

Quick Start Guide

C-more 6" Micro-Graphic Panels, Accessories & Replacement Parts



EA1-T6CL
shown in Landscape (Horizontal) mode



EA1-T6CL
shown in Portrait (Vertical) mode

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

General Description

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 power supply during operation, or can be powered in low power mode thru 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)
- 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
- 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

Accessories (sold separately)



EA-MG6-BZ2

21-Button Keypad Bezel



EA-MG6-BZ2P

Clear Screen Overlay



EA-6-COV2

Accessory details shown on the reverse side.

Programming Software & Programming Cable (sold separately)

Programming Software



EA-MG-PGMSW

NOTE: Free download of the C-more Micro-Graphic programming software at the [AutomationDirect](http://AutomationDirect.com) web site.

USB Programming Cable



USB-CBL-AB6

Agency Approvals

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



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 6" Micro-Graphic panel
- C-more Micro-Graphic Programming Software EA-MG-PGMSW (Downloadable version available from the [AutomationDirect](http://AutomationDirect.com) web site at no charge.)
- C-more Micro-Graphic USB Programming Cable such as USB-CBL-AB6, used to connect between a PC and the Micro-Graphic panel's built-in serial port. The panel will operate in Low-Power mode when powered by the PC and the screen brightness is diminished.
- Power source – An external 12-24 VDC class 2 power source is required for normal High-Power operation. Recommended power supplies are AutomationDirect part numbers PSC-24-015 or PSC-24-030.
- 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.



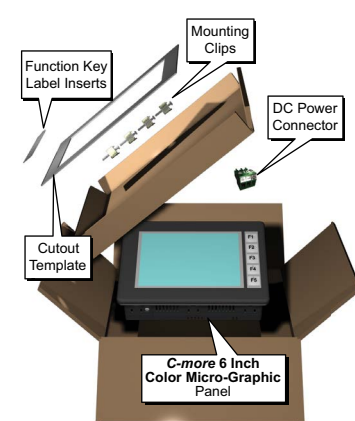
1 Unpack and Inspect

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

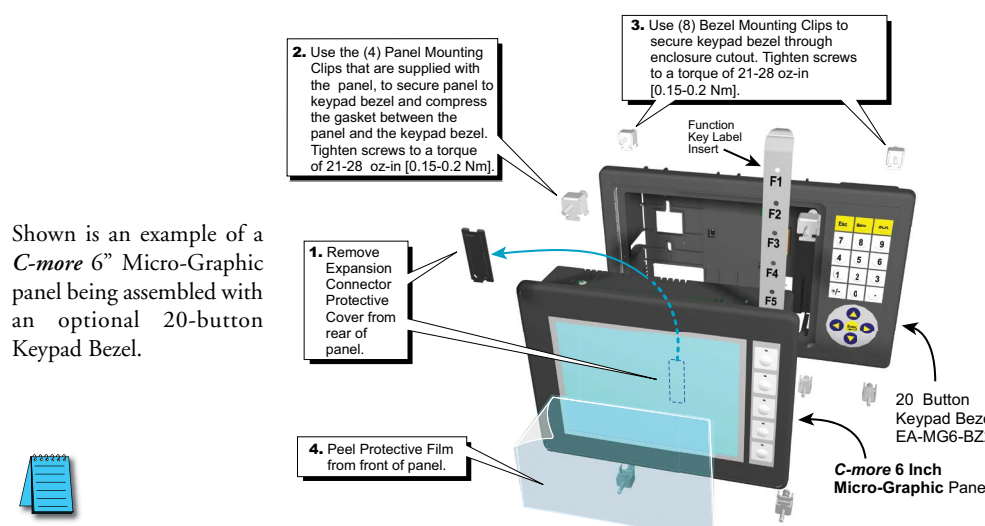
- C-more 6" Micro-Graphic panel
- cutout template
- mounting clips
- gasket
- function key label inserts
- Quick Start Guide
- DC Power Connector

Unpack any accessories that have been ordered, such as: Keypad Bezel, DC Power Supply, 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.



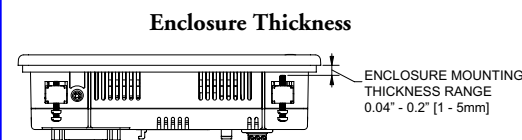
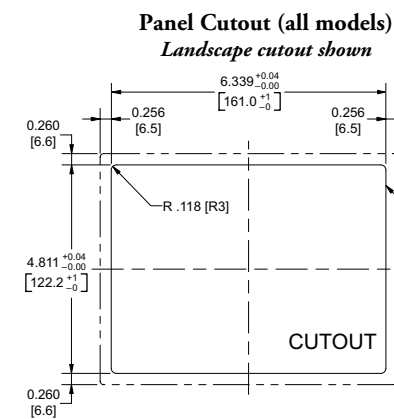
2 Install Optional Hardware Accessories (sold separately)



NOTE: Mounting clips for the panel or keypad bezel are included with each product

4 Install C-more 6" Micro-Graphic Panel

The C-more 6" 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. The optional keypad bezels also include templates. 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].



