C-more Micro-Graphic Specifications

Model / Specification	3" STN Micro-Graphic Panel Touch Screen	3" STN Micro-Graphic Panel Non-Touch Screen
Part Number	EA1-S3ML	EA1-S3ML-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: Red, Green, Amber, Lime, Yellow	
User Replaceable	No	
Touch Screen		
Type	Analog touch panel	N/A
Operation	51 gram force [0.5 N] maximum	N/A
Life	Minimum of 1,000,000 cycles	N/A
Features		
User Memory	768 KB	
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 customize the 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 & 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, 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, Scroll Text, Screen Change Push Button, Screen Selector, Adjust Contrast, Function (Define function keys).	
Static Shapes	Lines, Rectangles, Circles and Frames	
Displayable Fonts	Fixed fonts: 4x6 (only static text), 6x6, 6x8, 8x16, 8x32, 16x16, 16x32, 32x16, 32x32 /Windows fonts	
Micro-Graphic panel specifications continued on next page.		

NOTE: Photo includes EA-MG-BZ2

C-more Micro-Graphic Specifications

Specification \ Model	3" STN Micro-Graphic Panel Touch Screen	3" STN Micro-Graphic Panel Non-Touch Screen
Part Number	EA1-S3ML	EA1-S3ML-N
	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 *Direct*LOGIC 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	
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 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)	
Storage Temperature	–20 to +60 °C (–4 to +140 °F)	
Humidity	5–95% RH (non-condensing)	
Environmental Air	No corrosive gases permitted	
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	EMA ICS3-304 RFI, (145 MHz, 440 Mhz 10 W @ 10 cm) Impulse 1000 V @ 1 µs pulse	
Enclosure	NEMA 4/4X, IP-65 (When mounted correctly, for indoor use only.)	
Agency Approvals	CE (EN61131-2), UL508, CUL Canadian C22.2 No. 142-M95, UL File E157382	
	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 environmental specifications for the panels shown above are also applicable for the *C-more* Micro-Graphic accessories shown later in this section of the catalog.

NOTE: Photo includes EA-MG-BZ2

PLC Overview

DL05/06 PLC

DL105 PLC

DL205 PLC

DL305 PLC

DL405 PLC

Field I/O

Software

C-more HMIs

Other HMI

AC Drives

Motors

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

TB's & Wiring

Power

Circuit Protection

Enclosures

Appendix

Part Index

C-more Micro-Graphic Programming Software

FREE Software!

C-more Micro-Graphic Programming Software can be downloaded at no charge or a CD version may be purchased by ordering EA-MG-PGMSW. The software requires a USB port on your PC to connect to the *C-more* Micro-Graphic panel. Software Help Files are included in the download. This software can only be used to program the *C-more* Micro-Graphic panel (not the *C-more* 6" through 15" touch panels).

C-more Micro-Graphic Programming Software is a spin-off of its powerful sibling *C-more* Touch Panel. 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! The time saving benefits of the *C-more* configuration software could easily pay for the panel. Check out **www.C-moreMicro.com** to download a free version.
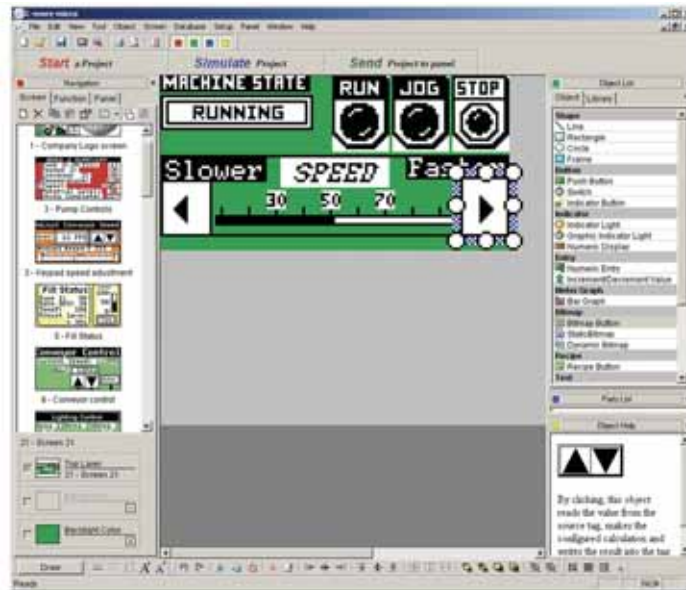
Built-in project simulator
- Runs your project on your PC
- Test all of your screens before downloading
- Time savings pays for the panel

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.

Thumbnail project preview pane
Helps keep track of multi-screen projects.

