



# USBCNC

USB Disk Key reader for CNC Controls  
Machine Mount instructions



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## **Introduction**

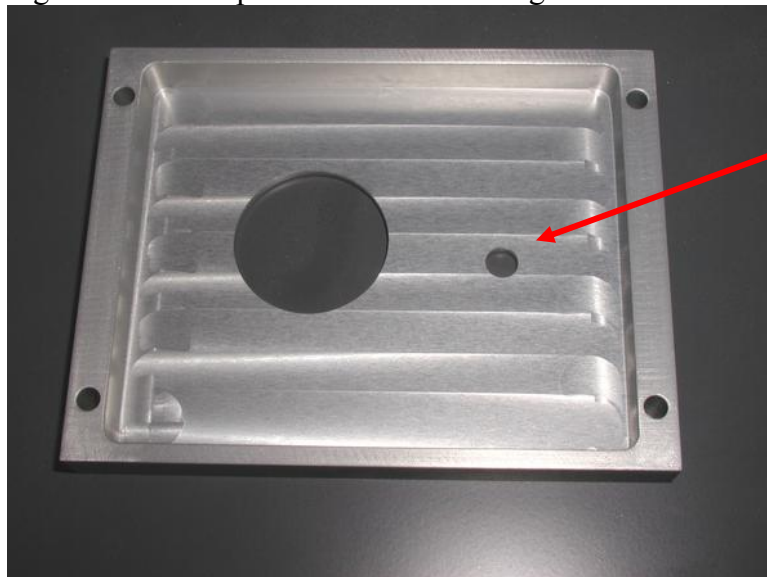
This manual is intended to provide a description of the installation procedure for the Calmotion USBCNC universal disk key reader.

## **Requirements**

The USBCNC device will work with a CNC control with a standard DB25 RS-232 serial connection to the control box for the purposes of input/output of CNC data. Typically, the CNC manufacturer refers this as read and punch tape functions.

**Please review the instruction manual thoroughly before beginning installation. In addition, the installer should verify that proper space and clearance has been taken into account prior to drilling holes in the CNC pendant. This includes cable bending radius and cable length.**

The USBCNC-INT kit includes a mounting bezel that also acts as a drill jig. Once the installer has identified where the display should be mounted, the mark the small hole in the center and drill a hole of the same size. Mount the plate, level and tighten to the cabinet. Please note to use best method to manage the metal chips created when drilling the holes.



This is the smaller hole in the center. Use this to hold the bezel in place while drilling the outer four mounting holes.

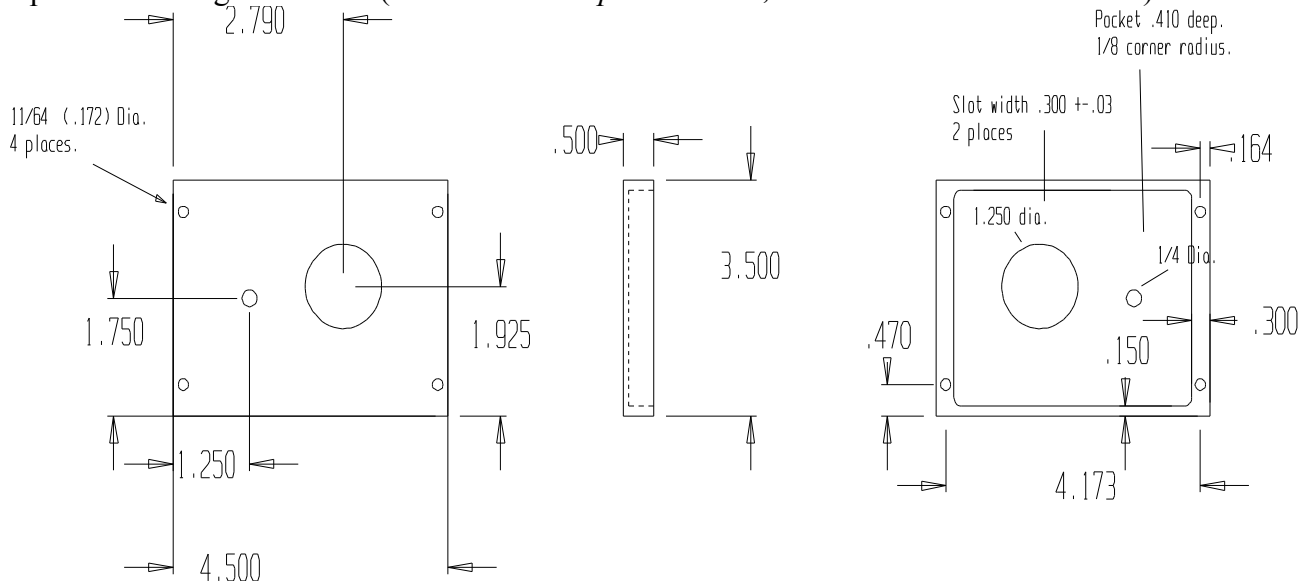
Note the orientation of the bezel. The large hole should be on the left. The large hole allows lay the RJ11 jack on the display to protrude into the machine's enclosure. Ensure that the proper orientation is used before drilling any holes.

