



CHAPTER 2

SPECIFICATIONS

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Specifications

The *C-more*® RHMI Operator Interface is the next generation of HMI brought to you by AutomationDirect. It has been designed to display and interchange graphical data from a PLC by connecting a monitor and USB mouse or compatible touch screen or accessing screens remotely from a PC or smart device app.

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EA9-RHMI Specifications	
Operating Temperature	0 to 50°C (32 to 122°F); Maximum surrounding air temperature rating: 50°C (122°F) IEC 60068-2-14 (Test Nb, Thermal Shock)
Altitude	Up to 2000m (6562ft)
Storage Temperature	-20 to +60°C (-4 to +140°F) IEC 60068-2-1 (Test Ab, Cold) IEC 60068-2-2 (Test Bb, Dry Heat) IEC 60068-2-14 (Test Na, Thermal Shock)
Humidity	5-95% RH (non-condensing)
Environment	For use in Pollution Degree 2 environment, no corrosive gases permitted
Noise Immunity	(EN61131-2) EN61000-4-2 (ESD): 4kV (Contact Discharge) 2kV/4kV/8kV (Air Discharge) EN61000-4-3 (RFI): 10V/m (80MHz-1GHz), 3V/m (1.4GHz-2.0GHz) 1V/m (2.0GHz-2.7GHz) EN61000-4-4 (FTB): 2kV, positive/negative, 5kHz (DC power port) EN61000-4-5 (Surge): 0.5kV line to line 0.5kV line to earth EN61000-4-6 (Conducted): 10V, 0.15-80MHz EN61000-4-8 (Power frequency magnetic field immunity): 30A/m (Local test) RFI, (145MHz, 440MHz 10W @10cm) Impulse 1000V @ 1µs pulse
Withstand Voltage	1000VAC, 1 min. (FG to power supply)
Insulation Resistance	> 10M ohm @ 500VDC (FG to power supply)
Vibration	IEC60068-2-6 (Test Fc) 5-9Hz: 3.5mm amplitude, 9-150Hz 1.0G 10 sweep cycles per axis on each of 3 mutually perpendicular axes
Shock	IEC60068-2-27 (Test Ea) 15G peak, 11ms duration, 3 shocks in each direction per axis, on 3 mutually perpendicular axes
Specifications continued on next page	



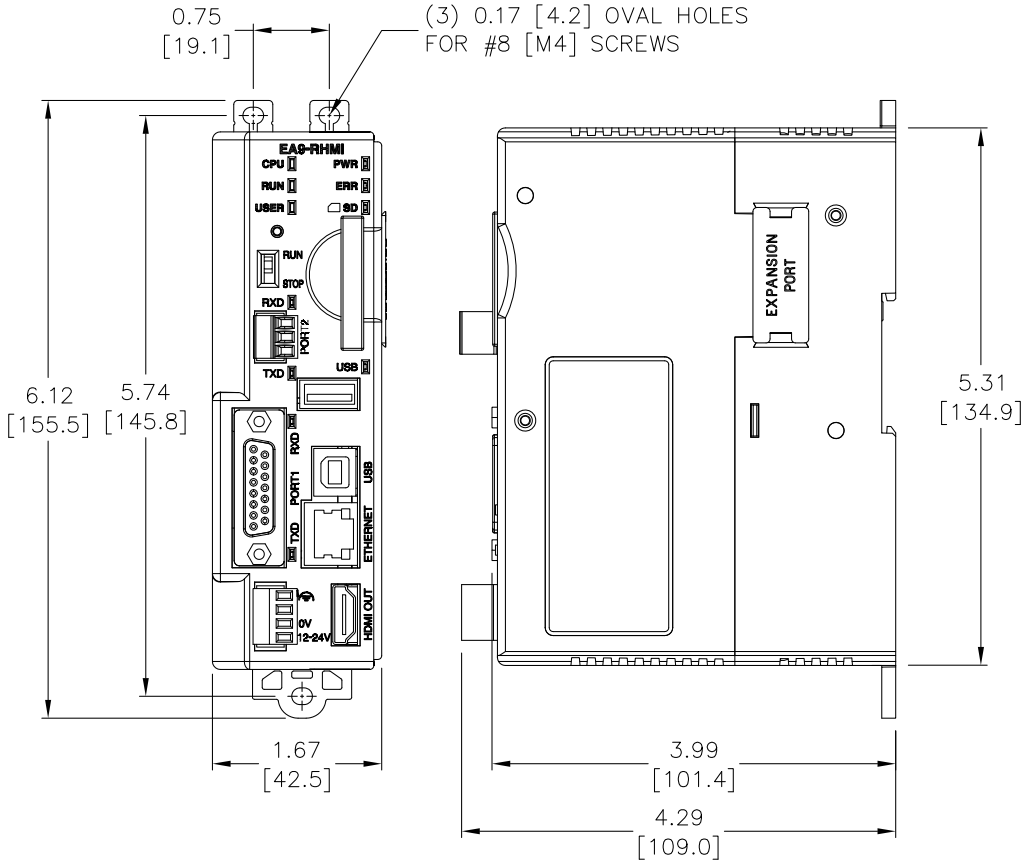
NOTE: The touch screen driver is designed to respond to a single touch. If it is touched at multiple points at the same time, an unexpected object may be activated.