Scrolling help window
Gives you helpful information on each object

PC requirements

Following are the minimum system requirements for running *C-more* Micro-Graphic Programming Software, EA-MG-PGMSW, on a PC:
- USB port for project transfer from software to touch panel
- Personal Computer with a 333 MHz or higher processor (CPU) clock speed recommended; Intel®Pentium/Celeron family, or AMD®K6/Athlon/Duron family, or compatible processor recommended
- 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)
- CD-ROM or DVD drive for installing software from the CD or internet access to download
- Operating System - Windows®XP Home / Professional Edition with Service Pack 2, Windows®2000 with Service Pack 4, or Windows®Vista

NOTE: *C-more* **Micro-Graphic panels offer next generation features and because of this, the new programming software does not convert older EZText or Optimate projects.**

C-more Micro-Graphic Programming Software

Automation Direct

PLC Overview

DL05/06 PLC

DL105 PLC

DL205 PLC

DL305 PLC

DL405 PLC

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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 **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 **C-more** Micro-Graphic display only supports two colors, black and white.	
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 **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 bitmap file for import. Bitmaps must be in one of the following formats: .BMP .WMF .JPG .JPEG	
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 **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.	
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 Line 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.		**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.	RECIPE
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 **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.	STATIC TEXT
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 **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 **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.	On	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 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
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.	On	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 **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.		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
The **Numeric Display** consists of a frame that displays a real-time numeric value according to the value 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 points. User Defined Alpha Numeric Prefix and Suffix values are also supported.	1234512345	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.	Screen Selector
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 **Adjust Display 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.	10
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 **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 Touch panel version. The object size is restricted so that the keys will line up with the hardware function keys on the panel.	
The **Bar Meter** object is used to monitor an assigned Tag Name continuously. This object 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.	9999 5000 0		

C-more PLC Communication Protocols & Cables

PLC Compatibility Table

PLC Family	Model		Protocols
Allen-Bradley	MicroLogix 1000/1100/1200/1500, SLC 5-/01/02/03, PLC5		DH485/AIC/AIC+
	MicroLogix 1000, 1100, 1200 and 1500		DF1 Half Duplex; DF1 Full Duplex
	SLC 5-/03/04/05		DF1 Half Duplex; DF1 Full Duplex
	ControlLogix™, CompactLogix™, FlexLogix™		DF1 Half Duplex; DF1 Full Duplex
	PLC-5		DF1 Full Duplex
	ControlLogix, CompactLogix, FlexLogix - Tag Based		DF1 Half Duplex; DF1 Full Duplex
	ControlLogix, CompactLogix, FlexLogix - Generic I/O Messaging		EtherNet/IP Server
	ControlLogix, CompactLogix, FlexLogix - Tag Based		EtherNet/IP Client
	MicroLogix 1100 & SLC 5/05, both via native Ethernet port		EtherNet/IP Client
	MicroLogix 1000, 1100, 1200, 1500 & SLC 5-03/04/05, all via ENI Adapter		EtherNet/IP Client
Modbus TCP/IP	Modbus TCP/IP devices		Modbus TCP/IP
GE Fanuc	90/30 and 90/70		SNPX
Mitsubishi	FX Series		FX Direct
Omron	C200 Adapter, C500		Host Link
	CJ1/CS1 Serial		FINS
Modicon	984 CPU, Quantum 113 CPU, AEG Modicon Micro Series 110 CPU: 311-xx, 411-xx, 512-xx, 612-xx		Modbus RTU
DirectLOGIC	DL05/DL06	all	K-Sequence
			DirectNET
			Modbus (Koyo addressing)
		H0-ECOM/H0-ECOM100	DirectLOGIC Ethernet
	DL105	all	K-Sequence
	DL205	D2-230	K-Sequence
		D2-240	K-Sequence
			DirectNET
		D2-250/D2-250-1/D2-260	K-Sequence
			DirectNET
			Modbus (Koyo addressing)
		D2-240/D2-250-1/D2-260 Using DCM	DirectNET
			Modbus (Koyo addressing)
		H2-ECOM/H2-ECOM100	DirectLOGIC Ethernet
	DL305	D3-330/330P (Requires the use of a Data Communications Unit)	DirectNET
		D3-340	DirectNET
		D3-350	K-Sequence
			DirectNET
			Modbus (Koyo addressing)
		D3-350 DCM	DirectNET
			Modbus (Koyo addressing)
	DL405	D4-430	K-Sequence
			DirectNET
		D4-440	K-Sequence
			DirectNET
		D4-450	K-Sequence
			DirectNET
			Modbus (Koyo addressing)
		All with DCM	DirectNET
			Modbus (Koyo addressing)
		H4-ECOM/H4-ECOM100	DirectLOGIC Ethernet
	H2-WinPLC (Think & Do) Live V5.2 or later and Studio any version		Think & Do Modbus RTU (serial port)
	H2-WinPLC (Think & Do) Live V5.5.1 or later and Studio V7.2.1 or later		Think & Do Modbus TCP/IP (Ethernet port)

Cable Description	Cable Part Number	Price
*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**	<--->
*Direct*LOGIC PLC RJ-11 port, D3-340 (RS-232C)	**EA-3CBL**	<--->
*Direct*LOGIC DL405 PLC 15-pin d-sub port, DL405 (RS-232C)	**EA-4CBL-1**	<--->
*Direct*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 & 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 500 DH485 port (RS-485A)	**EA-DH485-CBL**	<--->
GE Fanuc 90/30 and 90/70 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: EZTouch serial PLC communication cables are compatible with C-more touch panels.