With the bracket held in place with a bolt through the smaller center hole, level the bracket and mark the larger hole on the bracket, this will need to be punched or step drilled to this same size.

Drill the four outer holes using the bracket as a drill jig.

Remove the bracket.

Hole saw, step drill or punch out the larger diameter hole. The RJ11 connector of the display will protrude through this hole. (*McMaster Carr p/n 3789A18, 1 1/8" hole saw can be used*).

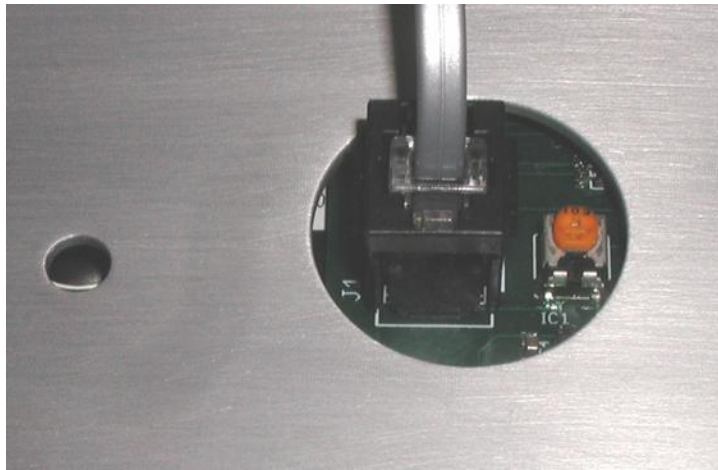




Mount the display and bracket to the control box.



Inside the cabinet the RJ11 and the potentiometer should be visible through the large diameter hole. The potentiometer is used to adjust the brightness of the display as needed.



