

CRYSTAL VISION

SIMPLY SMART CONTROLER

CV-RB

**PROGRAMMING AND INSTALATION
INSTRUCTIONS**

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Introduction

The **Crystal Vision Controller** is designed with today's express wash in mind. This simply smart controller starting with 24 functions can expand up to 72 functions. Any of these can be programmed for the entire specialty functions today's car wash demands.

The base controller mounted in the user interface button station that has a read out screen and LED indicators for quick easy reference. This is referred to as the Base throughout this manual. It has all the input wiring running to it as well as a communication to the output box(s). The Base itself has outputs that are used in specialty functions like status indicator lights or to run an interfacing relay for a function or a signal such as Roller-Up. The base although is set up to be the Operator/attendant interface can be mounted in a different location and a button input station can be used instead.

The main outputs come in a separate box that holds up to 24 functions. These are referred to simply as Box #. Up to 3 of these can be used expanding the system to 72 functions. So Box 1 would be 1-24, Box 2 would be 25- 48 and Box 3 would be 49-72 channels respectively. All Box outputs have a changeable 10 amp DPDT relay with fuse protection on the commons. This also includes a switch that allows for Auto-Off-On selection of each output.

On retrofit installations it is recommended to make sure the old functions work and are working as labeled before installing the new controller. This saves the installer a lot of trouble shooting time on abandoned or malfunctioning functions when the installation is complete.

Wiring should be done according to all local electrical codes. Due to the nature of this low voltage device most do not cover requirements of this type. A few things that should be done for the installation. Use good quality cables meant for the environment that you are running them in. Prefer ALL wiring to be of a STRANDED type. The Controller inputs, buttons, entry gate, pulse are all low voltage and only need 22 to 16 gauge wire. Gauge 14 and higher cables can be run but is not recommended. Outputs may be of higher voltages and as such should be wired and protected according to codes. Also recommend at this time to write down and label the circuit breakers used in these circuits if possible. Again this makes it easier to trouble shoot things later on.

As in most controllers of this type the memory of the program is not portable and the information should be written down for future reference in case of a loss of the Base unit. To make this easier, program information charts are included in this manual. Please take the time to fill them out for the end user. Not only does this save on reprogramming later, it also helps plan out any tunnel changes in the future.


These instructions are meant as guidelines each location is different and no simple set of instructions would cover them all. A little time on preparation, installation and set up can save many hours and headaches later on.


Main Menu and Key Quick Reference Sheet


Main running display


Pulse #	Auto S 0	1) Status Line
Day Month 01, 2007		2) Date
Use < > for Options		3) Instructions
Edit (<i>menu item</i>) 'Enter'		4) Action to Do [Enter]





 Moves Field or Cursor to the Left

 Moves Field or Cursor to the Right

 Moves Selection Up (Line choice) or some menus Increase Value of selected.


 Moves Selection Down (Line choice) or some menus Decrease Value of selected.

 Decrease Value of Selected (Subtract)

 Increase Value of Selected (Add)

 Enter Change or Select Item Highlighted. [Enter]

Line 1 and 2 will delete and display the button station input for 10 seconds or when another button is pressed.

Pressing the  [Enter] key will bring up the Menu named on line 4

PASSWORDS AND MENUS:

Pulse #	Auto S 0
Day Month 01, 2007	
VER X.X	PW LOCKED

- 1) Status Line
- 2) Date
- 3) BLANK
- 4) Action to Do [Enter]

On the main running menu if the line PW LOCKED is shown No changes can be made unless a password is entered off the PW menu. To get to the PW menu from here press the ENTER key.

Enter to do Action Use the < > to Scroll PASS WORD AND UNLOCK

- 1) Instruction
- 2) Instruction
- 3) BLANK
- 4) Action to Do [Enter]



Scroll Options:  

- 1) **Pass Word and Unlock** Allows for PW to be Entered and Unlock to that Level
- 2) **Change Passwords** Edits the passwords (Only Level 1)
- 3) **Change PW Sets** Edits the PW Level of the Menus (Only Level 1)

Entering PW Level Button Input Level (+/-) = X Press Enter To Exit

- 1) Information
- 2) Editing Menu < > to scroll
- 3) Instruction and Level Set
- 4) Action to Do [Enter]

Line 2 displays what menu you are editing. Use the   to scroll the menus.

The X on line 3 would be the level it is set to.   To change it.