5 Install the Software and Develop a Project

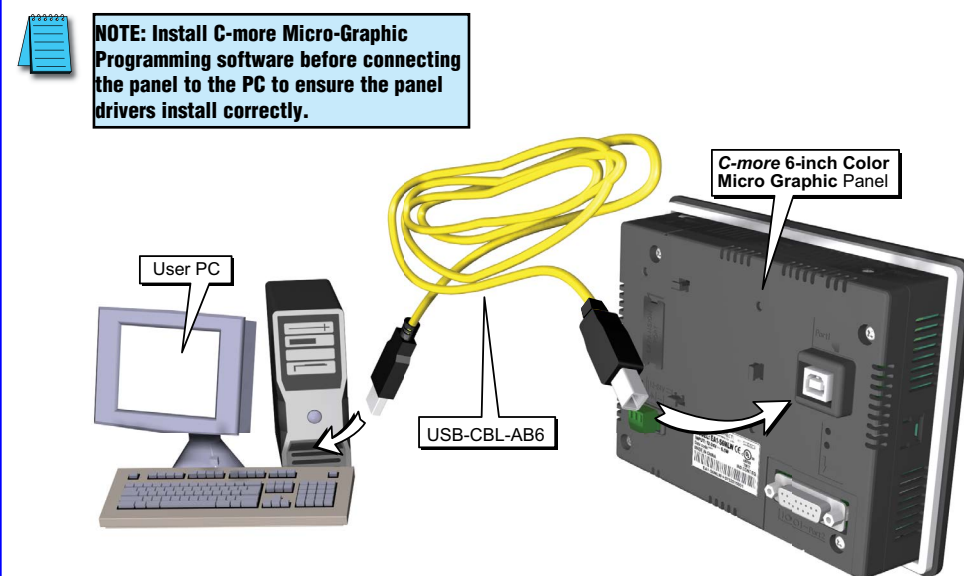
NOTE: Software and Firmware Version 2.5 or later is required with model EA1-T6CL. Available for free download at www.automationdirect.com.

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
- 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

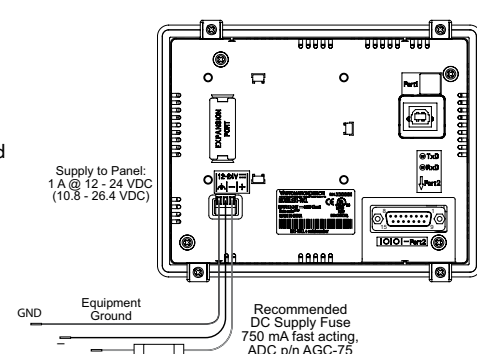
6 Connect C-more Color Micro-Graphic Panel to Computer

Use a Programming Cable such as USB-CBL-AB6, from a USB port type A on the project development PC to the USB port on the C-more 6" Micro-Graphic panel as shown below.



7 Provide Power to the C-more 6" Color Micro-Graphic Panel

1. The panel is powered by a 1 amp @ 12-24 VDC class 2 power source in normal operation.
2. The C-more 6" 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.



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 to power the C-more Micro-Graphic Panel, AutomationDirect Part No. PSC-24-015 or PSC-24-030.

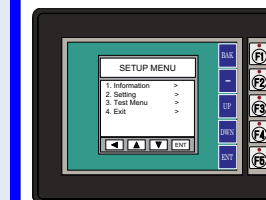
8 Accessing the C-more Micro-Graphic Panel Setup Screens

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.

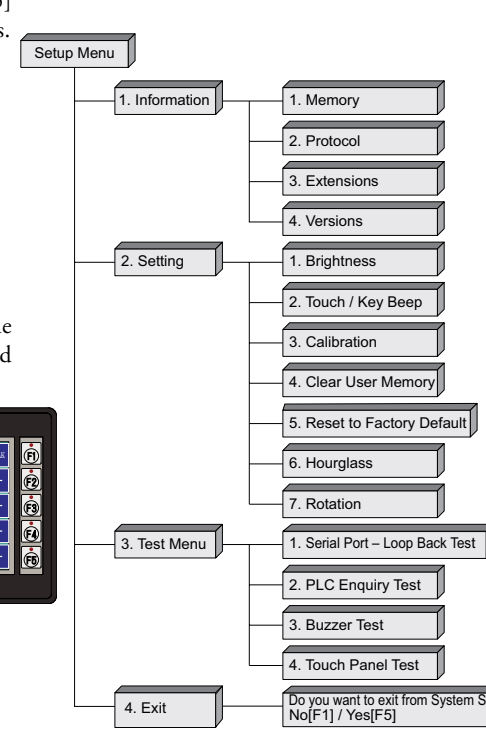


From the Setup Menu, information about the panel can be obtained, settings can be adjusted, and panel functions can be tested.

