

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.

CM5-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): 2kV/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/1kV line to line 0.5kV/2kV 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: 3.5 mm 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	



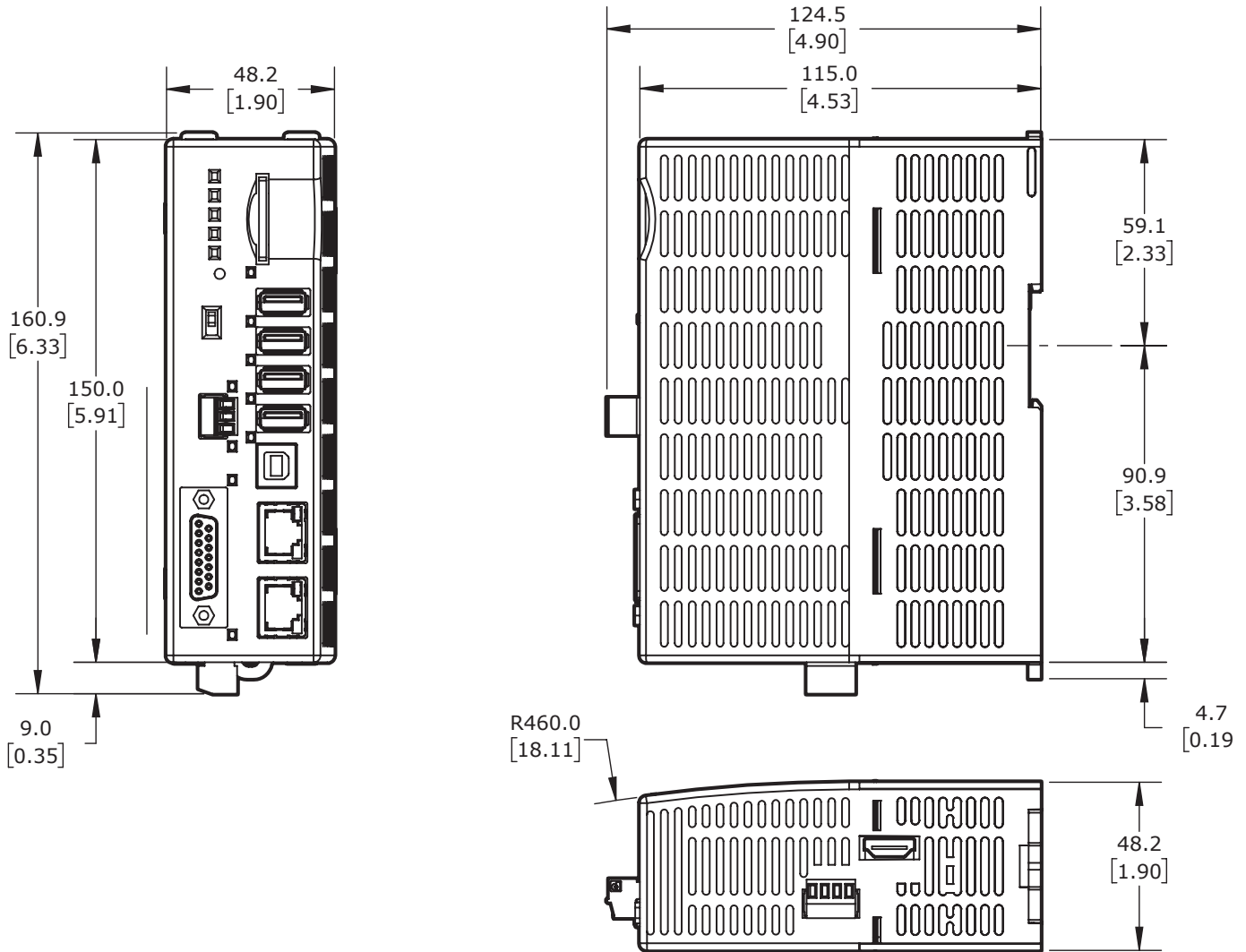
NOTE: The touch screen driver is designed to respond to a single touch. If it is touched at multiple points at the same time, an unexpected object may be activated.