- 4) **Back Remain Locked** Exit to Main screen and stay locked

Default pass words are PASS#, with # = level. Level 1 would be PASS1; Level 2 would be PASS2 etc. The PW level unlocked will allow for any menu set to equal or a higher number to be edited or used. Such as Level 3 can edit level 3-4 level set menus but can not edit level set for 1 or 2. Level 1 is the Master level and can unlock or edit all menus. Make sure you keep this Pass word in a safe place. If you change it make sure you write it down and check that the spelling matches.

Main Menu Options:

S#	Pulse #	Auto S	0	1) Status Line
Day	Month	01,	2007	2) Date
Use < > to change selected.				3) Instructions
Edit (selected) press ENTER				4) Action to Do [Enter]

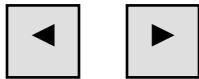
The main running menu displays a lot of information

Line 1: S# Cars In The Q, Pulse # Pulse Count and Auto Shutdown Count down.


Line 2: Date, (T) = Tire Input is active and (R) = Roller Location Input is active

Line 3: Instructions on what keys to use.

Line 4: What Menu/Application it is going to go to when you hit the Enter Key.





- 1) **EDIT 'Inputs' Enter** Edits the Wash Buttons as to what they program/control.
- 2) **EDIT 'Outputs' Enter** Edits the Output or Channel operation.
- 3) **EDIT 'Time' Enter** Edits the Time and Date clock
- 4) **EDIT 'Price' Enter** Edits the Prices. Used with – Receipts or Total reports
- 5) **EDIT 'RecptLN' Enter** Edits the Receipt lines. If Receipt printer is used.
- 6) **EDIT 'Counters' Enter** Views the Counters
- 7) **EDIT 'Roller-Up' Enter** Edits the Roller-Up operation.
- 8) **EDIT 'Installing' Enter** Takes you to a selection for clearing out all data.
This will reset all the data held back to factory settings.



Pressing the  [Enter] key will bring up the Edit Selected.


Adding Text


When you selected to change text in any of the menus the following editor will come up. If you wait a few seconds, Help instructions will scroll. Hit an arrow key to continue.


ABCDEF_GHIJKLMN_	1) Letters or Symbols available
	2) Cursor highlights Select
	3) Blank
_	4) Editing field

The Pointer _ shows what Letter you are on the  or  moves to another group of letters or symbols you can use.

  To change your selection, move cursor up and down the available letter group.

The  Adds the selected item over the _.



The  Subtracts Letters

Enter Key  will **Save and Exit** to the previous Screen.

INPUT MENU – BUTTON STATION

-> Button # 1
Name Button 1
Program to Outputs
Exit

- 5) Button # you are on
- 6) Name of Button (changeable)
- 7) Add channels to this button
- 8) Exit to Main Menu

The Pointer -> shows what selection you are on. Press the  or  to move to the line you want.

Enter key  to select it. If on 'Exit' returns back to the Main Screen.

Line 1: By pressing the  or  keys you change the # of the button.

Line 2: Go to the Alfa-Numeric change menu where the name can be edited.
See: 'Adding Text'

Line 3: Go to the Button /Channel Link Array (add channels to be programmed)
See: 'Button /Channel Link Array'

Line 4: Exit back to the Button Menu.

Button /Channel Link Array

This Display will come up if Line 3 is selected in the Input Menu

Asks what output group you want to edit.

What Group to Edit? Base Control 'Enter' Use <or> to Change	1) Question 2) Blank 3) Hub or Box# Choice to Edit 4) Instruction <> to change
---	---

First Screen will ask what station/hub you want it starts with the Base Controller



To change your selection : Base Unit , Relay Box 1, Relay Box 2, etc.

Enter key  to select it.

After you selected what group to add or change to the button link you will get this screen:

Box1 Chan 1 to 8 0 0 1 0 0 0 0 3 ^ Press Enter To Exit	1) Hub, Channels (8 at a time) 2) Status 0 = unlinked 1 = Linked 3) # you are on and cursor location. 4) Instruction hit Enter key to Exit back
--	--

Shown here channel 3 in Box #1 would be programmed by this button.




To change the Group to look at 1-8, 9-16 or if it is a Box up to 17-24



To move the Field Cursor of the channel you want to change. Notice the little pointer moves under what you are on as well as the number on the left side of line 3





Change Field 0 = Unlinked 1 = Linked (Programs channel)


Enter Key  Saves changes and goes back to the Main Button screen.



OUTPUT MENU – CHANNELS

```
-> Box 1 CHANNEL # 1
Name CHANNEL 1
20 1 0 0
Exit
```

- 1) Hub & Channel # you editing
- 2) Name of Channel (changeable)
- 3) Change settings to this channel
- 4) Exit to Main Menu

The Pointer -> shows what selection you are on. Press the  or  to move to the line you want.