Examples



Menu flow Chart



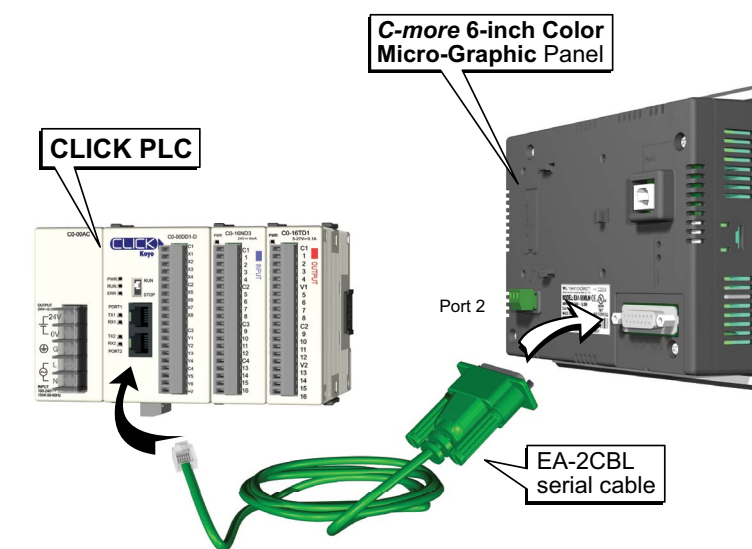
9 Choose C-more 6" Color Micro-Graphic Panel to PLC Protocols & Cables

PLC Drivers	Cable Description	Cable Part No.
Serial - Port2 only	Cables used with Serial Port2	
AutomationDirect Productivity Series	AutomationDirect Productivity Series, Do-more, CLICK, Direct LOGIC PLC RJ-12 port, DL05, DL06, DL105, DL205, D3-350, D4-450 & P2-WinPLC (RS-232C)	EA-2CBL
AutomationDirect CLICK	Direct LOGIC (VGA Style) 15-pin port, DL06, D2-250 (250-1), D2-260 (RS-232C)	EA-2CBL-1
AutomationDirect K-sequence	Direct LOGIC PLC RJ-11 port, D3-340 (RS-232C)	EA-3CBL
AutomationDirect DirectNET	Direct LOGIC DL405 PLC 15-pin D-sub port, DL405 (RS-232C)	EA-4CBL-1
AutomationDirect SOLO	Direct LOGIC PLC 25-pin D-sub port, DL405, D3-350, DL305 DCU and all DCM's (RS-232C)	EA-4CBL-2
AutomationDirect GS Drives	Allen-Bradley MicroLogix 1000, 1100, 1200 & 1500 (RS-232C)	EA-MLOGIX-CBL
AutomationDirect Modbus	Allen-Bradley DF1 Full Duplex, Allen-Bradley DF1 Half Duplex, ControlLogix, CompactLogix, FlexLogix DF1 port (RS-232C)	EA-SLC-232-CBL
Modicon Modbus RTU	Allen-Bradley DH485	EA-PLCS-232-CBL
Entivity Modbus RTU	Allen-Bradley PLC-5 DF1 port (RS-232C)	EA-DH485-CBL
Allen-Bradley DF1 Full Duplex	Allen-Bradley MicroLogix, SLC 5-01/02/03, DH485 port (RS-232C)	EA-90-30-CBL
Allen-Bradley DF1 Half Duplex	GE 90/30, 90/70, Micro 90, VersaMax Micro (Port2) 15-pin D-sub port (RS-422A)	EA-MITSU-CBL
Allen-Bradley PLC5 DF1	MITSUBISHI FX Series 25-pin port (RS-422A)	EA-MITSU-CBL-1
Allen-Bradley DH485	MITSUBISHI FX Series 8-pin mini-DIN (RS-422A)	EA-OMRON-CBL
GE SNPX (90/30, 90/70, Micro 90, VersaMax Micro)	OMRON Host Link (C200 Adapter, C500) (RS-232C)	
Mitsubishi FX		
Mitsubishi Q and QnA		
Omron Host Link (C200 Adapter, C500)		
Omron FINS Serial (CJ1, CS1)		
Siemens PPI (S7-200 CPU)		

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

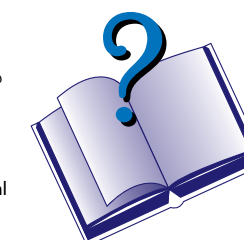
10 Connect C-more 6" Micro-Graphic Panel to PLC

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.



