

SPECIFICATIONS

1. POWER REQUIREMENTS:

Must use Class 2 or SELV rated power supply.
Power connection via removable three position terminal block.

Supply Voltage: +24 VDC $\pm 20\%$
Typical Power¹: 27 W
Maximum Power²: 67 W

Notes:

1. Typical power with +24 VDC, RS232/485 communications, Ethernet communications, CompactFlash card installed, and display at full brightness.
2. Maximum power indicates the most power that can be drawn from the 315. Refer to "Power Supply Requirements" under "Installing and Powering the 315."
3. The 315's circuit common is not connected to the enclosure of the unit. See "Connecting to Earth Ground" in the section "Installing and Powering the 315."
4. Read "Power Supply Requirements" in the section "Installing and Powering the 315" for additional power supply information.

2. **BATTERY:** Lithium coin cell. Typical lifetime of 10 years.

3. LCD DISPLAY:

SIZE	15-inch
TYPE	TFT
COLORS	32K
PIXELS	1024 X 768
BRIGHTNESS	600 cd/m ²
BACKLIGHT*	50,000 HR TYP.

*Lifetime at room temperature. Refer to "Display" in "Software/Unit Operation"

4. **10-KEY KEYPAD:** for on-screen menus.

5. **TOUCHSCREEN:** Resistive analog

6. MEMORY:

On Board User Memory: 32 Mbyte of non-volatile Flash memory.
Memory Card: CompactFlash Type II slot for Type I and Type II CompactFlash cards.

7. COMMUNICATIONS:

USB Device Port: Adheres to USB 2.0 Specification supporting high speed and full speed via Type B connection.



WARNING - DO NOT CONNECT OR DISCONNECT CABLES WHILE POWER IS APPLIED UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS. USB PORT IS FOR SYSTEM SET-UP AND DIAGNOSTICS AND IS NOT INTENDED FOR PERMANENT CONNECTION.

Serial Ports: Format and Baud Rates for each port are individually software programmable up to 115,200 baud.

PGM Port: RS232 port via RJ12.

COMMS Ports: RS422/485 port via RJ45, and RS232 port via RJ12.

DH485 TXEN: Transmit enable; open collector, $V_{OH} = 15$ VDC,
 $V_{OL} = 0.5$ V @ 25 mA max.

Note: For additional information on the communications or signal common and connections to earth ground please see the "Connecting to Earth Ground" in the section "Installing and Powering the 315."

Port to port isolation: 500 Vrms for 1 minutes signal isolation : 50V

Ethernet Port: 10 BASE-T / 100 BASE-TX

RJ45 jack is wired as a NIC (Network Interface Card).

Isolation from Ethernet network to CTVue operator interface: 1500 Vrms

8. ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0 to 50°C

Storage Temperature Range: -20 to 70°C

Operating and Storage Humidity: 80% maximum relative humidity (non-condensing) from 0 to 50°C.

Altitude: Up to 2000 meters.

9. CERTIFICATIONS AND COMPLIANCES:

SAFETY

IEC 61010-1, EN 61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 1.

IP66 Enclosure rating (Face only), IEC 529

Type 4X Enclosure rating (Face only), UL50

ELECTROMAGNETIC COMPATIBILITY

Emissions and Immunity to EN 61326: Electrical Equipment for Measurement, Control and Laboratory use.

Immunity to Industrial Locations:

Electrostatic discharge	EN 61000-4-2	Criterion A 4 kV contact discharge 8 kV air discharge
Electromagnetic RF fields	EN 61000-4-3	Criterion B 10 V/m
Fast transients (burst)	EN 61000-4-4	Criterion B 2 kV power 1 kV signal
Surge	EN 61000-4-5	Criterion A 1 kV L-L, 2 kV L&N-E power
RF conducted interference	EN 61000-4-6	Criterion B 3 V/rms

Emissions:

Emissions EN 55011 Class A

Note:

1. Criterion A: Normal operation within specified limits.

2. Criterion B: Temporary loss of performance from which the unit self recovers.

10. **CONNECTIONS:** Compression cage-clamp terminal block.