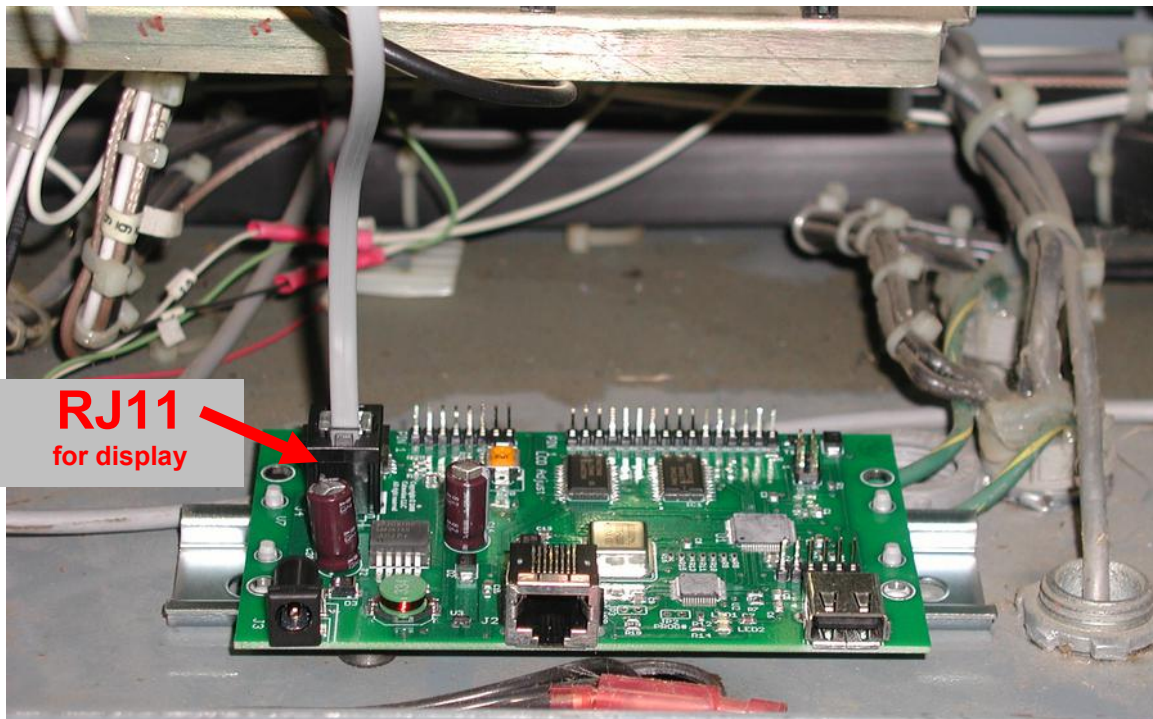
Plug the modular cable into the RJ11 jack. Note the length of the cable. The USBCNC controller board will need to be within cable length distance of the display when mounted.

Locate a good position to mount the USBCNC controller board. It will need to be within the distance of the display cable, serial cable and the power plug. Secure the din rail as shown below.

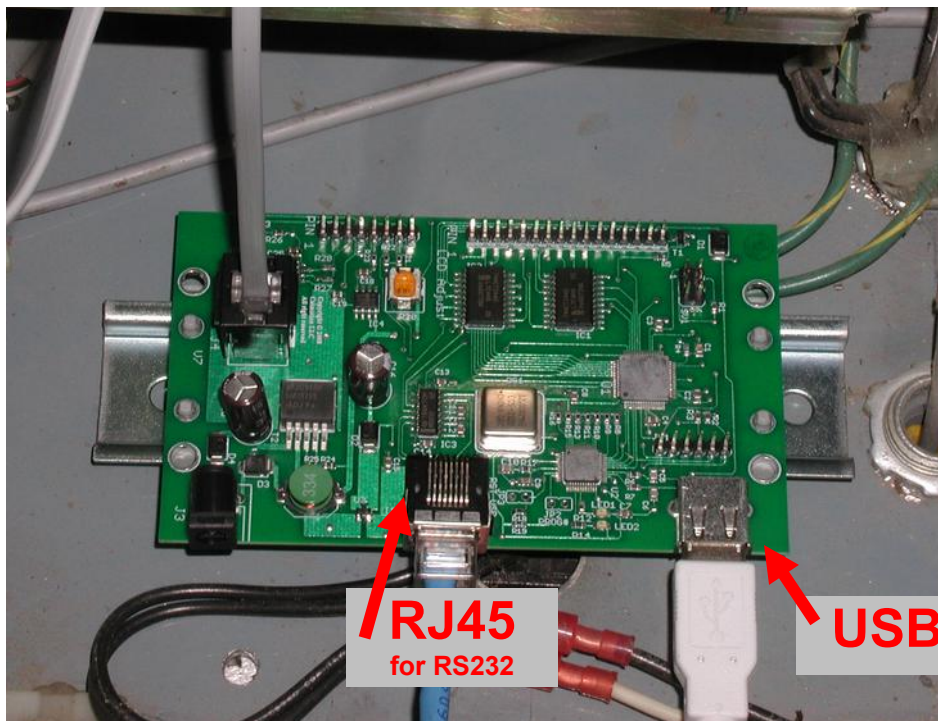


Attach the din rail clips to the USBCNC controller and mount to the din rail. Check for spacing. The two outer holes from the din rail clips can be used to release from the clips with a small screw driver.