EA-2CBL

EA-2CBL-1

PLC Overview

DL05/06 PLC

DL105 PLC

DL205 PLC

DL305 PLC

DL405 PLC

Field I/O

Software

C-more HMIs

Other HMI

AC Drives

Motors

Steppers/Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pushbuttons/Lights

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Appendix

Part Index

C-more Computer Programming Connections

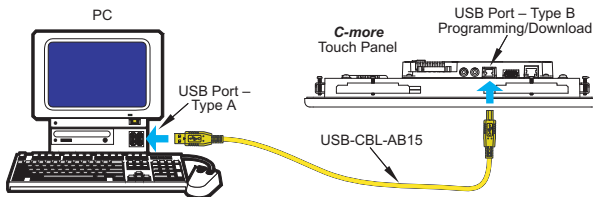Using the *C-more* Programming Software for project development, the touch panel can be connected to a PC (personal computer) in one of several ways:

- Connect a USB Programming Cable (USB-CBL-AB15) from a USB port type A on the PC to the USB type B programming port on the C-more touch panel. The USB connection is for direct connection only and does not support USB hubs.
- Connect the *C-more* touch panel to a PC via an Ethernet hub or switch, and CAT5 Ethernet cables (full feature panels only). Multiple panels can be programmed in this configuration.
- Use an Ethernet crossover cable directly between the *C-more* touch panel's Ethernet port and the PC Ethernet port (full feature panels only).
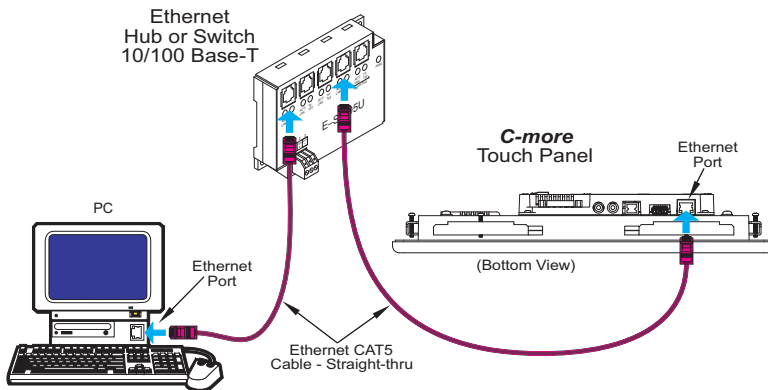
Following are the minimum system requirements for running *C-more* Programming Software, p/n EA-PGMSW, on a PC:

- Personal Computer with a 333 MHz or higher processor (CPU) clock speed recommended; Intel®Pentium/Celeron family, or AMD®K6/Athlon/Duron family, or compatible processor recommended
- 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
- 300 MB free hard-disk space
- 128 MB free RAM (512 MB recommended)
- CD-ROM or DVD drive for installing software from the CD
- USB port or Ethernet 10/100 Mbps port for project transfer from software to touch panel (Ethernet port not available on -R models)
- Operating System - Windows®XP Home / Professional Edition Service Pack 2 or Windows® 2000 with Service Pack 4
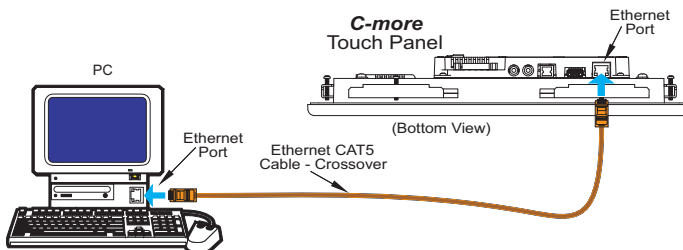
USB Programming Cable

Part No. USB-CBL-AB15

<--->

Other lengths available see USB-CBL-AB3, USB-CBL-AB6, USB-CBL-AB10 on page 9-27

Ethernet Switch (switching hub)

Message in from a device

Message is sent out only from the port connected to destination device

Part No. E-SW05U

<--->

USB Connectivity

PC

USB Port – Type A

C-more Touch Panel

USB Port – Type B Programming/Download

USB-CBL-AB15

Ethernet Connectivity via a Hub or Switch

Ethernet Hub or Switch 10/100 Base-T

PC

Ethernet Port

C-more Touch Panel

Ethernet Port

(Bottom View)

Ethernet CAT5 Cable - Straight-thru

Ethernet Configuration Kit

Part No. RT-CNFGKIT

<--->

The Ethernet Configuration Kit includes a five-port 10/100 Base-T Ethernet switch, four straight-through cables, and one crossover cable. (The cables are at least five feet in length.) The kit provides a great convenience for configuring systems, demonstration systems or basic control projects using Ethernet.

Ethernet Direct Connection

C-more Touch Panel

Ethernet Port

PC

Ethernet Port

Ethernet CAT5 Cable - Crossover

(Bottom View)