Wire Gauge: 12-22 AWG copper wire

Torque: 5-7 inch-pounds (56-79 N-cm)

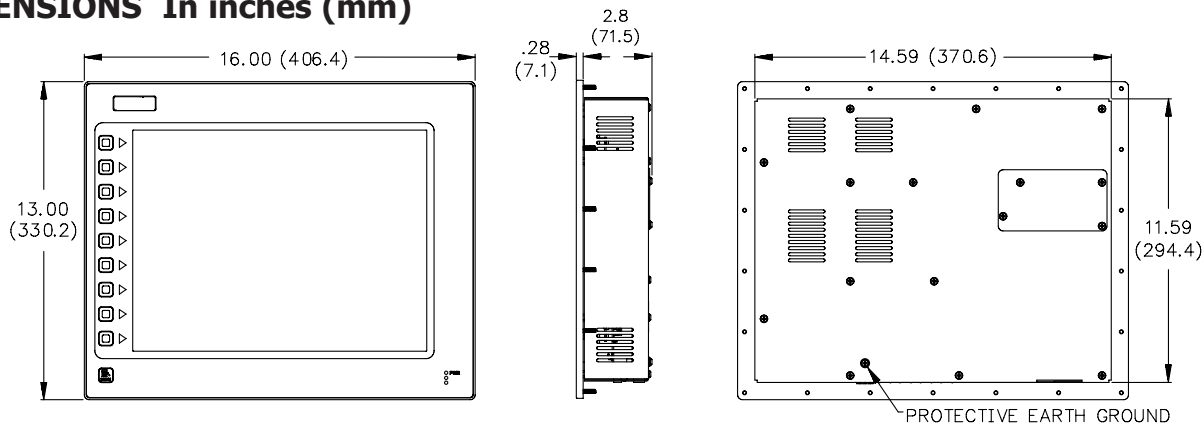
11. **CONSTRUCTION:** Steel rear metal enclosure with NEMA 4X/IP66 aluminum front plate for indoor use only when correctly fitted with the gasket provided. Installation Category II, Pollution Degree 2.

12. **MOUNTING REQUIREMENTS:** Maximum panel thickness is 0.25" (6.3 mm). For NEMA 4X/IP66 sealing, a steel panel with a minimum thickness of 0.125" (3.17 mm) is recommended.

Maximum Mounting Stud Torque: 17 inch-pounds (1.92 N-m)

13. **WEIGHT:** 11.41 lbs (5.17 Kg)

DIMENSIONS In inches (mm)

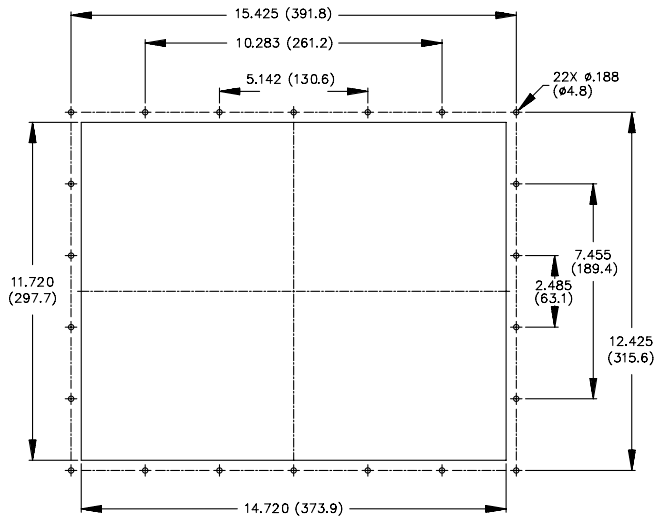


INSTALLING AND POWERING THE 315

MOUNTING INSTRUCTIONS

This operator interface is designed for through-panel mounting. A panel cut-out diagram and a template are provided. Care should be taken to remove any loose material from the mounting cut-out to prevent that material from falling into the operator interface during installation. A gasket is provided to enable sealing to NEMA 4X/IP66 specification. Install the 22 kee nuts provided and tighten evenly for uniform gasket compression.

Note: Tightening the kee nuts beyond a maximum of 17 inch-pounds (1.92 N-m) may cause damage to the front panel.



All tolerances ± 0.010 " (± 0.25 mm).