Specifications (cont'd)

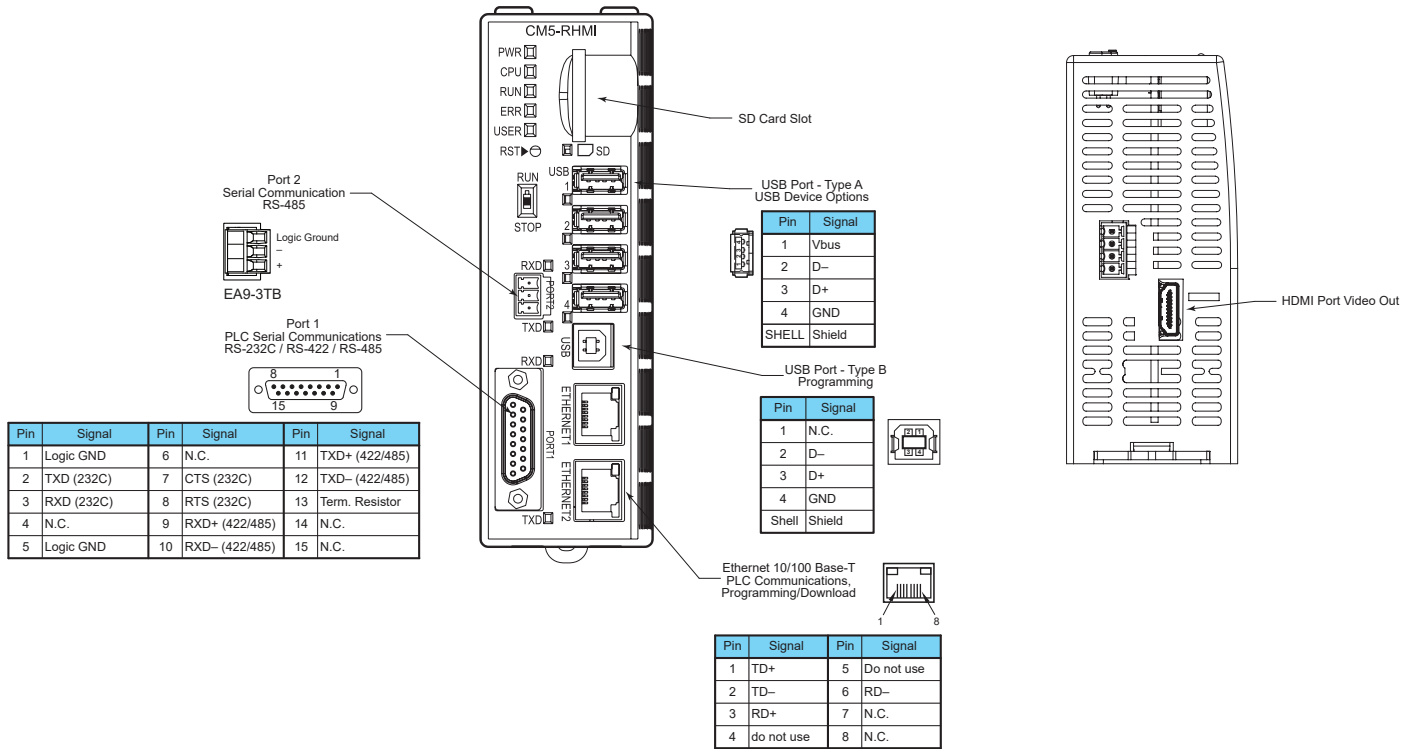
CM5-RHMI Specifications (continued)	
Emission	EN55011 Class A (Radiated RF emission)
Supply Power	10.2-26.4 VDC Class2 or SELV (Safety Extra-Low Voltage) Circuit or Limited Energy Circuit (LEC), Reverse Polarity Protected
Weight	1.06 lb (480g)
Color Scale	16.7 million colors
Project Memory	90MB
Number 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 – RS-232, 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	HID touch screen driver works with most pCap and Resistive touchscreen monitors
Ethernet Ports	Ethernet Ports 10/100 Base-T, auto MDI/MDI-X
SD Card Slot	1 slot. Supports max 2GB (SD,) Max.2TB (SDXC)
HDMI Video Out	HDMI Type A Port
Power Consumption	18.0 W 1.5 A @ 12VDC 0.75 A @ 24VDC
Maximum Inrush Current	4.0 A @ 9.5 ms
Recommended Fuse	5 A (part no. MDL-5)
Internal Fuse (non-replaceable)	12 A
Agency Approvals	UL61010 (E157382), CE (EN61131-2), cUL Canadian C22.2, RoHS (2011/65/EU)

