

# SPECIFICATIONS

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## In this Chapter...

Available Models.....	2-2
Model Specifications .....	2-4
Panel Dimensions (all models).....	2-6
Communications Ports .....	2-7
Chemical Compatibility .....	2-8

## Available Models

The *C-more*<sup>®</sup> Micro-Graphic panels continue 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 merely viewing, using the function keys, or touching the screen (touch screen model only).

The *C-more* Micro-Graphic panel is available in four models to suit your application. Refer to the following table for part numbers, descriptions and general specifications. See **Chapter 3: Accessories** for details on the available accessories for the *C-more* Micro-Graphic panels.

C-more Micro-Graphic Panels	
Part Number	Description
EA1-S3ML	 <p>3.1-inch <i>C-more</i> Micro-Graphic Touch Panel with green and red LED backlights. Supports 5 selectable backlight colors (Green, Red, Amber, Yellow and Lime). STN LCD monochrome, 128 x 64 dot display. Has 5 user-defined function keys with LED indicators. Power is supplied to the panel through the serial communication port connection when used with <i>Direct</i>LOGIC PLCs having an RJ12 communication port. EA-MG-SP1 (power supply with serial option module) required when connecting to third party PLCs. NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only).</p>
EA1-S3ML-N	 <p>3.1-inch <i>C-more</i> Micro-Graphic Non-Touch Panel with green and red LED backlights. Supports 5 selectable backlight colors (Green, Red, Amber, Yellow and Lime). STN LCD monochrome, 128 x 64 dot display. Has 5 user-defined function keys with LED indicators. Power is supplied to the panel through the serial communication port connection when used with <i>Direct</i>LOGIC PLCs having an RJ12 communication port. EA-MG-SP1 (power supply with serial option module) required when connecting to third party PLCs. NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only).</p>
EA1-S3MLW*	 <p>3.1-inch <i>C-more</i> Micro-Graphic Touch Panel with High Contrast white and red LED backlights. Supports 5 selectable backlight colors (White, Pink1, Pink2, Pink3 and Red). STN LCD monochrome, 128 x 64 dot display. Has 5 user-defined function keys with LED indicators. Power is supplied to the panel through the serial communication port connection when used with <i>Direct</i>LOGIC PLCs having an RJ12 communication port. EA-MG-SP1 (power supply with serial option module) required when connecting to third party PLCs. NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only).</p>
EA1-S3MLW-N*	 <p>3.1-inch <i>C-more</i> Micro-Graphic Non-Touch Panel with High Contrast white and red LED backlights. Supports 5 selectable backlight colors (White, Pink1, Pink2, Pink3 and Red). STN LCD monochrome, 128 x 64 dot display. Has 5 user-defined function keys with LED indicators. Power is supplied to the panel through the serial communication port connection when used with <i>Direct</i>LOGIC PLCs having an RJ12 communication port. EA-MG-SP1 (power supply with serial option module) required when connecting to third party PLCs. NEMA 4/4X, IP-65 (when mounted correctly; for indoor use only).</p>



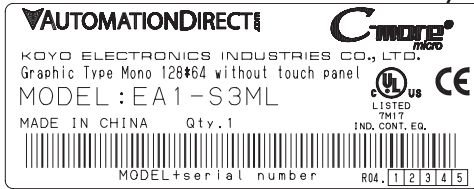
**\*NOTE:** *C-more* Micro-Graphic panels with the letter “W” in the part number designate units with 5 selectable background colors of White, Pink1, Pink2, Pink3 and Red. Part numbers without the letter “W” are provided with 5 selectable background colors of Green, Red, Amber, Yellow and Lime.



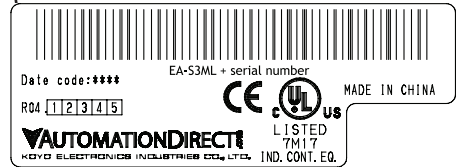
**\*NOTE:** Software and Firmware Version 1.5 or later is required with models EA1-S3MLW and EA1-S3MLW-N. Available for free download at [www.automationdirect.com](http://www.automationdirect.com).

