

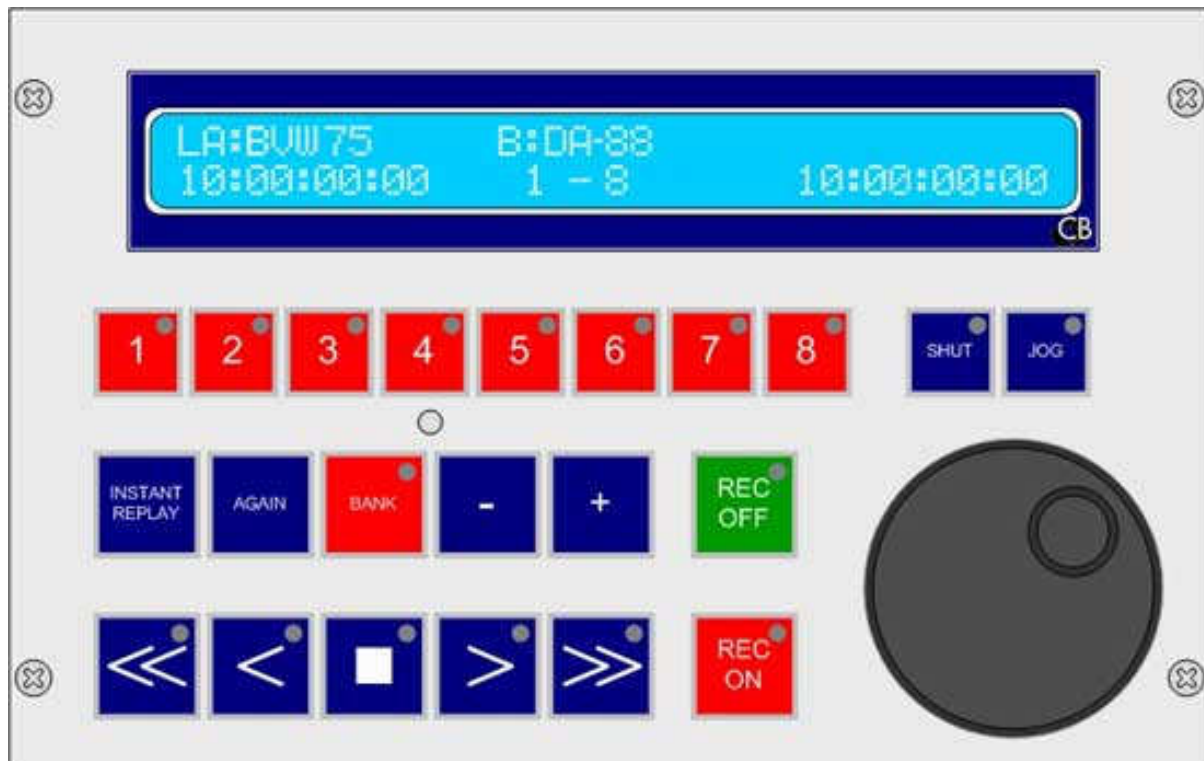
## UR422: universal RS422 remote

- \* Sony P2 protocol ..... Future versions will include Midi and DVD Protocols
- \* Two RS422 ports ..... Two Outputs or One Input and One Output
- \* Plug & Play ..... Recognizes connected machines and Configures automatically
- \* Large Display ..... 2 line by 40 character display
- \* 22 User Definable keys with LED's ..... All keys are user definable via PC Program
- \* Field software update ..... Software may be updated by user using PC with serial port
- \* Key functions include ..... Track Arm, Monitor, Edit, Locate, Loop's, Macro's
- \* Special CB Macro functions ..... Instant Replay, Instant Forward, Again
- \* Two packages ..... Low Profile Desktop or 2U Rack Mount with tilting panel
- \* Jog Wheel ..... Precision weighted Low Profile Jog Wheel
- \* Version 2 GPIO ..... Four GP Inputs, Four GP Outputs and Biphase Synchronizer Option

UR422 remote is designed as a low cost remote control for general-purpose use. The keyboard is user definable and may be configured to suit specific applications.

When configured with input and output the controller may be connected to a DAW to provide track arming and a Jog/shuttle machine control interface.

When configured with two outputs one may be used to control a video the other to control track arming and master record on/off on a multi-track hard disk or tape.