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](http://AutomationDirect.com) web site or purchased through the [AutomationDirect](http://AutomationDirect.com) Sales team @ 1-800-633-0405 as part number EA1-MG6CL-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.



C-more 6" Color Micro-Graphic Panel Specifications

Specifications															
Description:	320 x 240 dots LCD display (Landscape Mode) Five user defined keypad function buttons, and five user defined LEDs														
Display:	<ul style="list-style-type: none"> Type: 5.7" TFT Color LCD, graphical characters Resolution: 320 (W) x 240 (H) dots (Landscape Mode) 240 (W) x 320 (H) dots (Portrait Mode) Color: 32768 colors Display Brightness (Reference): 45 nits (typ) High Power Mode: 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 built-in configuration setup menu Viewing Angle: 3.9 o'clock axis → 50 degrees 6 o'clock axis → 50 degrees 12 o'clock axis → 45 degrees 														
Backlight:	<ul style="list-style-type: none"> Type: LED Color: White User Replaceable: No 														
Touch Screen:	<ul style="list-style-type: none"> Type: Analog resistive, single touch* Operation: 82 gram force [0.8 N] maximum Life: Minimum of 1,000,000 cycles 														
Features:	<ul style="list-style-type: none"> User Memory: 32768 bytes 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 Serial Communications: 15-pin D-sub serial communications port (RS-232, RS-485 / 422). Expansion Connection: Yes – used with optional Keypad Bezels, EA-MG6-BZ2 & EA-MG6-BZ2P 														
Screen Objects:	<ul style="list-style-type: none"> Functional Devices: Push Button, Switch, Indicator Button, Indicator Light, Graphic Indicator Light, Numeric Display, Numeric Entry, Incr/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: 6x6, 6x8, 8x16, 16x16, 32x16, 32x32, and Windows fonts 														
Electrical:	<table border="1"> <thead> <tr> <th>USB Bus Power (Programming)</th> <th>High Power Mode</th> </tr> </thead> <tbody> <tr> <td>Input Voltage Range: 5.0 VDC (4.75 – 5.25 VDC)</td> <td>12/24 VDC (10.2 – 26.4 VDC)</td> </tr> <tr> <td>Input Power: Supplied from a PC USB.</td> <td>Supplied from an external 12-24 VDC class 2 power source.</td> </tr> <tr> <td>Power Consumption: 2W</td> <td>6.5 W</td> </tr> <tr> <td>Recommended Fuse: No fuse required when directly connected to a PC with recommended cable.</td> <td>Type AGC, fast acting glass fuse, 750 mA, 250 VAC, ADC pin AGC-75</td> </tr> <tr> <td>Maximum Inrush Current: 4.5 A for 800 μs</td> <td>13 A for 800 μs</td> </tr> <tr> <td>Acceptable External Power Drop Duration: Maximum 1 ms</td> <td></td> </tr> </tbody> </table>	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 pin AGC-75	Maximum Inrush Current : 4.5 A for 800 μs	13 A for 800 μs	Acceptable External Power Drop Duration : Maximum 1 ms	
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Maximum Inrush Current : 4.5 A for 800 μs	13 A for 800 μs														
Acceptable External Power Drop Duration : Maximum 1 ms															
Environmental:	<ul style="list-style-type: none"> Operating Temperature: 0 to 50 °C (32 to 122 °F) Storage Temperature: Maximum surrounding air temperature rating: 50 °C -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 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) Shock: NEMA ICS3-304 (EN61131-2) RFL (145 MHz, 440 MHz 10W @ 10cm) Noise Immunity: Impulse 1000V @ 1 μs 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:	<ul style="list-style-type: none"> 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" [1 – 5 mm] Mounting Clip Screw Torque Range: 21 – 28 oz-in [0.15 – 0.2 Nm] Depth from bezel rear with options Module: 1.894" [47.1 mm] Weight: 29.63 oz. (840 g) 														