Enter key  to select action based on what line you are on.

  To change Base Unit, Relay Box 1, Relay Box 2, etc.

Line 1: By pressing the  or  keys you change the # of the channel.

Note: The scrolling will go from *Base Unit* up to the *Relay Boxes*
Base has Channels 1-16
Each Relay Box will have its own Channels 1-24

Line 2: Go to the Alfa-Numeric change menu where the name can be edited.

See: ‘Adding Text’

Line 3: Go to the Button /Channel Link Array (Channel Configuration)
Allows to go into the editing of the settings of this channel.

See: ‘Channel Editing’

Line 4: Exit back to Main Menu.

CHANNEL EDITING

The Display will change to this Edit screen if Line 3 is selected in the Output Menu and will do the following.

```
Chan 1 Editing
  20  1  0  0
<message and information>
Press Enter To Exit
```

- 1) Channel you are editing
- 2) Edit fields (configuration)
- 3) Information on the setting
- 4) Instruction Enter key to Exit

Shown above: Field #1, #2, #3 and #4

20 1 0 0 = 20 pulses from entry , sequential, 0 extension pulses, normal operation



To move the Cursor to the Field you want to change (selected is blinking)



Change Field value

Enter Key



Saves changes and goes back to the beginning Output screen.

Field # 1 (Line #3 messages: Pulse from Entry)

The setting of the pulses from the entry gate switch. This is the turn on point of the channel. It can be set from 1 to 999.

Field #2 (Line #3 will change message as the value changes)

1 = Sequential

Will come on every car.

2 = Programmable

Will come on if programmed with a button for that car.

3 = Deprogram able

Will come on for every car unless a button programs it.

4 = Before Entry

Will come on instantly with button and will go off with Gate switch.

5 = Toggle ON/OFF

Will toggle on and off with a button set to program it.

6 = Auto Shutdown

Special function will activate this channel for ¼ second after the set pulses of this channel if there are no cars on the conveyor when called for.

7= Roller-Up

Channel will be controlled by Roller-Up (*See Roller-Up*)

CHANNEL EDITING (Continued)

Field #3 (Line #3 message: Extended Pulses)

The extended number of pulses the channel will stay on after the car length pulses.

If This is a Tire Switch Function this is a $\frac{1}{4}$ sec Time ON setting. Such as a setting of **8** would allow the channel to be turned on for **2** seconds each tire.

Field #4 (Line #3 message: Based on the Following #'s)

0 = Normal Operation


1 = Look back.

If there is a 2nd car coming down the line this will wait for it and not shut down like normal channels.

2 = Tire Function. (Needs a Main Tire Switch Input)

3 = Flasher1 cycle 1 (Output will flash on and off, slow)

4 = Flasher2 cycle 2 (Output will flash on and off, fast)

Enter key  to Exit back to the Channel Menu at any time.

Any Changes will be saved.

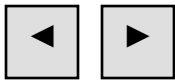
ROLLER-UP

The Display will change to this Edit screen if Roller-Up is selected in the Main Menu and will do the following.

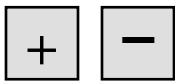
```
Roller-up Seq Set
      0 1 1 2 0 0 0 0
2      ^
Press Enter To Exit
```

- 1) Channel you are editing
- 2) Edit fields (configuration)
- 3) Information on the setting
- 4) Instruction Enter key to Exit


Shown above: Fields will bring up 2 Rollers and Reset.



To move the Cursor to the Field you want to change (selected is blinking)



Change Field value 0 = Off/Down, 1= On/UP 2= Reset we are done.

Enter Key  Saves changes and goes back

Notes:

Input IN23 on the Main Controller is for the Roller Location Switch. When Activated the sequence will advance by 1 step after the Roller-Up function is called by a button linked to the Roller-Up Channel output.

Any and All Button Selection inputs 1-16 can call for a Roller-Up just by linking the Channel to it.

Field 1 is set to 0 so we can find our rollers before bringing up forks. If this was set to 1 the Roller-Up forks would activate instantly with the button and start the sequence. It is recommended to Find the Rollers before calling them up. Any and All Channels set to the Roller-Up Function will activate with the Roller call.