ALL NONINCENDIVE CIRCUITS MUST BE WIRED USING DIVISION 2 WIRING METHODS AS SPECIFIED IN ARTICLE 501-4 (b), 502-4 (b), AND 503-3 (b) OF THE NATIONAL ELECTRICAL CODE, NFPA 70 FOR INSTALLATION WITHIN THE UNITED STATES, OR AS SPECIFIED IN SECTION 19-152 OF CANADIAN ELECTRICAL CODE FOR INSTALLATION IN CANADA.

CONNECTING TO EARTH GROUND



The protective conductor terminal is bonded to conductive parts of the equipment for safety purposes and must be connected to an external protective earthing system.

Each 315 has a chassis ground terminal on the back of the unit. Your unit should be connected to earth ground (protective earth).

The chassis ground is not connected to signal common of the unit. Maintaining isolation between earth ground and signal common is not required to operate your unit. But, other equipment connected to this unit may require isolation between signal common and earth ground. *To maintain isolation between signal common and earth ground care must be taken when connections are made to the unit.* For example, a power supply with isolation between its signal common and earth ground must be used. Also, plugging in a USB cable may connect signal common and earth ground.¹

1. USB's shield may be connected to earth ground at the host. USB's shield in turn may also be connected to signal common.

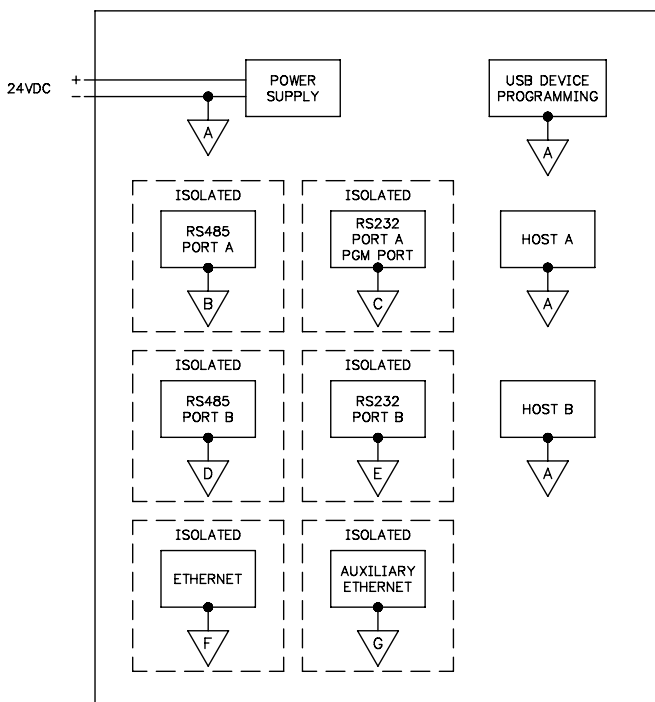
POWER SUPPLY REQUIREMENTS

The 315 requires a 24 VDC power supply. Your unit may draw considerably less than the maximum rated power depending upon the options being used. As additional features are used your unit will draw increasing amounts of power. Items that could cause increases in current are additional communications, optional communications card, CompactFlash card, and other features programmed through CTVue Configurator.

In any case, it is very important that the power supply is mounted correctly if the unit is to operate reliably. Please take care to observe the following points:

- The power supply must be mounted close to the unit, with usually not more than 6 feet (1.8 m) of cable between the supply and the operator interface. Ideally, the shortest length possible should be used.
- The wire used to connect the operator interface's power supply should be at least 22-gage wire. If a longer cable run is used, a heavier gage wire should be used. The routing of the cable should be kept away from large contactors, inverters, and other devices which may generate significant electrical noise.
- A power supply with a Class 2 or SELV rating is to be used. A Class 2 or SELV power supply provides isolation to accessible circuits from hazardous voltage levels generated by a mains power supply due to single faults. SELV is an acronym for "safety extra-low voltage." Safety extra-low voltage circuits shall exhibit voltages safe to touch both under normal operating conditions and after a single fault, such as a breakdown of a layer of basic insulation or after the failure of a single component has occurred.

BLOCK DIAGRAM



COMMUNICATING WITH THE 315

PROGRAMMING A 315

The 315 is programmed using CTVue Configurator software. The software is available as a free download from Control Technique's website, or it can be purchased on CD. Updates to the software for new features and drivers are posted on the website as they become available. By programming the 315 using the latest version of the software, you are assured that your unit has the most up to date feature set. The software can configure the 315 through the RS232 PGM port, USB port, Ethernet port, or CompactFlash.