Customizing the Function Keys Label Insert

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

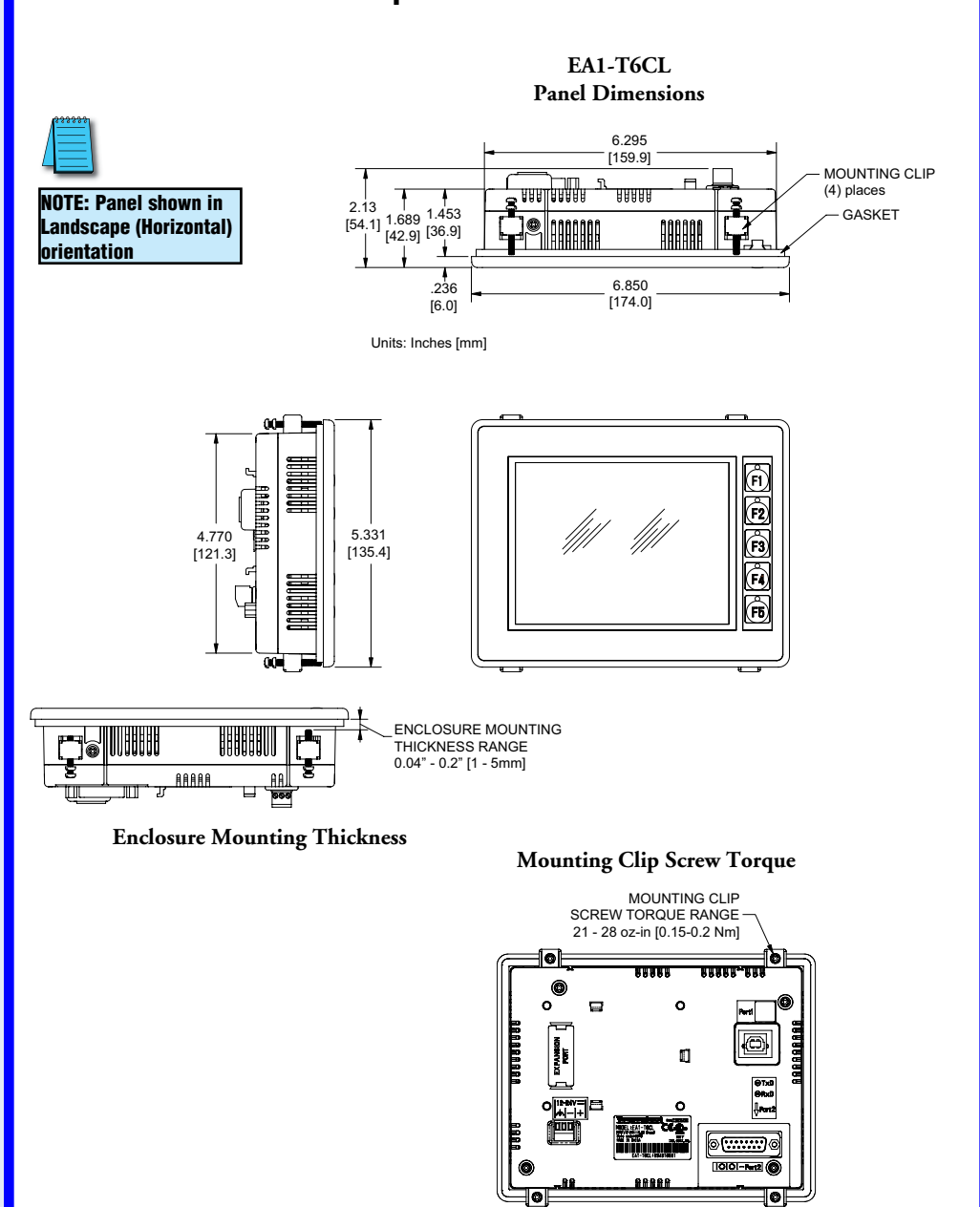
Step 2 - Remove the protective film from the blank key label insert.

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.

Units: inches [mm]