## Hardware Version

R04 . 1 2 3 4 5



**Product Package Label**



**Product Label**



***C-more 3" Micro Graphic panels with hardware version R04 and higher must use firmware version 3.20 or higher.***

## Model Specifications

The following table on the next two pages provide details to the Specifications of each available *C-more* Micro-Graphic model.

2

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		
<b>Display:</b>			
• 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		
<b>Backlight:</b>			
• 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		
<b>Touch Screen:</b>			
•Type	Analog touch panel, single touch*		N/A
• Operation	51 gram force [0.5 N] maximum		N/A
• Life	Minimum of 1,000,000 cycles		N/A
<b>Features:</b>			
• User Memory	768 kBytes		
• Number of Screens	Up to 999 – limited by project memory usage		
• Beep (Internal)	Yes		
• Keypad Function Buttons	Five user defined function key push buttons with the ability to label. 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.		
<b>*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.</b>			

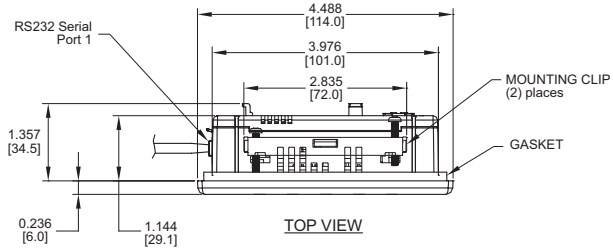
Specification table continued at the top of the next page.

## Model Specifications (cont'd)

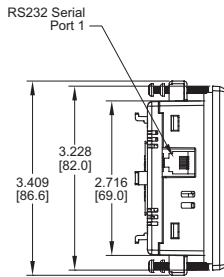
Specification	Model	3" STN Micro-Graphic Panel Touch Screen	3" STN Micro-Graphic Panel non Touch Screen
<b>Part Number:</b>		<b>EA1-S3ML, EA1-S3MLW</b>	<b>EA1-S3ML-N, EA1-S3MLW-N</b>
<b>Screen Objects:</b>			
• <b>Functional Devices</b>		Push Button, Switch, Indicator Button, Indicator Light, Graphic 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, Line Graph, Real Time Graph, Bar Meter	
• <b>Static Shapes</b>		Lines, Rectangles, Circles and Frames	
• <b>Displayable Fonts</b>		Fixed fonts: 4x6 (only in static text), 6x6, 6x8, 8x16, 8x32, 16x16, 16x32, 32x16, 32x32, and Windows fonts	
<b>Electrical:</b>			
• <b>Input Voltage Range</b>		5.0 VDC (4.75 – 5.25 VDC)	
• <b>Input Power</b>		Supplied through the panel's RJ12 serial communications port connection when used with any <b>Direct LOGIC</b> PLCs 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.	
• <b>Power Consumption</b>		1.05 W @ 5 VDC (210 mA)	
• <b>Recommended Fuse</b>		Type AGC fast acting glass fuse, 250 mA, 250 VAC, ADC p/n AGC-25 No fuse required when directly connected to a PLC or PC with recommended cable.	
• <b>Max. Inrush Current</b>		1 A for 500 µs	
• <b>Acceptable External Power Drop</b>		Maximum 1 ms	
<b>Environmental:</b>			
• <b>Operating Temperature</b>		0 to 50 °C (32 to 122 °F)	
• <b>Storage Temperature</b>		-20 to +60 °C (-4 to +140 °F)	
• <b>Humidity</b>		5–95% RH, non-condensing	
• <b>Environmental Air</b>		No corrosive gases permitted	
• <b>Vibration</b>		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	
• <b>Shock</b>		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)	
• <b>Noise Immunity</b>		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)	
• <b>Enclosure</b>		NEMA 4/4X, IP-65 (When mounted correctly, for <b>indoor</b> use only.)	
• <b>Agency Approvals</b>		CE (EN61131-2), UL508, CUL Canadian C22.2 No. 142-M95, UL File E157382, CSA File 234884	
<b>Physical:</b>			
• <b>Dimensions</b>		4.488" (W) x 3.228" (H) x 1.593" (D) [114.0 mm x 82.0 mm x 40.5 mm]	
• <b>Enclosure Mounting Thickness Range</b>		0.04" – 0.2" [1 – 5 mm]	
• <b>Mounting Clip Screw Torque Range</b>		21 – 28 oz-in [0.15 – 0.2 Nm]	
• <b>Depth from bezel rear with options Module</b>		2.295" [58.3 mm]	
• <b>Weight</b>		5.82 oz. (165 g)	