Dimensions

Inches [mm]



Communication Ports and Memory Expansion



HDMI Port Video Out

CM5-RHMI Video Out Specifications	
Resolution	SD – 720 x 480 HD – 1280 x 720 VGA – 640 x 480 XGA – 1024 x 768 FHD – 1080 x 1290
Output	Video Data - Same Screen as Panel
Sound Pass Through	Does not support Mic sound Pass Through

Communication Ports

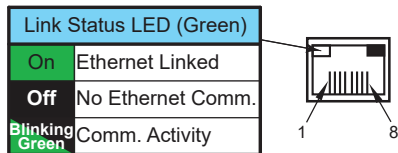
Ethernet Port

Either Ethernet port can be used several ways: for programming the panel (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 panel remotely.

The Ethernet connector is an RJ-45 Module jack.

Ethernet 10/100 Base-T
PLC Communications,
Programming/Download

Pin	Signal	Pin	Signal
1	TD+	5	do not use
2	TD-	6	RD-
3	RD+	7	N.C.
4	do not use	8	N.C.



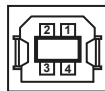
See AutomationDirect.com for the latest driver information.

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 Port - Type B
Programming

Pin	Signal
1	N.C.
2	D-
3	D+
4	GND
Shell	Shield



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 panel, 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 panel from the pen drive. You can also back up project files and panel firmware.

USB Port - Type A
USB Device Options

Pin	Signal
1	Vbus
2	D-
3	D+
4	GND
SHELL	Shield



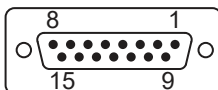
NOTE: Output current is less than 500mA @ 5VDC.

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 1
PLC Serial Communications
RS-232C / RS-422 / RS-485

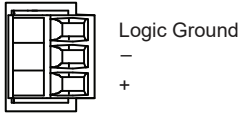


Pin	Signal	Pin	Signal	Pin	Signal
1	Logic GND	6	N.C.	11	TXD+ (422/485)
2	TXD (232C)	7	CTS (232C)	12	TXD- (422/485)
3	RXD (232C)	8	RTS (232C)	13	Term. Resistor
4	Do Not Connect	9	RXD+ (422/485)	14	N.C.
5	Logic GND	10	RXD- (422/485)	15	N.C.

Port 2

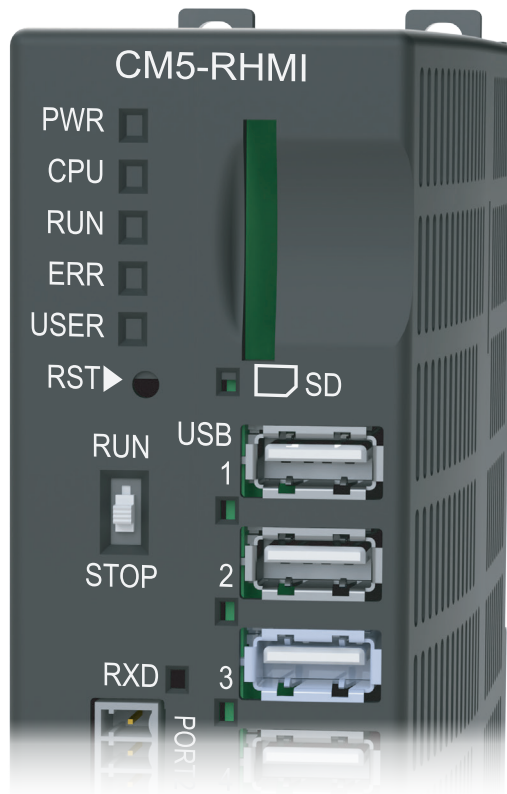
Connect your RS-485 network via Port 2. Port 2 is provided with a 3-wire removable terminal block.

Port 2
Serial Communication
RS-485



User Defined LED

The user defined LED on the panel front bezel can be controlled from the project to illuminate red, green or orange. It can also be configured to blink these colors. Refer to the online help file provided with the programming software for details.



Compatible Touch Screen Monitors

The **C-more** CM5-RHMI supports most HID compatible Resistive and pCap touchscreens.