C-more 6" Color Micro-Graphic Panel Dimensions

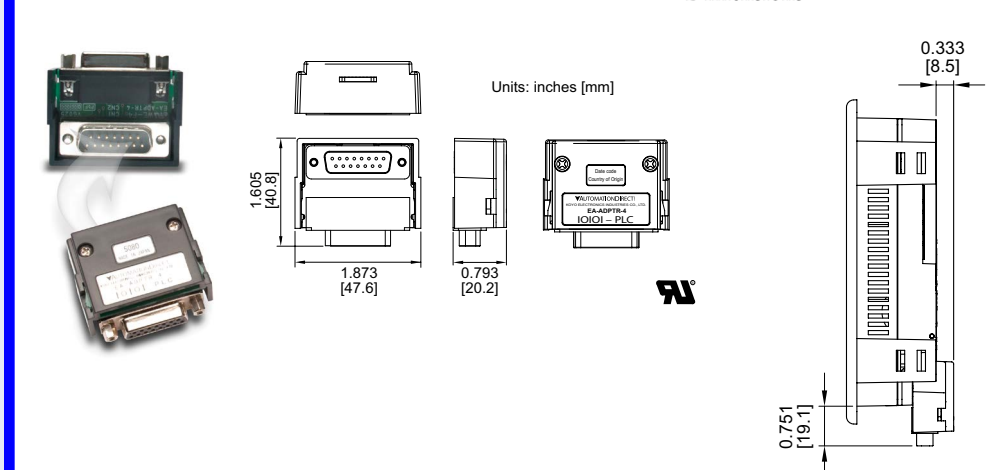


Communication Port Adapters

D-SUB 15-pin 90-degree Communication Port Adapter (EA-ADPTR-4)

The EA-ADPTR-4 adapter plugs into the 15-pin serial port on the rear of the 6" 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.

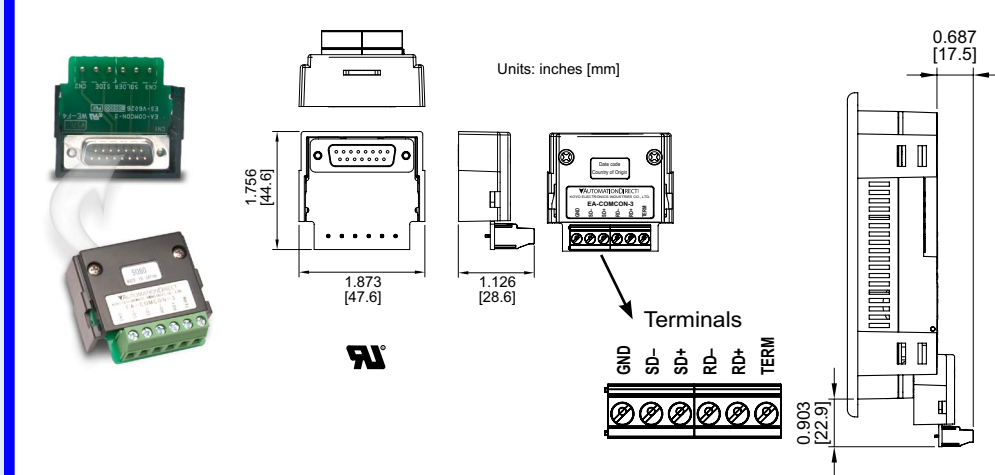
EA-ADPTR-4 Dimensions



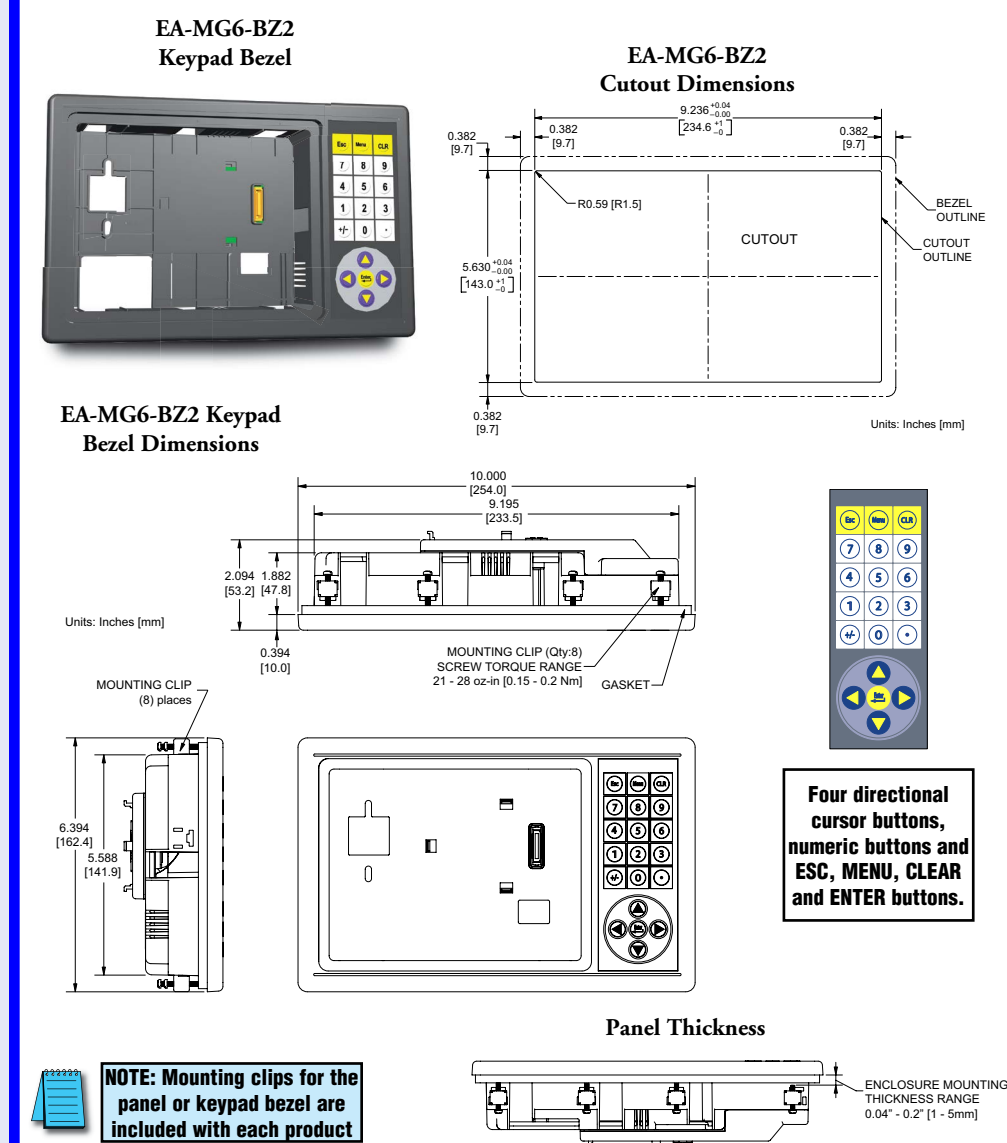
D-SUB 15-pin to Terminal Block Adapter (EA-COMCON-3)