The USB port is connected using a standard USB cable with a Type B connector. The driver needed to use the USB port will be installed with CTVue Configurator.

The RS232 PGM port uses a programming cable to connect to the DB9 COM port of your computer. If you choose to make your own cable, use the "315 Port Pin Out Diagram" for wiring information.

The CompactFlash can be used to program a CTVue by placing a configuration file and firmware on the CompactFlash card. The card is then inserted into the target CTVue, and the CTVue is then powered up. Refer to the CTVue Configurator literature for more information on the proper names and locations of the files.

USB, DATA TRANSFERS FROM THE COMPACTFLASH CARD



WARNING - DO NOT CONNECT OR DISCONNECT CABLES WHILE POWER IS APPLIED UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS. USB PORT IS FOR SYSTEM SET-UP AND DIAGNOSTICS AND IS NOT INTENDED FOR PERMANENT CONNECTION.

In order to transfer data from the CompactFlash card via the USB port, a driver must be installed on your computer. This driver is installed with CTVue Configurator and is located in the folder C:\Program Files\Control Techniques\CTVUE\Device\ after CTVue Configurator is installed. This may have already been accomplished if your 315 was configured using the USB port.

Once the driver is installed, connect the 315 to your PC with a USB cable, and follow "Mounting the CompactFlash" instructions in the CTVue Configurator user manual.

ETHERNET COMMUNICATIONS

Ethernet communications can be established at either 10 BASE-T or 100 BASE-TX. The 315 unit's RJ45 jack is wired as a NIC (Network Interface Card). For example, when wiring to a hub or switch use a straight-through cable, but when connecting to another NIC use a crossover cable.

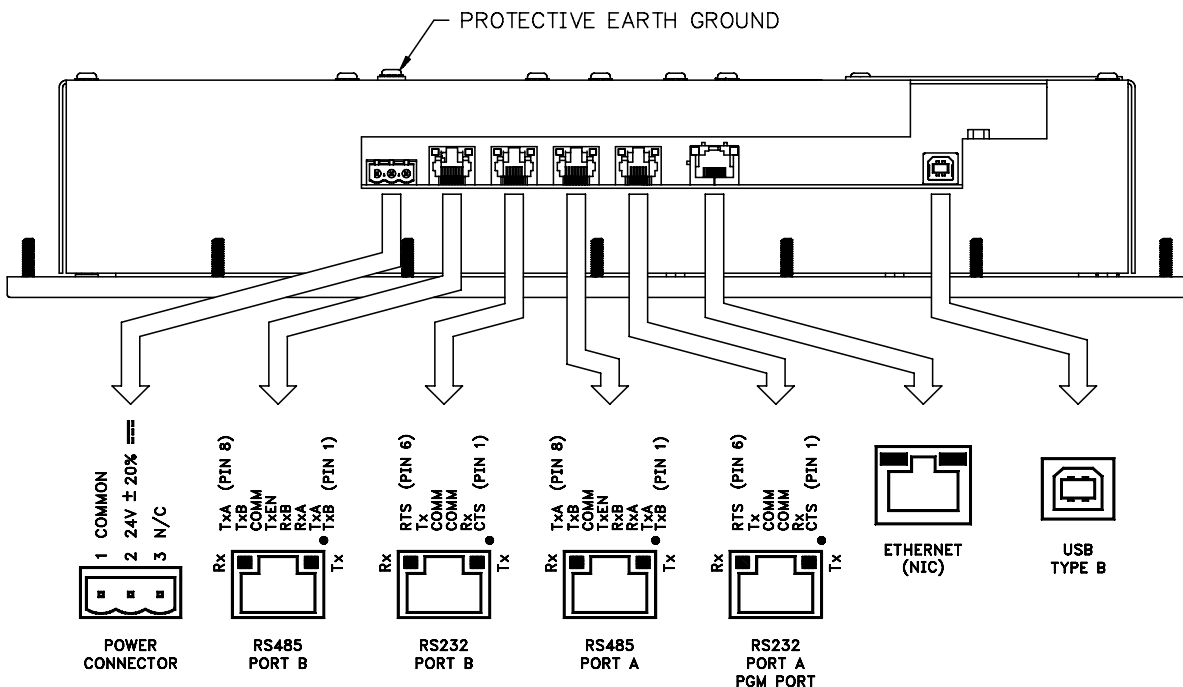
The Ethernet connector contains two LEDs. A yellow LED in the upper right, and a bi-color green/amber LED in the upper left. The LEDs represent the following statuses:

LED COLOR	DESCRIPTION
YELLOW solid	Link established.
YELLOW flashing	Data being transferred.
GREEN	10 BASE-T Communications
AMBER	100 BASE-TX Communications

On the rear of each unit is a unique 12-digit MAC address and a block for marking the unit with an IP address. Refer to the CTVue Configurator manual and Control Technique's website for additional information on Ethernet communications.

WIRING THE 315

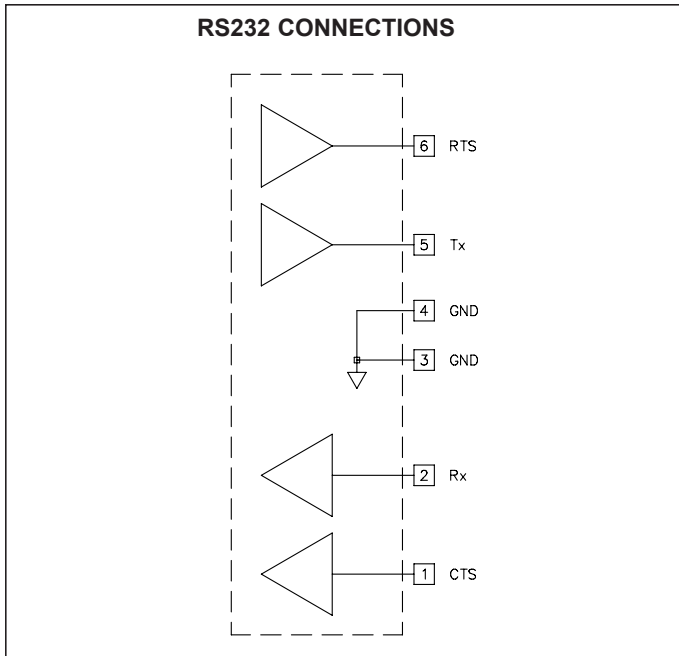
315 PORT PIN OUTS



RS232 PORTS

The 315 has two isolated RS232 ports. The port marked “RS232/PORT A/PGM PORT” may be used for programming as well as communications, while the port marked RS232/PORT B may only be used for communications.

Both ports can be used for either master or slave protocols.



DH485 Connections

The 315's RS422/485 COMMS port can also be used for Allen Bradley DH485 communications.

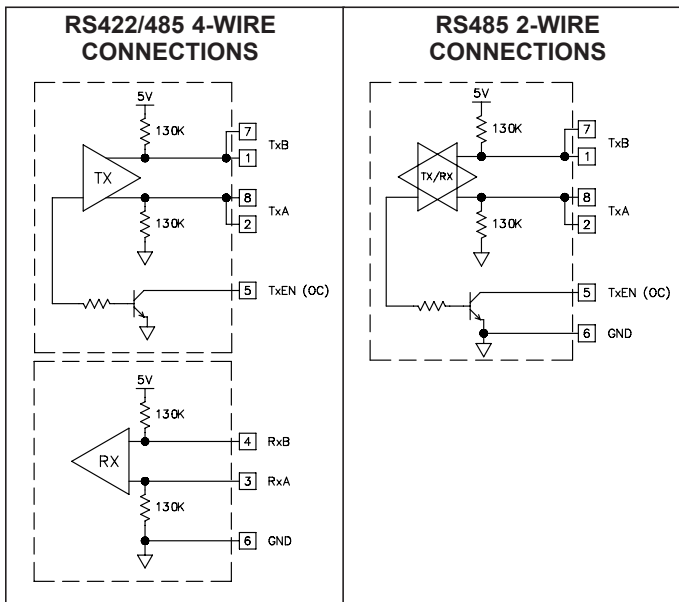
WARNING: DO NOT use a standard DH485 cable to connect this port to Allen Bradley equipment. A cable and wiring diagram are available from Control Techniques.