The manufacturers and models that have been tested at the time of firmware version 8.20 release are:

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

CM5-RHMI Compatible Touch Screen Monitors		
Manufacturer / Distributor	Models	Touchscreen Type
Adlink	OM-215	pCap
Advantech	FPM-221W	pCap
Advantech	IDS-3215	Resistive
Atlas	ATM1500T	Resistive
Atlas	ATM1700T	Resistive
Atlas	ATM1900T	Resistive
Dynics	FX15PTUMAD	Resistive
ELO	E382790	SAW
ELO	ET1593L	pCap
Hope	HIS-ML15CTBH	Resistive
Hope	HIS-ML19.5CTBA	Resistive
Hope	HIS-ML19.5FPVB	pCap
Hope	HIS-ML19CTBH	Resistive
Hope	HIS-ML23-CTBD	pCap
HP	E24T G5	pCap
TruVu	VMTR-15C	Resistive
TruVu	ZBMT-18.5R	Resistive
ViewSonic	TD2465	pCap



NOTE: The USB standard requires all powered USB devices to prevent power from feeding back through the USB ports to connected devices. If a powered USB Hub, Bar Code Reader, or other powered device does not follow this standard, power may feed back into the CM5-RHMI USB A-port and cause the CM5-RHMI to remain powered on and operational even though power is removed from the CM5-RHMI.

One example is a touchscreen monitor with a built-in USB Hub. The USB-A port on the monitor may feed power back to the CM5-RHMI if the manufacturer did not follow the USB standard.

To protect against this event, make sure the power to the connected device and the CM5-RHMI are both powered down. Another alternative is to use an USB Power Blocker.

Handling External Memory Devices

Writing to External Memory devices

Different types of numeric and text data from the **C-more** touch panel 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 Indicator objects can also be stored.

Up to 16 Line Trend or PID Trend 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 SRAM and data is written to the external memory device:

- 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 insure 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	32GB or larger	exFAT	Yes

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** touch panel while the external memory device is being accessed.
- Do not remove any external memory device with 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 Copy LogToUSB2	SYS USB4 Eject
SYS USB1 WriteStatus	SYS Copy LogToUSB3	SYS SD1 ReadyToUse
SYS USB2 WriteStatus	SYS Copy LogToUSB4	SYS USB1 ReadyToUse
SYS USB3 WriteStatus	SYS SD1 Eject	SYS USB2 ReadyToUse
SYS USB4 WriteStatus	SYS USB1 Eject	SYS USB3 ReadyToUse
SYS Copy LogToSD1	SYS USB2 Eject	SYS USB4 ReadyToUse
SYS Copy LogToUSB1	SYS USB3 Eject	

- Be sure to backup 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 may 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 USB1 UsedMemory	SYS USB3 FreeMemory
SYS SD1 FreeMemory	SYS USB2 TotalMemory	SYS USB3 UsedMemory
SYS SD1 UsedMemory	SYS USB2 FreeMemory	SYS USB4 TotalMemory
SYS USB1 TotalMemory	SYS USB2 UsedMemory	SYS USB4 FreeMemory
SYS USB1 FreeMemory	SYS USB3 TotalMemory	SYS USB4 UsedMemory

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

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 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	Resume Operation
DC (Panel Only)	8.3 VDC	9.4VDC

Watchdog Timeout

Overview

The watchdog timer operates after product startup. Therefore, it will not operate in the event of a catastrophic hardware failure or if the CM5-RHMI fails to boot.

When Watchdog timeout occurs, the CM5-RHMI automatically reboots as part of the recovery process.

In this case, the Watchdog timer is processed with the highest priority, so other functions are inoperable.

CM5-RHMI Compatible Touch Screen Monitors			
Timing	CM5-RHMI Status	Supported Functions	Processing
At Startup	Hardware failure(*1)	Status LED control	OS Error, Memory Error
At Startup	Software startup failure(*2)	Software recovery	Shift to Safe Mode and manual Firmware Update
During operation	System runaway	Watchdog timeout	Automatic restart
During operation	Project froze(*3)	—	Restart by Power ON/OFF

(*1) If a hardware failure is suspected, check the status LED indications.

(*2) If there is a software error and the product fails to start, the CM5 will automatically reboot and enter Safe Mode. The user should update the product to the latest version firmware with the **C-more** Software.

(*3) If for some unforeseen reason the product freezes during operation, the user should cycle the power.

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