Field samples:

0 1 1 2 0 0 0 0 Bring Up 2 Rollers and Reset

0 1 1 1 2 0 0 0 Bring Up 3 Rollers and Rest

0 1 0 0 0 1 2 0 Bring Up 1 Roller, Down 3, Bring Up 1 Roller and Rest

Wiring Notes:

BASIC NEEDED WIRING MAIN INTERFACE:

+RAW	12 -15VDC Positive Main Power (Plug in module)
GND	12-15VDC Negative Main Power (Plug in module)
IN22	Enter Gate Input (12VDC Negative In)
IN21	Pulse Input (12VDC Negative In)

Relay Box Communication Block and Basic Relay layout:

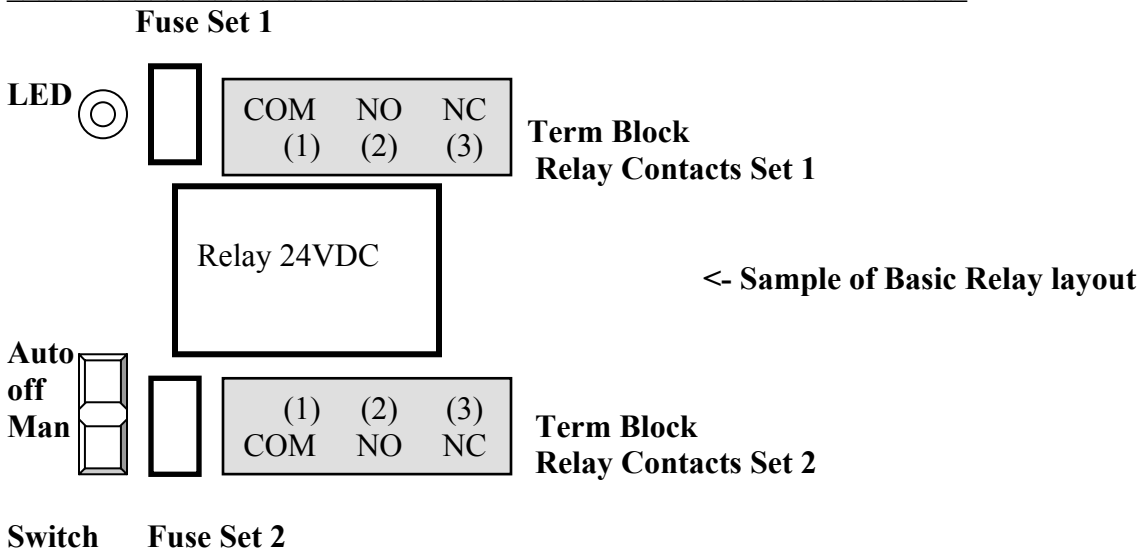
+RS485	Relay Box Communications (Red)
-RS485	Relay Box Communications (Black)
GND	Ground (Shield wire)

Box Terminals to Interface Terminals
Recommend cable

(1)	(2)	(3)
G	485	485
Shield	RED	BLACK
GND	(+) RS485	(-)

H	Relay Box Input Power 110VAC
2 N	Relay Box Input Neutral
3 G	Relay Box Ground

Relay Channel Layout: Each Control Relay has 2 Terminal Strips for contact wiring. The are independently fused. Grouped in a bank of 4 relays per board. Each has its own Control switch and LED indicator light.



AUXILIARY WIRING:

IN01 – IN16	Button Inputs 1-16 (Input 12VDC Negative)
IN00	Tire Switch (Input 12VDC Negative)
IN23	Roller Location Switch (Input 12VDC Negative)
OUT00 – OUT15	Base outputs 1-16 for Aux Entrance Functions. Solid State LOW Wattage LOW VOLTAGE
OUTPUTS	12-24vdc positive.
K1	Power input common for OUT00-OUT07 (Up to +24vdc)
K2	Power input common for OUT08-OUT15 (Up to+24vdc)
IN18	Printer Call Totals (If Printer is used.)