# Panel Dimensions (all models)

## Panel Dimensions

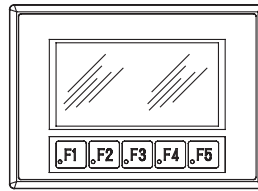


Units: inches [mm]



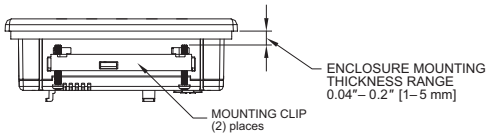
LEFT VIEW

### C-more 3" Micro-Graphic Panel



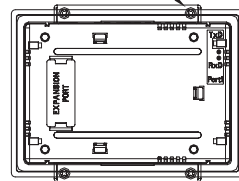
FRONT VIEW

## Enclosure Thickness



## Mounting Clip Screw Torque

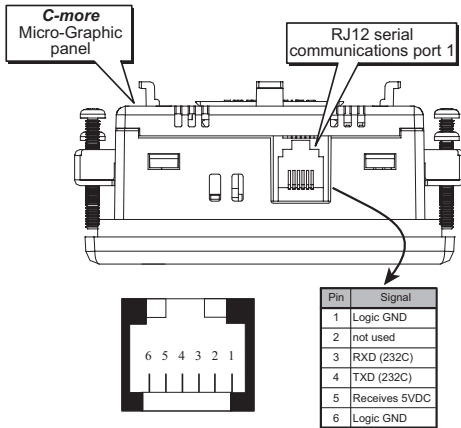
MOUNTING CLIP  
SCREW TORQUE RANGE  
21-28 oz-in [0.15-0.2 Nm]



**NOTE:** A minimum clearance of 1.2 inches (30mm) must be maintained around and behind the panel to allow for proper cooling.

# Communications Ports

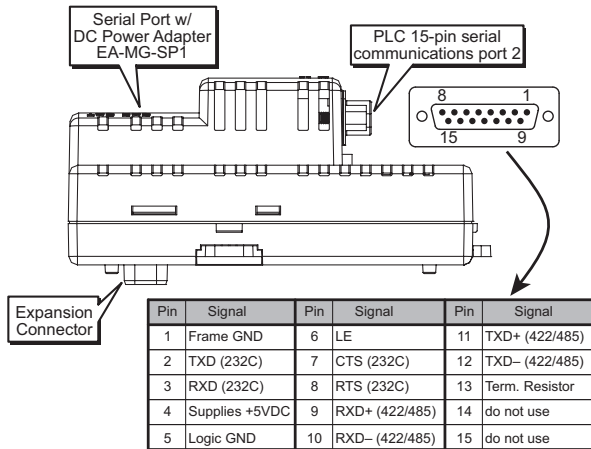
## Port 1 (built-in)



## Port 2 (optional)



**NOTE:** If the DC power adapter is installed on the panel, the adapter must be powered and the panel not dependent on +5 VDC from the PLC's RJ12 comm port.



NOTE: Adapter requires 10.8-26.4 VDC supply.



**NOTE:** The panel has one built-in RJ12 serial communications port (Port 1 - RS-232) and the option to add one 15-pin serial communications port (Port 2 - RS-232/422/485) to the panel by installing the EA-MG-SP1 module. **Only one** of the ports can be used with a connected PLC. The programming software allows the user to select either Comm. Port1 or Comm. Port2 under the Panel Manager dialog box. When using Port 2 to communicate with the connected PLC, Port 1 can still be used with the EA-MG-PGM-CBL Software Programming Cable Assembly to transfer projects between the PC and panel.

# 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.

2