CTVue to AB SLC 500 (CBLAB003)

Connections			
RJ45: CTVue	Name	RJ45: A-B	Name
1	TxB	1	A
2	TxA	2	B
3, 8	RxA	-	24V
4, 7	RxB	-	COMM
5	TxEN	5	TxEN
6	COMM	4	SHIELD
4, 7	TxB	-	COMM
3, 8	TxA	-	24V

RS422/485 COMMS PORT

The 315 has two isolated RS422/485 ports. These ports can be configured to act as either RS422 or RS485.



SOFTWARE/UNIT OPERATION

CTVue CONFIGURATOR SOFTWARE

CTVue Configurator software is available as a free download from Control Technique's website or it can be purchased on a CD, see "Ordering Information" for part number. The latest version of the software is always available from the website, and updating your copy is free.

DISPLAY

This operator interface uses a liquid crystal display (LCD) for displaying text and graphics. The display utilizes a cold cathode fluorescent tube (CCFL) for lighting the display. The CCFL tubes can be dimmed for low light conditions.

These CCFL tubes have a limited lifetime. Backlight lifetime is based upon the amount of time the display is turned on at full intensity. Turning the backlight off when the display is not in use can extend the lifetime of your backlight. This can be accomplished through the CTVue Configurator software when configuring your unit.

KEYPAD

The 315 keypad consists of ten keys that can be used for on-screen menus.

TOUCHSCREEN

This operator interface utilizes a resistive analog touchscreen for user input. The unit will only produce an audible tone (beep) when a touch on an active touchscreen cell is sensed. The touchscreen is fully functional as soon as the operator interface is initialized, and can be operated with gloved hands.

TROUBLESHOOTING YOUR 315

If for any reason you have trouble operating, connecting, or simply have questions concerning your new 315, contact Control Technique's technical support. For contact information, refer to the front page of this bulletin for phone and fax numbers.

EMAIL: info@emersonct.com

Web Site: <http://www.emersonct.com>

FRONT PANEL LEDS

There are three front panel LEDs. Shown below is the default status of the LEDs.

LED	INDICATION
GREEN (TOP, LABELED "PWR")	
FLASHING	Unit is in the boot loader, no valid configuration is loaded. ¹
STEADY	Unit is powered and running an application.
YELLOW (MIDDLE)	
OFF	No CompactFlash card is present.
STEADY	Valid CompactFlash card present.
FLASHING RAPIDLY	CompactFlash card being checked.
FLICKERING	Unit is writing to the CompactFlash, either because it is storing data, or because the PC connected via the USB port has locked the drive. ²
FLASHING SLOWLY	Incorrectly formatted CompactFlash card present.
GREEN (BOTTOM)	
FLASHING	A tag is in an alarm state.
STEADY	Valid configuration is loaded and there are no alarms present.

1. The operator interface is shipped without a configuration. After downloading a configuration, if the light remains in the flashing state continuously, try cycling power. If the LED still continues to flash, try downloading a configuration again.
2. Do not turn off power to the unit while this light is flickering. The unit writes data in two minute intervals. Later Microsoft operating systems will not lock the drive unless they need to write data; Windows 98 may lock the drive any time it is mounted, thereby interfering with logging. Refer to "Mounting the CompactFlash" in the CTVue Configurator User Manual.

BATTERY & TIME KEEPING



WARNING - EXPLOSION HAZARD - THE AREA MUST BE KNOWN TO BE NON-HAZARDOUS BEFORE SERVICING/ REPLACING THE UNIT AND BEFORE INSTALLING OR REMOVING I/O WIRING AND BATTERY.



WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN DISCONNECTED AND THE AREA IS KNOWN TO BE NON-HAZARDOUS.



CAUTION: RISK OF ELECTRIC SHOCK

The inverter board, attached to the mounting plate, supplies the high voltage to operate the backlight. Touching the inverter board may result in injury to personnel.



CAUTION: The circuit board contains static sensitive components. Before handling the operator interface without the rear cover attached, discharge static charges from your body by touching a grounded bare metal object. Ideally, handle the operator interface at a static controlled clean workstation. Also, do not touch the surface areas of the circuit board. Dirt, oil, or other contaminants may adversely affect circuit operation.

