

# V-CCU CLOCK CONTROLLER PACKAGE

## GENERAL

The Valcom Clock Controller provides 24VDC power as well as automatic synchronization and correction to Valcom clocks when used with a V-DCPI Digital Clock Protocol Interface, a V-D11025 2.5" Digital Clock, a V-D11040 4.0" Digital Clock, a V-WMC Wireless Master Clock Transceiver, a V-GPS GPS Receiver, a VERCA Remote Card Adapter or a clock output from another V-CCU.

## PACKAGE INCLUDES

- 1 Valcom V-CCU Clock Controller
- 1 Valcom 24V Power Supply V-C6124P
- 1 24V Wiring Harness
- 1 6-Pin Silver-Satin Cord
- 1 6-Pin RJ-11 Wiring Block

## SPECIFICATIONS

### Outputs

Three individual 2 Amp, 24VDC outputs are provided to power up to 120 Valcom Analog clocks, 36 Valcom 2.5" Digital Clocks or 30 Valcom 4.0" Digital Clocks.

### Inputs

- Correction data
- 24VDC input power

### Features

- Supports two wire clock operation
- Individual current limited 2 Amp outputs
- User selectable correction intervals
- Data error LED indicators
- Power/Data output LED indicators

### Dimensions/Weight

- 2.63"H x 12.36"W x 7.75"D  
(6.7cm H x 31.4cm W x 19.7cm D)
- 7lbs. ( 3.2 kg ) (with power supply)

### Power Requirements

The V-CCU requires 24VDC 2 Amps per output (V-C6124P included).

### Environmental

Operating Temperature: -0 to +40° C  
Humidity: 0-95% non-precipitating

### Wiring Requirements

- 24AWG UTP, CAT 3/5/5E/6



## INSTALLATION

### Precautions

Failure to observe the following precautions could result in damage to the V-CCU.

- Make all connections to the V-CCU and associated equipment with the input power removed. Check and verify all connections before applying power.

**Note:** Spare pairs in multi conductor talkback speaker cables, as are often used for classrooms, may be used to distribute Valcom 2-wire digital clock correction signals. DO NOT use spare pairs in any cable being used to provide line level audio to one-way speakers, amplifiers, or local sound mixers (i.e. VE9121 type devices). For other scenarios, contact tech support before using spare pairs for 2-wire digital clock correction. In addition, it is advisable to maintain 8 inches of separation between the cable carrying 2-wire digital clock correction signals and all other low voltage cables.

### V-C6124P Mounting Instructions

- Locate an area on the wall capable of supporting the weight of the power supply (approximately 5 pounds) within six feet of an AC receptacle.
- Using the mounting bracket as a template, mark the two slotted holes on the mounting surface.
- Using the two #8 screws enclosed, mount the bracket to the mounting surface as shown (See Figure 1).
- Slide the V-C6124P onto the mounting bracket.

### V-C6124P Wiring Instruction

- Plug the AC cord into the V-C6124P only. **(Do NOT plug into the AC outlet)**
- Plug the wiring harness packaged with the V-CCU into the output connector of the V-C6124P (See Figure 1)
- Connect any one of the 3 Negative Power Supply output connections to the earth ground screw.

## V-CCU Mounting

- Plug the 24V wiring harness from the V-C6124P into the POWER IN connector of the V-CCU.
- Position the V-CCU directly below the V-C6124P. Using the 24V wiring harness as a measure, align the V-CCU under the V-C6124P where the wiring harness is not stressed (See Figure 1).
- Using the unit as a template, mark the mounting hole locations on the mounting surface.
- Disconnect the wiring harness and mount the V-CCU to the wall.

## V-CCU Wiring

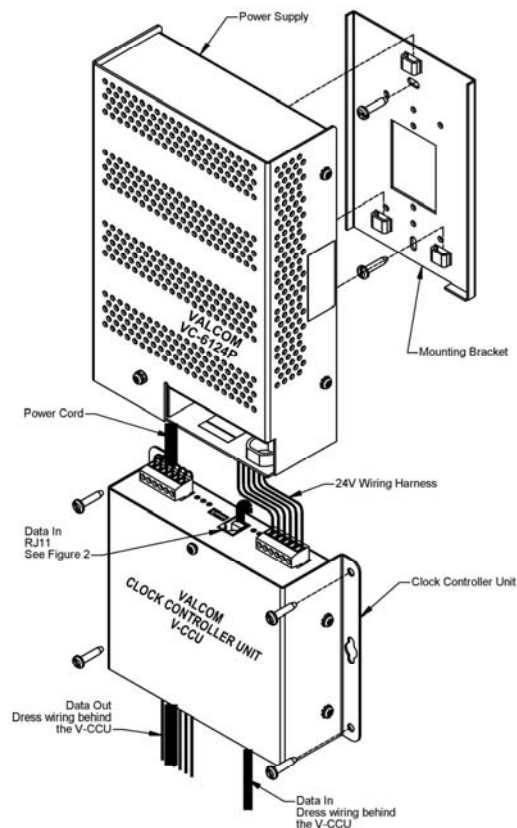
- Re-attach the 24V harness to the V-CCU. Dipswitch functionality requires that 24V be applied to all three 24V inputs.
- Connect the data out from a V-DCPI Digital Clock Protocol Interface, a V-D11025 2.5" Digital Clock, a V-D11040 4.0" Digital Clock, a V-WMC Wireless Master Clock Transceiver, a V-GPS GPS Receiver, a VERCA Remote Card Adapter or a clock output from another V-CCU to the "DATA IN" RJ-11 on the V-CCU. Dress the wires behind the V-CCU as shown.