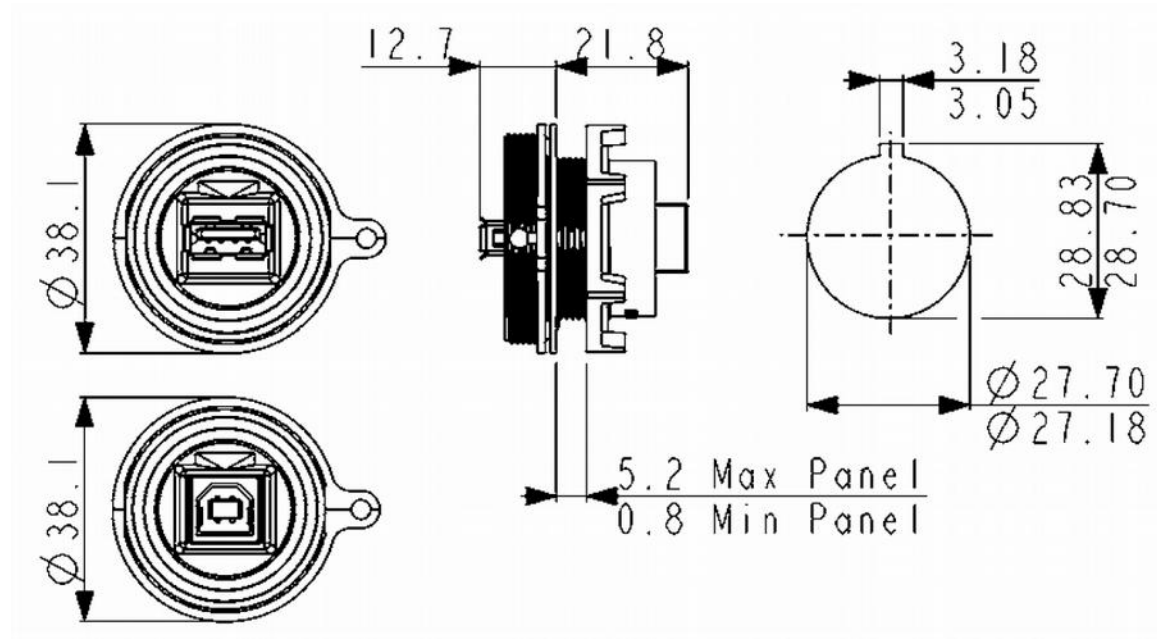
Plug the modular cable from the display into the RJ11 connector **J4** on the USBCNC controller board.