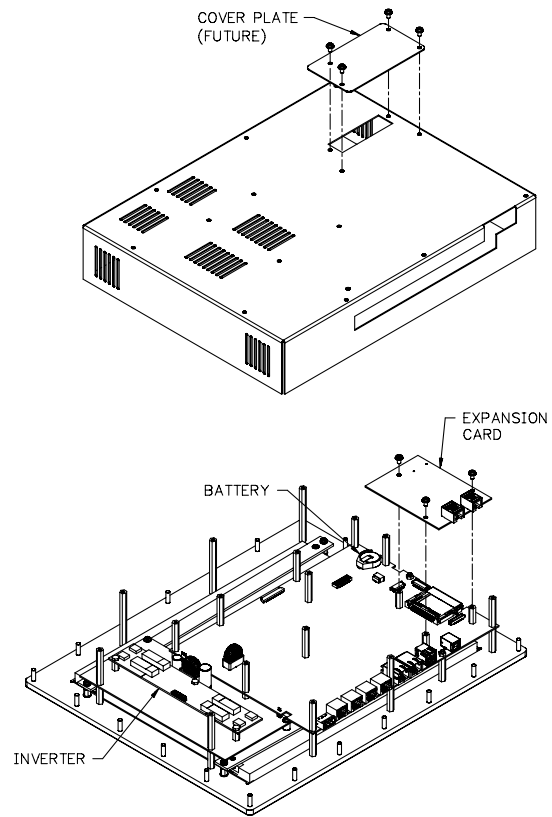
A battery is used to keep time when the unit is without power. Typical accuracy of the 315 time keeping is less than one minute per month drift. The battery of a 315 unit does not affect the unit's memory, all configurations and data is stored in non-volatile memory.

To change the battery of a 315, remove power, cabling, and then the rear cover of the unit. To remove the cover, remove the 16 screws on the rear of the unit. Then, by lifting the top side, hinge the cover, thus providing clearance for the connectors on the bottom side of the PCB as shown in the illustration below. Install in the reverse manner.

Remove the old battery* from the holder and replace with the new battery. Replace the rear cover, cables, and re-apply power. Using CTVue Configurator or the unit's keypad, enter the correct time and date.

* Please note that the old battery must be disposed of in a manner that complies with your local waste regulations. Also, the battery must not be disposed of in fire, or in a manner whereby it may be damaged and its contents come into contact with human skin.

The battery used by the 315 is a lithium type CR2025.



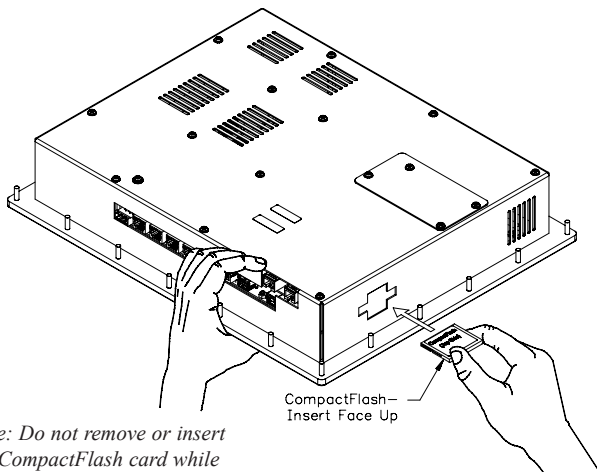
OPTIONAL FEATURES AND ACCESSORIES

COMPACTFLASH SOCKET

CompactFlash socket is a Type II socket that can accept either Type I or II cards. Use cards with a minimum of 4Mbytes with the 315's CompactFlash socket. Cards are available at most computer and office supply retailers.

CompactFlash can be used for configuration transfers, larger configurations, data logging, and trending.

Information stored on a CompactFlash card by a 315 can be read by a card reader attached to a PC. This information is stored in IBM (Windows®) PC compatible FAT16 file format.



Note: Do not remove or insert the CompactFlash card while power is applied. Refer to "Front Panel LEDs."

OPTIONAL COMMUNICATION CARD

Control Techniques offers optional communication cards for fieldbus communications. These communication cards will allow your 315 to communicate with many of the popular fieldbus protocols.

Control Techniques is also offering a communications card for additional RS232 and RS422/485 communications. Visit Control Technique's website for information and availability of these cards.

