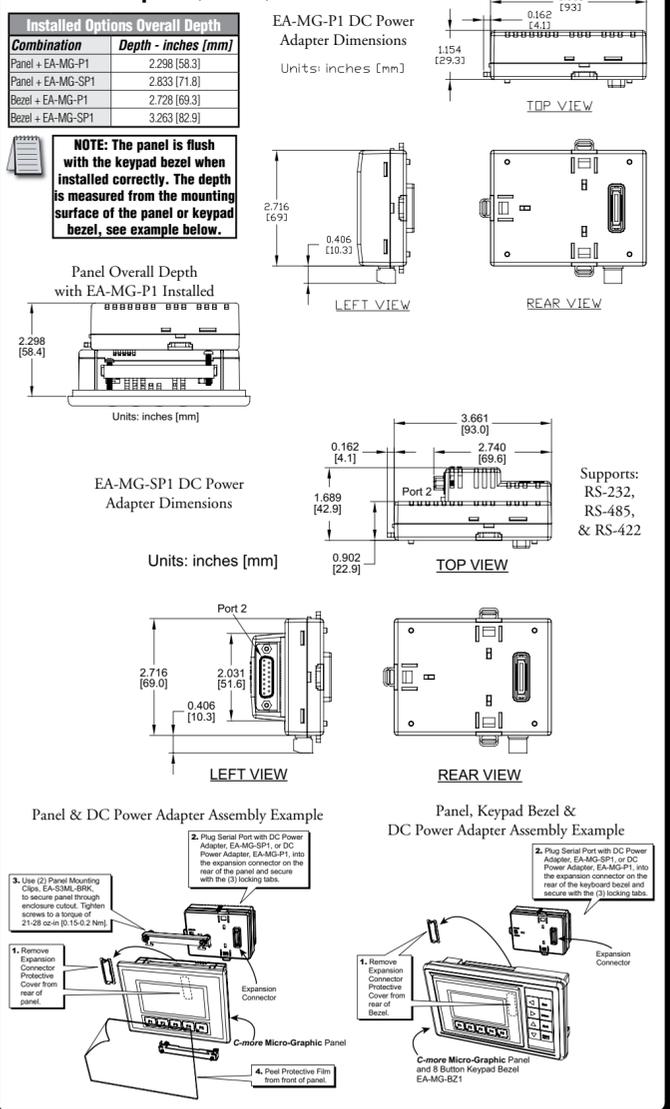Converter Status Indicators / Converter Dimensions

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8 and 20 Button Keypad Bezels

8-Button Keypad Bezel — EA-MG-BZ1 / 20-Button Keypad Bezel — EA-MG-BZ2

8 and 20 Button Keypad Bezel Specifications

Part Number:	EA-MG-BZ1	EA-MG-BZ2
Description:	8-button keypad bezel with 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 *C-more* Micro-Graphic panels. No panel configuration is required.	20-button keypad bezel with numeric keypad, 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 *C-more* Micro-Graphic panels. No panel configuration is required.
General:		
• Supports EA1 Micro Graphic Panels	EA1-S3ML, EA1-S3ML-N, EA1-S3MLW, EA1-S3MLW-N	
• Connection	Connects with expansion connector on the rear of the *C-more* Micro-Graphic panel. An expansion connector is also on the rear of the bezel to allow a EA-MG-P1 DC Power Adapter, or a EA-MG-SP1 Serial Port with DC Power Adapter to be attached.	
• Power Consumption	None	
• Keypad Button Life	Minimum of 500,000 cycles	
• Enclosure Mounting	(2) mounting clips, EA-MG-BZ1-BRK, included.	(6) mounting clips, EA-MG-BZ2-BRK, included.
	Note: The *C-more* Micro-Graphic panel is installed into the keypad bezel using the EA-MG-S3ML-BRK mounting clips that are supplied with the panel.	
Physical:		
• Dimensions	7.126" (W) x 4.225" (H) x 2.180" (D) [181.0 mm x 107.3 mm x 55.4 mm]	8.150" (W) x 4.225" (H) x 2.180" (D) [207.0 mm x 107.3 mm x 55.4 mm]
• Weight	7.05 oz. [200 g]	7.40 oz. [210 g]
• Enclosure Thickness Range	0.04"-0.2" [1-5 mm]	
Environmental: Same as Micro-Graphic panel specifications.		

Keypad Bezels continued at top of next column.

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8 and 20 Button Keypad Bezels (cont'd)

EA-MG-BZ1 Keypad Bezel Cutout / EA-MG-BZ2 Keypad Bezel Cutout

EA-MG-BZ1 Keypad Bezel Dimensions

EA-MG-BZ2 Keypad Bezel Dimensions

Panel & Keypad Bezel Assembly Example

NOTE: Mounting clips for the panel and keypad bezel are included.