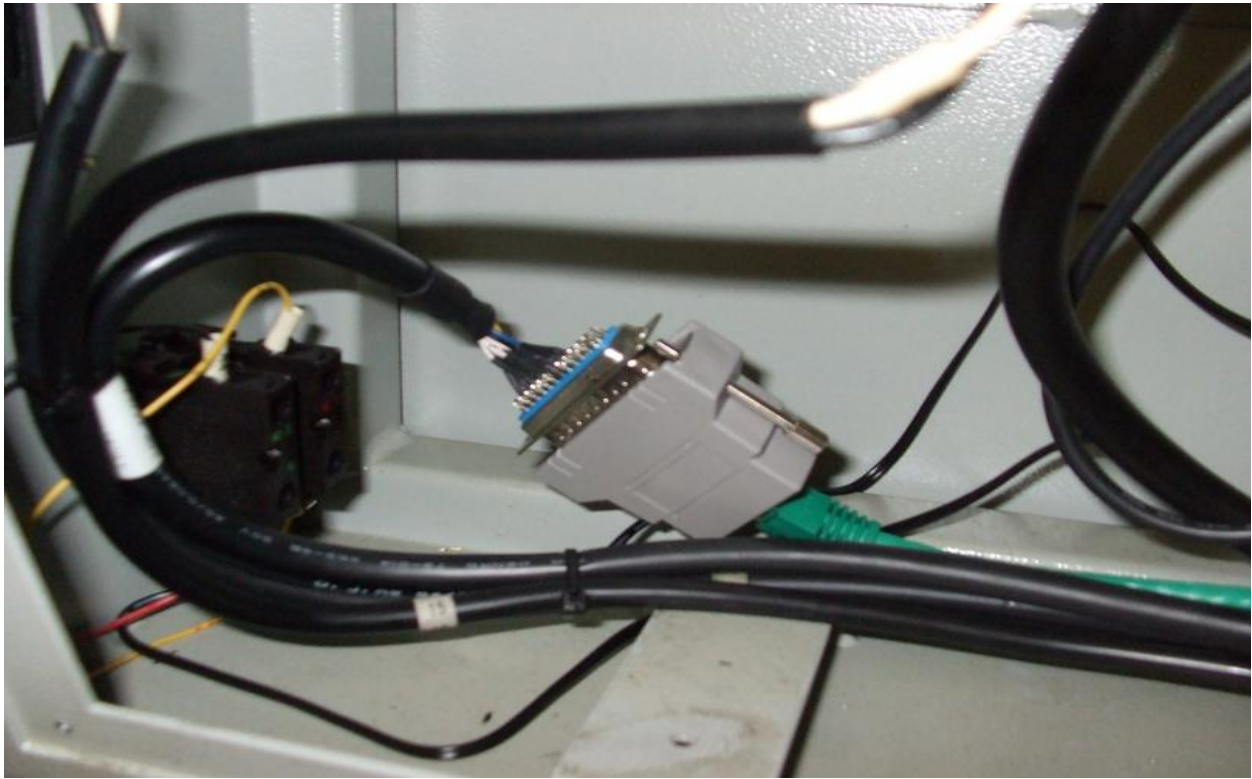
Plug the CAT5 cable into RJ45 labeled **J1** on the control board shown above. Later in the installation, the other end of the CAT5 cable will be plugged into the RJ45/DB25 plug.

Plug the USB cable into **J2** on the control board shown above. Later in the installation process, the other end of the USB cable will plug into the panel mounted USB connector.

Choose a location for the panel mounted USB plug. Its location should be chosen for convenient connection of a USB key during normal operation of the machine. Punch a hole in the desired location to the dimensions shown below. Insert the panel mount USB connector through the hole and secure with the attached nut. Ensure that the gasket included with the kit is used to prevent contaminants from entering the enclosure. The cap of the panel mount USB connector snaps onto the connector house. (Note: the A side of the USB connector faces out of the pendant while the square B side of the USB connector faces into the pendant). Connect the USB plug to the controller with the USB cable provided.



Locate the serial port connector of the CNC. Attach one end of the CAT5 cable to the serial port connector of the USBCNC controller. Attach the other end to one of the DB25 connectors included with the kit. Both male and female connectors have been provided. Choose one as appropriate. In most cases, it is best to simply pull the serial connector in from its mounting assembly and connect inside the pendant as shown below.



The power plug provided will be connected at **J3** on the printed circuit board. The center is +VDC and the outside barrel of the plug is 0 VDC common (DC ground). The positive wire is identified with a white-stripe running the full length of the wire. The solid black wire should be connected to ground. The power supply can be anywhere in the range of 7-28 volts DC. Find a suitable power source in the cabinet and connect the flying lead connections to a power source.

Test the voltage and polarity before plugging into the USBCNC board. Use the CNCs DC common (0 VDC) on the pin 7 on the machines DB25 RS232 plug, this is typical, but please verify in the machines wiring manual. Note if you are unsure where to tap the DC voltage inside the CNC, purchase the optional DIN rail power supply from Calmotion. This optional power supply uses 120 to 240VAC line voltage to create the DC voltage for the USBCNC.

Apply power to the unit. A green LED should illuminate on the controller indicating that power has been applied. If properly connected, the keypad will also illuminate after a slight delay.

### **To Adjust the Display Contrast**

An orange potentiometer (**R2**) located on the back of the display board can be used to adjust the contrast of the keypad display. This potentiometer should be accessible through the large diameter hole in the control box. (Note: the R20 on the USBCNC control board does **not** adjust the contrast).





**Figure 1**

Please refer to the USBCNC user's manual for operation and communication set-up of the USBCNC.