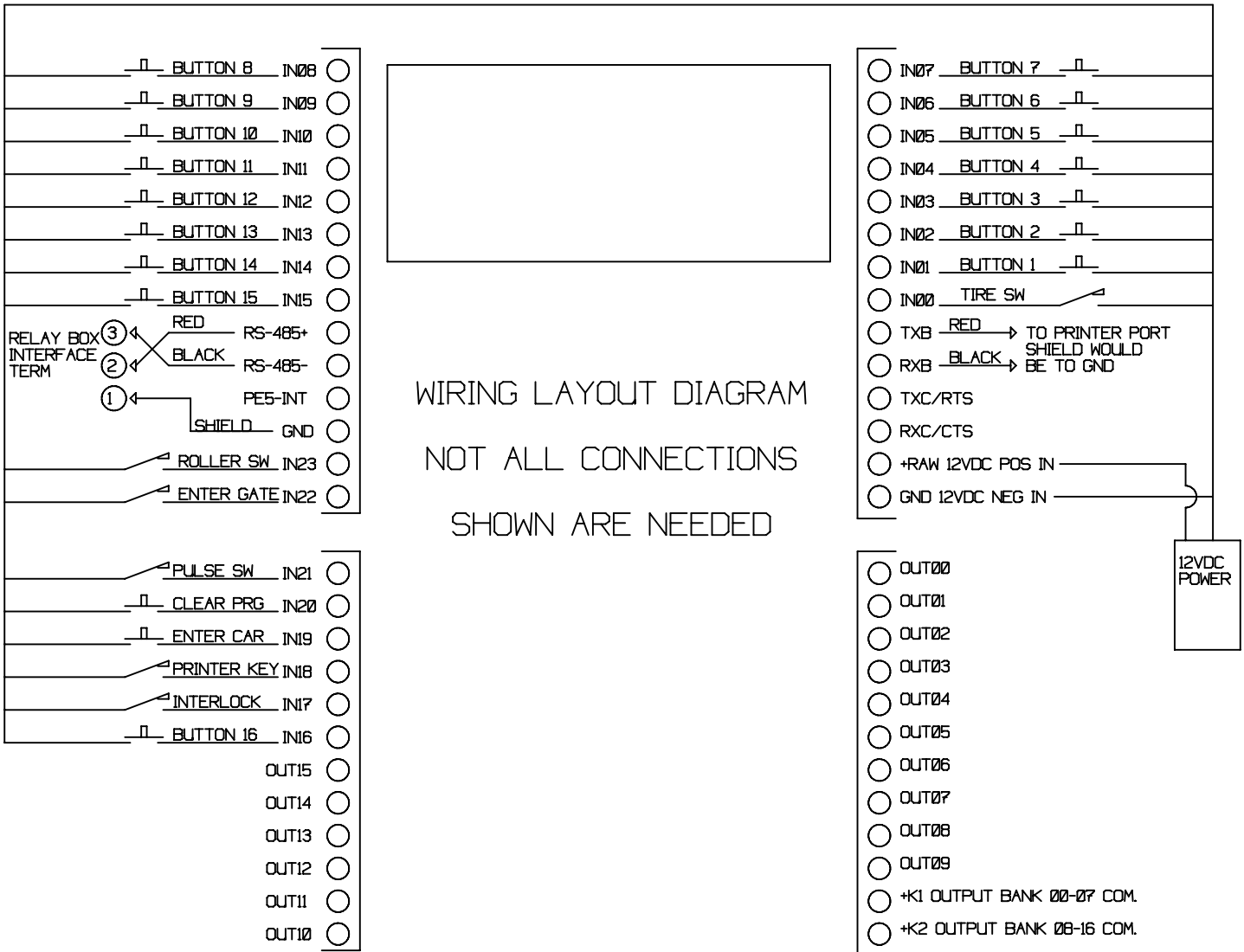
25 Pin Connector For Printer:

TXB	Printer Transmit (Red Pin3)
RXB	Printer Receive (Black Pin 2)
GN	Printer Ground (Shield Pin 7)
	Jumper Pins: 4-5 and 6-8-20

Button Station Interface Board Terminal Strip (Optional)

This allows wiring to be added to the buttons without having to double up on the main controller terminals. Because of the nature of the membrane/cable they do not go in order of the input buttons. The Inputs listed are the same as the Button Inputs of the controller.

Term#	Function	Ribbon Color	Button # on Button Station
1	Input # 4	Brown	4
2	Enter # 19	Red	8
3	Input # 3	Orange	3
4	Clear # 20	Yellow	7
5	Common 24-	Green	1-8 Common
6	Input # 2	Blue	2
7	Input # 6	Purple	6
8	Input # 1	Gray	1
9	Input # 5	White	5
10	Input # 7	Black	None



WIRING LAYOUT DIAGRAM
 NOT ALL CONNECTIONS
 SHOWN ARE NEEDED

Main Controller Program Output Sheet

C #	Name	PULSE	FUNC.	EXT.P	TYPE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

Notes _____

BOX # 1 Program Output Sheet

C #	Name	PULSE	FUNC.	EXT.P	TYPE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

Notes _____

BOX # 2 Program Output Sheet

C #	Name	PULSE	FUNC.	EXT.P	TYPE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

Notes _____

BOX # 3 Program Output Sheet

C #	Name	PULSE	FUNC.	EXT.P	TYPE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

Notes _____