DC Power Adapters

DC Power Adapter — EA-MG-P1 / Serial Port w/ DC Power Adapter — EA-MG-SP1

Supports: RS-232, RS-485, & RS-422

DC Power Adapter & Serial Port w/ DC Power Adapter Specifications

Part Number:	EA-MG-P1	EA-MG-SP1
Description:	DC power adapter used to supply power to the panel in a 12-24 VDC power source instead of using the 5 VDC supplied through the RJ12 communications port of certain *AutomationDirect* PLCs.	DC power adapter with serial communications port. The adapter is used to supply power to the panel from a 12-24 VDC power source instead of using the 5 VDC supplied through the RJ12 communications port of certain *AutomationDirect* PLCs. The adapter also provides a RS-232/RS-422/485 serial port for communications to either *AutomationDirect* or 3rd party PLCs.
Serial PLC Interface:		
• Interface Standard	N/A	RS232 & RS485/422
• Adjustable Settings from Software (Dependent on PLC Protocol)	N/A	Baud rate: 9600, 19200 or 38400 bits/sec Data bits: 7/8 bits Parity: None, Odd/Even Stop bits: 2/1 bits
• Connector Type	N/A	15-pin D-sub connector (female)
Electrical:		
• Input Voltage	12-24 VDC	
• Input Voltage Range	10.8-26.4 VDC	
• Power Consumption	100 mA @ 24 VDC	
• Maximum Power	2.90 Watts	
• Maximum Inrush Current	5 A @ 500 µs with 12 VDC applied, 10 A @ 500 µs with 24 VDC applied	
• Recommended Fuse	Type AGC fast acting glass fuse, 750 mA, 250 VAC, ADC p/n AGC-75	
• Connector Type	3-pin screw type terminal block	
Physical:		
• Dimensions	3.823" (W) x 3.284" (H) x 1.331" (D) [97.1 mm x 83.4 mm x 33.8 mm]	3.823" (W) x 3.284" (H) x 1.866" (D) [97.1 mm x 83.4 mm x 47.4 mm]
• Weight	2.8 oz. [80 g]	4.375 oz. [125 g]
Environmental: Same as C-more Micro-Graphic panel specifications.		

DC Power Adapters continued top of next column.

DC Power Adapters (cont'd)

Installed Options Overall Depth	
Combination	**Depth - inches [mm]**
Panel + EA-MG-P1	2.298 [58.3]
Panel + EA-MG-SP1	2.833 [71.8]
Bezel + EA-MG-P1	2.728 [69.3]
Bezel + EA-MG-SP1	3.263 [82.9]

NOTE: The panel is flush with the keypad bezel when installed correctly. The depth is measured from the mounting surface of the panel or keypad bezel, see example below.

EA-MG-P1 DC Power Adapter Dimensions — Units: inches [mm]

Panel Overall Depth with EA-MG-P1 Installed

EA-MG-SP1 DC Power Adapter Dimensions — Units: inches [mm]

Supports: RS-232, RS-485, & RS-422

Panel & DC Power Adapter Assembly Example

Panel, Keypad Bezel & DC Power Adapter Assembly Example

Clear Screen Overlay

EA-MG-COV-CL

Dimensions

Overlay Cover Installation

Step 1 — Remove cover from package / Step 2 — Peel paper backing / Step 3 — Apply cover / Step 4 — Remove protective film

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Replacement Parts

C-more 3" Micro-Graphic Panel Mounting Clips: EA-MG-S3ML-BRK (pk of 2)

8-Button Keypad Bezel Mounting Clips: EA-MG-BZ1-BRK (pk of 2)

20 Button Keypad Bezel Mounting Clips: EA-MG-BZ2-BRK (pk of 8)

Part Number	Description
EA-MG-S3ML-BRK	Replacement mounting clip for *C-more* 3" Micro-Graphic panels (pk of 2)
EA-MG-BZ1-BRK	Replacement mounting clip for *C-more* Micro-Graphic keypad bezel EA-MG-BZ1 (pk of 2)
EA-MG-BZ2-BRK	Replacement mounting clip for *C-more* Micro-Graphic keypad bezel EA-MG-BZ2 (pk of 8)
EA-MG-DC-CON	Replacement adapter DC power connector for optional EA-MG-P1 and EA-MG-SP1 power adapters used with *C-more* Micro-Graphic panels (pk of 5)
EA-MG-S3ML-GSK	Replacement mounting gasket for *C-more* 3" Micro-Graphic panels
EA-MG-BZ1-GSK	Replacement mounting gasket for *C-more* 3" Micro-Graphic keypad bezel EA-MG-BZ1
EA-MG-BZ2-GSK	Replacement mounting gasket for *C-more* 3" Micro-Graphic keypad bezel EA-MG-BZ2
EA-MG-S3ML-FKL	Replacement function key label insert for *C-more* 3" Micro-Graphic panels (pk of 10; 5 blank, 5 F1-F5)

C-more Micro-Graphic Panel DC Power Connector: EA-MG-DC-CON (pk of 5)

C-more 3" Micro-Graphic Panel Mounting Gasket: EA-MG-S3ML-GSK

3" Keypad Bezel 1 Mounting Gasket: EA-MG-BZ1-GSK

3" Keypad Bezel 2 Mounting Gasket: EA-MG-BZ2-GSK

C-more 3" Micro-Graphic Panel Function Key Label Insert: EA-MG-S3ML-FKL (pk of 10; 5 blank, 5 F1-F5)