EA9-RHMI Specifications (continued)	
Emission	EN55011 Class A (Radiated RF emission)
Supply Power	10.2-26.4 VDC Class2 or SELV (Safety Extra-Low Voltage) Circuit or Limited Energy Circuit (LEC), Reverse Polarity Protected
Weight	0.59 lb (269g)
Color Scale	65,536 colors
Project Memory	82MB
Number of Screens	Up to 999 screens – limited by project memory
Realtime Clock	Realtime Clock built into unit, backed up for 30 days at 25°C after power has been applied for 24 hours
Calendar - Month / Day / Year	Yes - monthly deviation 60 sec at 25°C
Serial Port 1	15-pin D-sub female - RS2342C, RS-422/485
Serial Port 2	3-wire terminal block - RS-485
USB Port - Type B	USB 2.0 High speed (480 Mbps) Type B - Download/Program Max cable length - 15 ft.
USB Port - Type A	USB 2.0 High speed (480 Mbps) Type A - for USB device options Max cable length - 15ft Bus Power – Less than 500mA at 5VDC
Supported Touch Screen	ELO™ Single Touch Resistive/SAW, EETI eGalax Single Touch Resistive and pCAP
Ethernet Port	Ethernet Port Ethernet 10/100 Base-T, auto MDI/MDI-X
SD Card Slot	1 slot. Supports max 2GB (SD,) max 32GB (SDHC)
HDMI Video Out	HDMI Type A Port
Power Consumption	12.0 W 1.0 A @ 12VDC 0.5 A @ 24VDC
Maximum Inrush Current	15A @ 1ms
Recommended Fuse	2.5 A (part no. MDL2-5)
Internal Fuse (non-replaceable)	4A
Agency Approvals	UL61010 (E157382), CE (EN61131-2), cUL Canadian C22.2, RoHS (2011/65/EU)