The EA-COMCON-3 adapter plugs into the 15-pin serial port on the rear of the 6" panel to allow wire terminal connections for an RS-422/RS-485/DH-485 PLC communication cable. UL Recognized.

EA-COMCON-3 Dimensions



20 Button Landscape (Horizontal) Keypad Bezel



20-Button Keypad Bezel Specifications

Part Number:	EA-MG6-BZ2
General:	<ul style="list-style-type: none"> Micro-Graphic Panels Supported: EA1-S6ML, EA1-S6MLW, EA1-T6CL Connection: Connects with expansion connector on the rear of the C-more 6" Micro-Graphic panel. Power Consumption: None Keypad Button Life: Minimum of 500,000 cycles Enclosure Mounting: (8) mounting clips, EA-MG-BZ2-BRK, included.
Environmental:	<ul style="list-style-type: none"> Operating Temperature: 0 to 50 °C (32 to 122 °F) Storage Temperature: Maximum surrounding air temperature rating: 50 °C -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 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) Shock: NEMA ICS3-304 RFL (145 MHz, 440 MHz 10 W @ 10 cm) Noise Immunity: 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:	<ul style="list-style-type: none"> 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]

Replacement Parts

Part Number	Description
EA-MG-BZ2-BRK	Replacement mounting clip for C-more Micro-Graphic panel and keypad bezels (pk of 8)
EA-MG-DC-CON	Replacement DC power connector (pk of 5)
EA-MG6-S6ML-GSK	Replacement mounting gasket for C-more 6" Micro-Graphic panels
EA-MG6-BZ2-GSK	Replacement mounting gasket for C-more 6" Micro-Graphic keypad bezels EA-MG6-BZ2 and EA-MG6-BZ2P
EA-MG-S6ML-FKL	Replacement function key label insert for C-more Micro-Graphic panels (pk of 5, 3 blank, 1 F1-F5 for landscape, 1 F1-F5 for portrait)

Panel Mounting Clips
Part No. EA-MG-BZ2-BRK (pk of 8)