**NOTE:** The V-CCU data input is not polarity sensitive. See **FIGURE 2** for data connection detail.

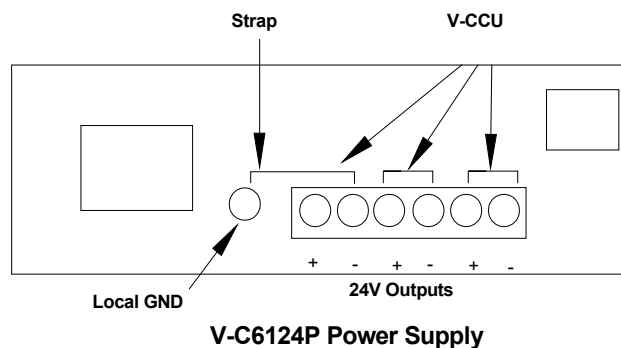
- Dress the peripheral clocks home run wiring behind the V-CCU as shown (See Figure 1).
- **If your system will use more than one V-CCU, you must connect a common ground. Simply connect one of the negative (-) outputs of each V-CCU's V-C6124P power supply together.**
- Connect the home runs to the plug-in terminal strip provided.

**NOTE:** Maximum of 2 Amps per Clock output.

- Plug the terminal strip into the Clock Output connector on the V-CCU.
- **DO NOT APPLY POWER YET!** The clock correction interval must be set prior to energizing the unit. See Setup and Programming.



**FIGURE 1**



**NOTE: One of the 3 Negative Output connections must be connected to the Earth Ground Screw.**

## Setup and Programming

- If using a V-GPS, a V-WMC or a V-D110XX Digital Clock as a data source, set the clock data correction interval on these units for “one second”. (Refer to the individual product manuals for details). If using a V-DCPI or a VERCA as a data source, program the Valcom intercom to provide “digital out” and “24-Hour Enhanced”.
- Using the V-CCU dipswitches set the desired clock correction intervals using chart 1 below.

|                   | Switch 1 | Switch 2 | Switch 3 | Switch 4 |
|-------------------|----------|----------|----------|----------|
| <b>1 SEC</b>      | Down     | Up       | Up       | Up       |
| <b>1 MIN</b>      | Up       | Down     | Up       | Up       |
| <b>10 MIN</b>     | Up       | Up       | Down     | Up       |
| <b>1 HR</b>       | Up       | Up       | Up       | Down     |
| <b>SLAVE MODE</b> | Down     | Down     | Down     | Down     |

**CHART 1: CORRECTION INTERVAL**

It is advisable to maintain 8 inches of separation between the cable carrying 2-wire digital clock correction signals and all other low voltage cables. There is one exception to this. When using Class Connection or Multipath systems, 2-wire digital clock correction signals may utilize spare pairs in dedicated talkback speaker cables. DO NOT use spare pairs in any other type cable being used to provide audio to speakers, amplifiers, or local sound mixers (i.e. VE9121 type devices). For other scenarios, contact tech support before using spare pairs for 2-wire digital clock correction. Dedicated clock cabling should also be used for digital display clocks that will be utilized to display the word “Fire” or “Bell”.

During initial setup, the V-CCU dipswitches should be set to send data every second.

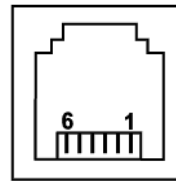
Once initial setup is complete:

If the V-CCU is connected to the clocks through dedicated cabling then the V-CCU dipswitches should be set to send data every ten minutes.

If the V-CCU is used with a Class Connection VECPU-5, a VECPU rev 4.02 or higher or a V-CPU4 rev 3.16 or higher, then the V-CCU dipswitches should be set to send data every ten minutes.

If the V-CCU is used with digital display clocks that will be utilized to display the word “Fire” or “Bell”, then the V-CCU dipswitches should be set to send data every second.

Otherwise, when initial setup is complete, change the V-CCU dipswitches to send data every hour.



- Pin 1 24V out to V-DCPI
- Pin 2 GND out to V-DCPI
- Pin 3 Data
- Pin 4 Data
- Pin 5 GND out to DCPI
- Pin 6 24V out to V-DCPI

**FIGURE 2: DATA IN RJ-11 DETAIL**

Data is connected via the two center pins of the “DATA IN” RJ-11 connector. Electrical shorting of any RJ-11 pins or terminations may result in unit failure.

The 24V and GND connections are provided as a power source for the V-DCPI Digital Protocol Interface.