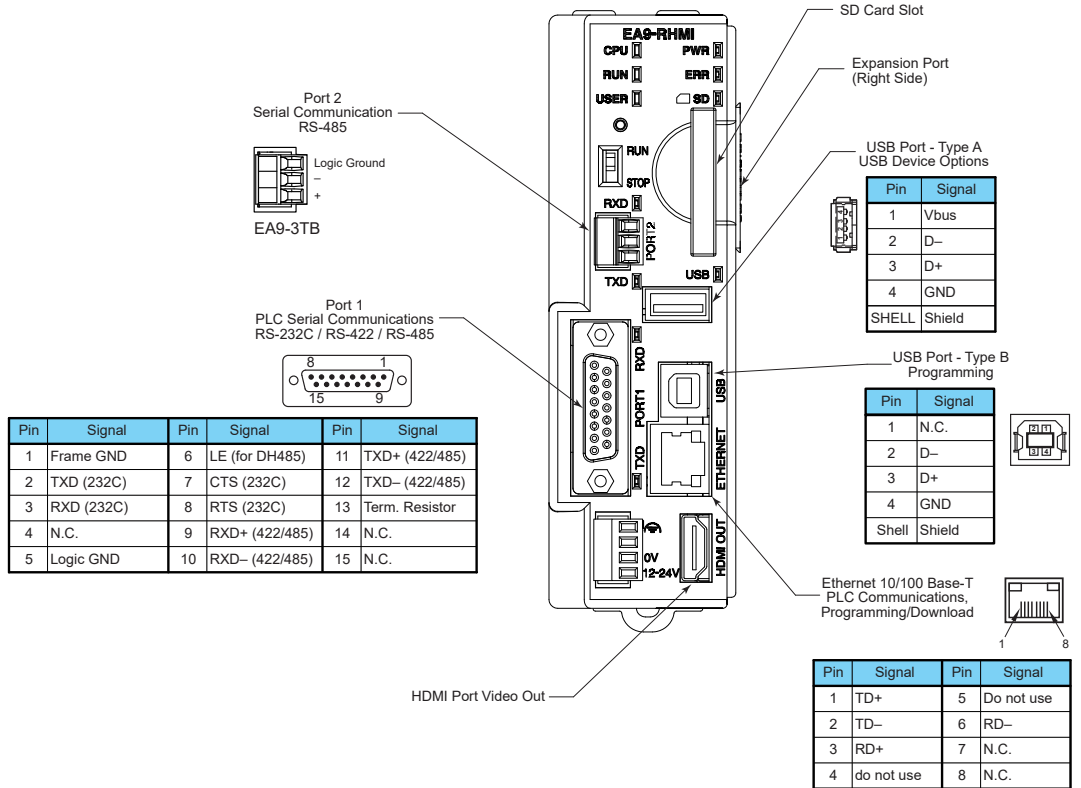
Dimensions

Inches [mm]

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Communication Ports and Memory Expansion



HDMI Port Video Out

EA9-RHMI Video Out Specifications	
Resolution	SD - 720 x 480 HD - 1280 x 720 VGA - 640 x 480 XGA - 1024 x 768
Output	Video Data - Same Screen as Panel
Sound Pass Through	Does not support Mic sound Pass Through

Ethernet Port

The Ethernet port can be used several ways: for programming the unit (downloading a project), for PLC communication, and for the advanced features, such as sending e-mail, web server, FTP access, and allowing users to access and control the HMI remotely.

The Ethernet connector is an RJ-45 Module jack.

Refer to <http://c-more.automationdirect.com> for the latest driver information.

USB Type B Port

Program *C-more* via the USB programming port. It's fast and easy, with no baud rate settings, parity, or stop bits to worry about. We stock standard USB cables for your convenience, such as part no. USB-CBL-AB15. The USB type B port can be used to upload or download projects to and from a PC (personal computer).

USB Type A Port

The USB type A port is a standard feature for all models and can be used to connect various USB 2.0 HID (Human Input Device) devices to the HMI, such as:

- Industrial Monitor with a compatible touch screen or Mouse
- USB pen drives, (ADC p/n USB-FLASH)
- USB keyboards
- USB barcode scanners
- USB card scanners

C-more can log data to the USB pen drive as well as restore projects to the HMI from the pen drive. You can also back up project files and HMI firmware.



NOTE: Output current is less than 500mA @ 5VDC.

Sound Interface (HDMI)

When connected to an HDMI device that supports audio over HDMI, *C-more* can play warning sounds or pre-recorded messages such as “conveyor is jammed.” Various “Objects” in the *C-more* programming software support sounds. *C-more* supports WAV type files. Sound files are stored in the sound library.

Serial Communication Ports

Port 1

Connect to your serial controller network via Port 1. Port 1 is a 15-pin port that supports RS-232 and RS-422/485.

Port 2

Connect your RS-485 network via Port 2. Port 2 is provided with a 3-wire removable terminal block.

Compatible Touch Screen Monitors

The **C-more** EA9-RHMI supports both ELO Resistive and SAW touch screens and EETI eGalax Resistive touch screens starting with firmware version 6.53. EETI eGalax single-touch pCap touch screens are supported with firmware version 6.70.



NOTE: Check with the monitor manufacturer to make sure the monitor you purchase uses one of the drivers listed below.

Capacitive, single or multi-touch touch screens are not supported

The manufacturers and models that have been tested at the time of firmware version 6.70 release are:

EA9-RHMI Compatible Touch Screen Monitors				
Manufacturer / Distributor	Models	Driver	Minimum Firmware Version	Support Website
AutomationDirect	Atlas	ELO	6.53	https://automationdirect.com
Hope Industrial Systems	- xVxx Resistive Touch Screen Models	ELO	6.53	https://www.hopeindustrial.com
ELO	All Resistive and SAW Touch Screen Models	ELO	6.53	https://www.elotouch.com
Advantech	IDS-3215R-40XGA1E Touch Screen Monitor	eGalax - Resistive	6.53	https://www.advantech.com
Tru-Vu	VMTR-15C-24 Touch Screen Monitor	eGalax - Resistive	6.53	https://tru-vumonitors.com
Dynics	FX15PTUMAD Touch Screen	eGalax - Resistive	6.53	https://www.dynics.com
Tru-Vu	ZBMT-18.5-R	eGalax - pCap	6.70	https://tru-vumonitors.com
Advantech	FPM-221W-P4AE	eGalax - pCap	6.70	https://www.advantech.com

Please contact the touch screen monitor supplier to confirm it uses a supported driver.