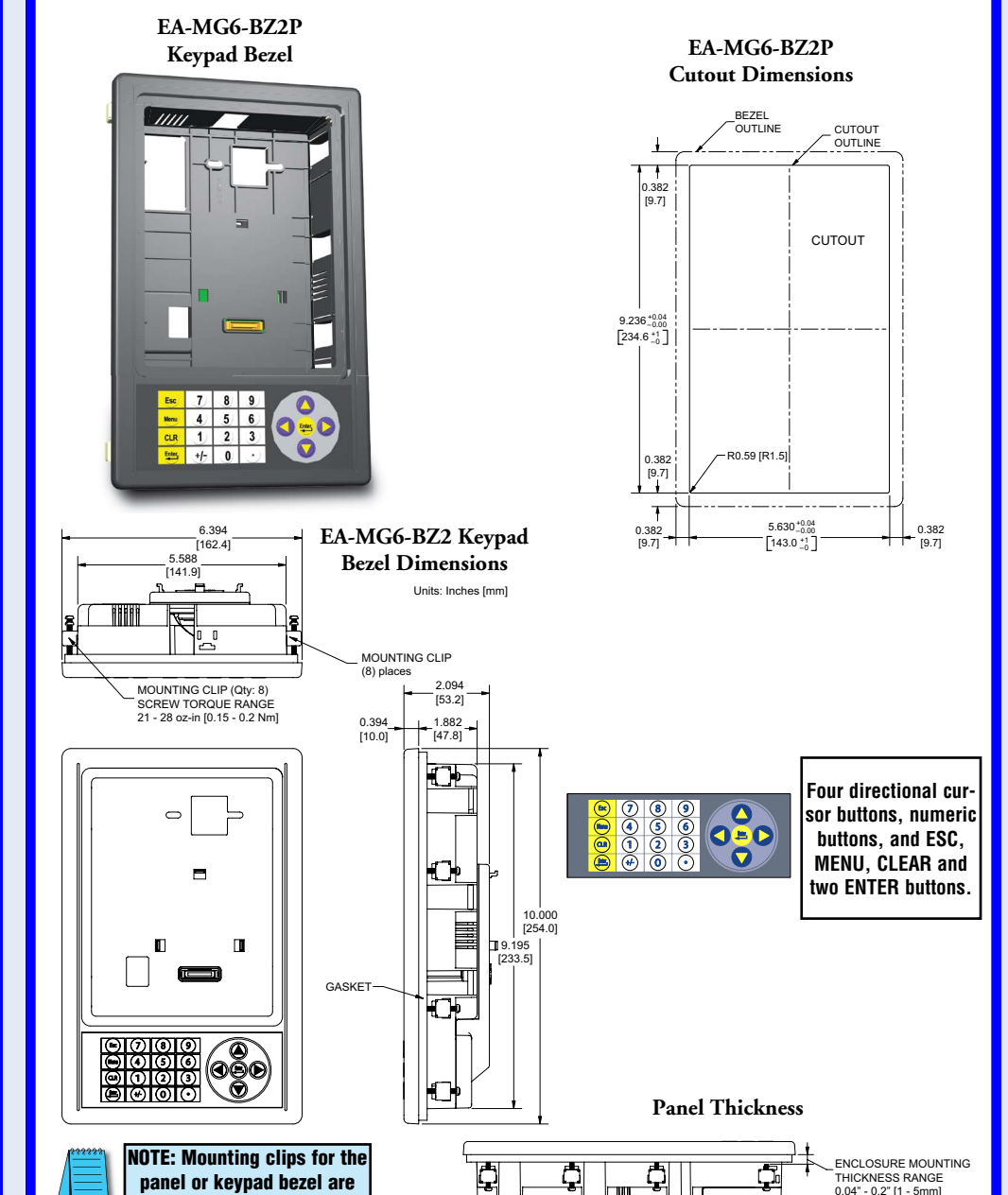
DC Power Connector
Part No. EA-MG-DC-CON (pk of 5)

Panel Gasket
Part No. EA-MG6-S6ML-GSK (pk of 5; 3 blank, 1 F1-F5 for landscape, 1 F1-F5 for portrait)

Keypad Bezel Gasket
Part No. EA-MG6-BZ2-GSK (pk of 5; 3 blank, 1 F1-F5 for landscape, 1 F1-F5 for portrait)

Function Keys Label Inserts
Part No. EA-MG6-S6ML-FKL (pk of 5; 3 blank, 1 F1-F5 for landscape, 1 F1-F5 for portrait)

21 Button Landscape (Horizontal) Keypad Bezel



21-Button Keypad Bezel Specifications

Part Number:	EA-MG6-BZ2P
General:	<ul style="list-style-type: none"> Micro-Graphic Panels Supported: EA1-S6ML, EA1-S6MLW, EA1-T6CL Connection: Connects with expansion connector on the rear of the C-more 6" Micro-Graphic panel. Power Consumption: None Keypad Button Life: Minimum of 500,000 cycles Enclosure Mounting: (8) mounting clips, EA-MG-BZ2-BRK, included.
Environmental:	<ul style="list-style-type: none"> Operating Temperature: 0 to 50 °C (32 to 122 °F) Storage Temperature: Maximum surrounding air temperature rating: 50 °C -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 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) Shock: NEMA ICS3-304 RFL (145 MHz, 440 MHz 10 W @ 10 cm) Noise Immunity: 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:	<ul style="list-style-type: none"> 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]

Clear Screen Overlay

EA-6-COV2 Dimensions

NOTE: The protective cover ships with a thin protective sheet on the face of the cover that needs to be carefully removed. If your panel is not clear, the protective sheet may not have been removed.