## Initialization Self Test

Plug the V-C6124P into the AC receptacle. After approximately two seconds, the three RED LEDs on the V-CCU should blink twice and then extinguish when the unit begins to receive data from the master clock. This indicates that the unit is energized and operating properly.

**NOTE:** During the power up self-test, it is normal for the LEDs to blink out of sequence.

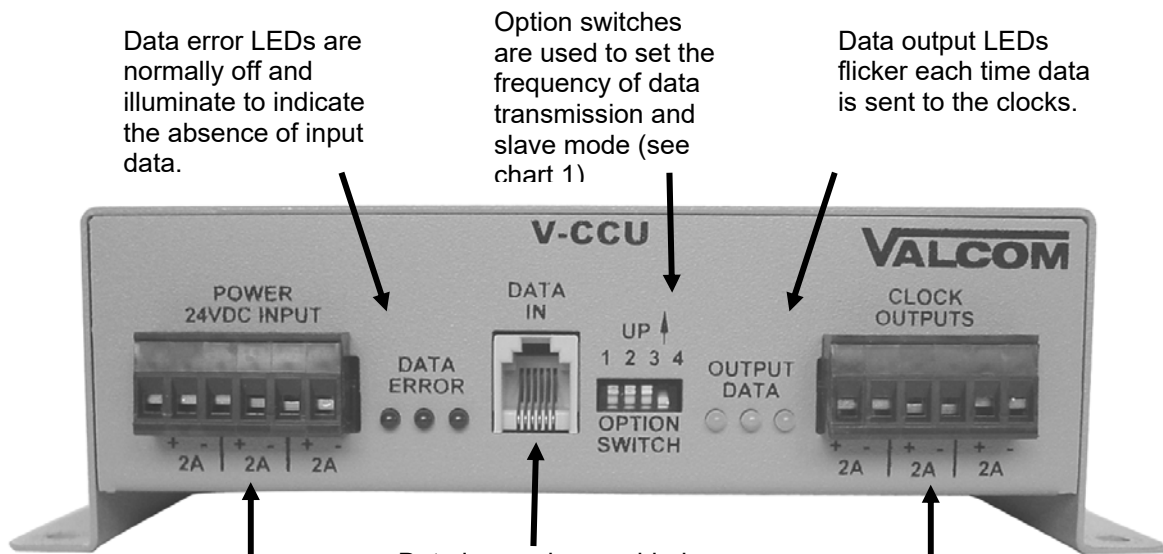
After the initialization self test, the three GREEN LEDs should illuminate, indicating that 24V is being supplied to the clocks. The GREEN LEDs will flicker periodically following data transmission to the clocks.

## OPERATION

The V-CCU provides 24VDC power and correction data over a single pair of wires to Valcom clocks. The unit can be programmed to send the correction data out once every second, every minute, every ten minutes or every hour. RED LEDs indicate that the unit is not receiving input data. GREEN LEDs indicate that 24VDC is being supplied to the clocks. The GREEN LEDs will flicker when correction data is supplied to its respective output.

## Master/Slave Mode

Systems requiring multiple V-CCUs may be wired in a master/slave configuration with one of the clock outputs connected to the “Data In” of one or more slaves. Slave units must be mounted within 500 feet of the master and must have all of their dipswitches set to the “down” position (slave mode).



Data error LEDs are normally off and illuminate to indicate the absence of input data.

Option switches are used to set the frequency of data transmission and slave mode (see chart 1)

Data output LEDs flicker each time data is sent to the clocks.

Connect to V-C6124P power supply using the cable supplied in the V-VCU package.

Data in may be provided from a V-DCPI Digital Clock Protocol Interface, a V-D11025 2.5" Digital Clock, a V-D11040 4.0" Digital Clock, a V-WMC Wireless Master Clock Transceiver, a V-GPS GPS Receiver, a VECRA Remote Card Adapter or a clock output from another V-CCU.

3 clock outputs are provided. Each output can be connected to up to 40 Valcom Analog clocks, 12 Valcom 2.5" Digital Clocks or 10 Valcom 4.0" Digital Clocks. 2 Amps are available per output.

Visit [www.valcomclocks.com](http://www.valcomclocks.com) for clock connection diagrams and CAD drawings.

## TECHNICAL SUPPORT

When trouble is reported, verify that power is being supplied to the unit and that there are no broken connections. Check input power for correct polarity. Assistance in troubleshooting is available from the factory. When calling, you should have a VOM, several clip leads and be calling from the site. Call (540) 563-2000 and press 1 for Technical Support or visit our website at [www.valcom.com](http://www.valcom.com).

The V-CCU is not field repairable. Valcom, Inc. maintains repair facilities in Roanoke, VA. Should repairs be necessary, attach a tag to the unit clearly stating your company name, address, phone number, contact person and the nature of the problem. Send the unit to:

**Valcom, Inc.**  
**Repair and Return Dept.**  
**5614 Hollins Road**  
**Roanoke, Virginia 24019-5056**

## WARRANTY

Warranty information may be found on our website at [www.valcom.com/warranty](http://www.valcom.com/warranty).