Handling External Memory Devices

Writing to External Memory Devices

Different types of numeric and text data from the *C-more* HMI can be stored on an SD card or a USB memory device. Numeric data from Line Trend Graph and PID Faceplate Trend Graph objects may be stored. Text data from Lookup Text and Multi-state Text objects can also be stored.

Up to 16 objects may be configured in the *C-more* programming software to log data. Along with the 16 object limit, available storage on the external memory device is subject to the memory capacity of the SD card or USB memory device. One log file is created in a 24 hour period for each object. Additionally, logging data is initially stored in the buffer in the panel MRAM and data is written to the external memory device when one of the following occurs:

- When 2kB of data is cached
- When 20 records have been stored
- Periodically, once every 1 minute
- When one of the “SYS Copy LogTo %device%” or “SYS %device% Eject” tags is turned on
- When there is an email or FTP action
- When the System Screen is called
- When the panel date is changed

Memory Device Formatting

Memory Devices should be formatted according to the following guidelines to ensure best performance and integrity of logged data.

Item		Capacity	Supported Resolution	Supported
USB Memory Device		up to 2GB	FAT	Yes
		4GB to 32GB	FAT 32	Yes
		64GB or larger	exFAT	Yes
SD Card	Type			
	SD	up to 2GB	FAT	Yes
	SDHC	4GB to 32GB	FAT 32	Yes
	SDXC		exFAT	No

SD cards must be formatted using the SD formatter provided by the SD Association at www.sdcard.org using the standard allocation unit size for best performance.

Minimizing Data Errors

To minimize data errors when logging data to external memory, consider the following:

- Do not turn off power to the *C-more* HMI while the external memory device is being accessed.
- Do not remove any external memory device when the device is being accessed by the *C-more* panel.

The following internal tags should be used to monitor, access and safely remove external memory devices:

SYS SD1 WriteStatus
SYS USB WriteStatus
SYS Copy LogToSD1
SYS Copy LogToUSB
SYS SD1 Eject
SYS USB Eject
SYS SD1 ReadyToUse
SYS USB ReadyToUse

- Be sure to back up the memory device at regular intervals.
- If you suspect the memory device is bad, you may want to use a PC to re-format the device, or use a known good memory device.
- The number of times the memory device can be written to is limited. Consequently, logging frequently will shorten the service life of the memory device. Using slower sample rates will increase the life of the device.

Monitoring Available Memory

Each external memory device can be monitored and events can be configured to alert the user when available memory is approaching the maximum capacity of the external memory device.

The following internal tags allow external memory devices data to be monitored:

SYS SD1 TotalMemory
SYS SD1 FreeMemory
SYS SD1 UsedMemory
SYS USB TotalMemory
SYS USB FreeMemory
SYS USB UsedMemory

Refer to the *C-more* programming software online help files for additional information on system tags and managing data logging devices.

File Name Limitations

There is a limit of 999 file names with the same first four characters. Internal file names are restricted by the DOS 8-character-dot-3-character limit. Therefore trend log files are identified internally by the first four characters of the object name plus tilde plus a three digit number.

Examples are:

TREND GRAPH EAST CHILLER TEMP_130925.txt is saved internally as TREN~001.txt

TREND GRAPH WEST CHILLER TEMP_130925.txt is saved internally as TREN~002.txt

As new log files are created in each 24 hour period, these files count against the maximum of 999 files. If multiple graph objects appear on one screen, the files will be identified internally by the first two characters of the screen name plus the first two characters of the object name plus tilde plus three digit number.

To maximize storage capabilities on external memory devices, use screen names that have unique characters in the first four digits and object names that are unique in the first two characters.



NOTE: When the 999 filename limit is reached, the oldest files will automatically be deleted and logging will continue.

Power Loss Retention

When a power loss is detected, the panel will attempt to complete all data logging operations safely.

The power retention while using a DC power supply is not long enough to complete writes to an SD Card or USB device. An Uninterruptable Power Supply (UPS) should be considered.

Power Loss Detection (at 25°C)	
Power Supply	Detect Loss
DC (Panel only)	8.9 VDC