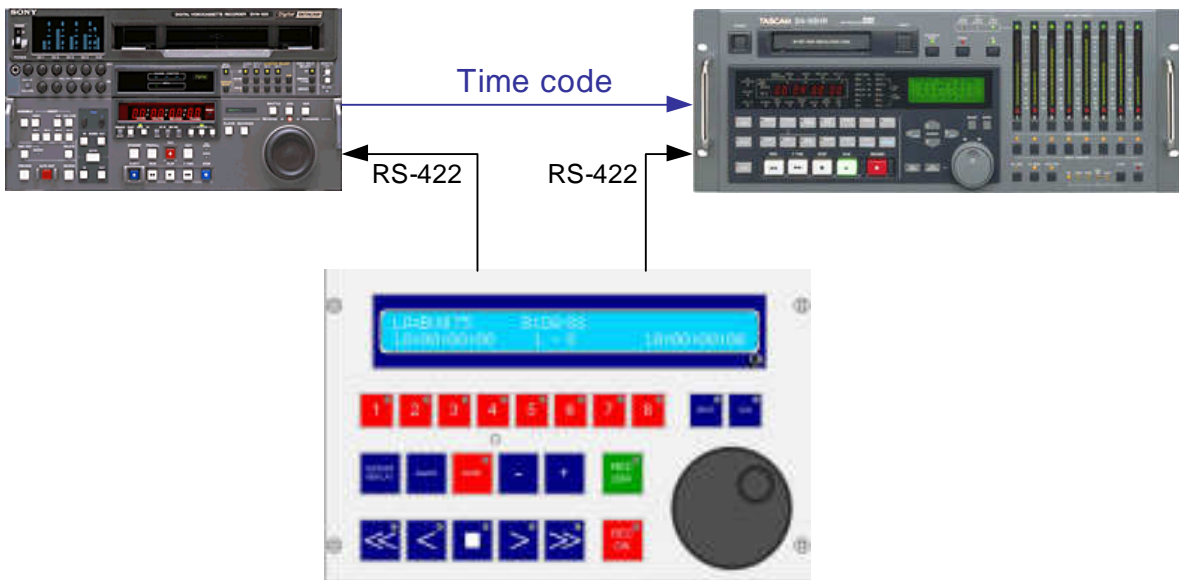
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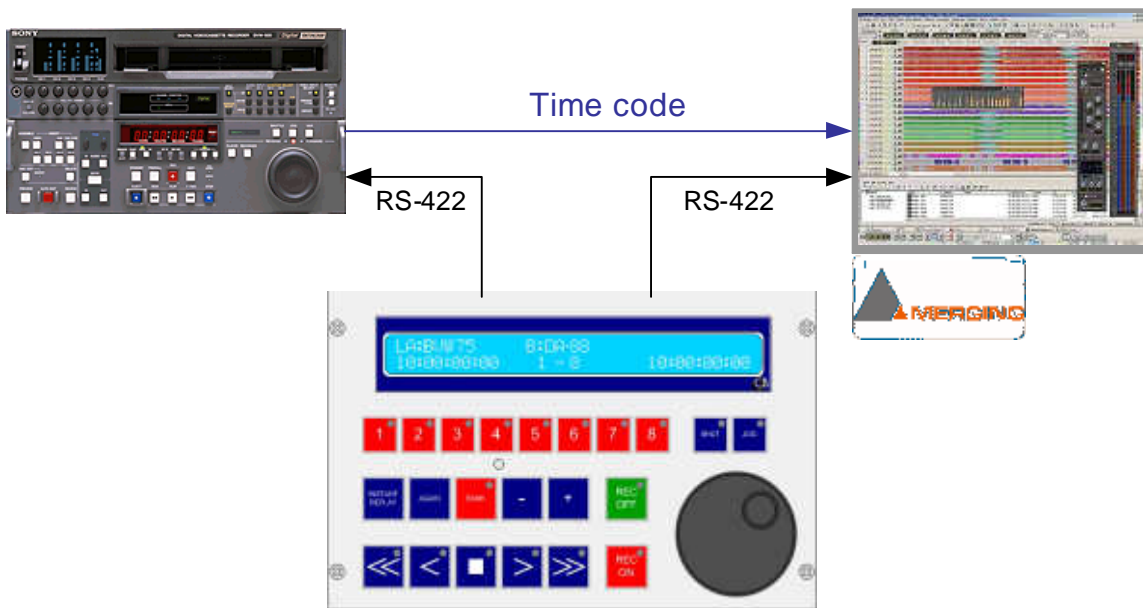
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# 1 Examples

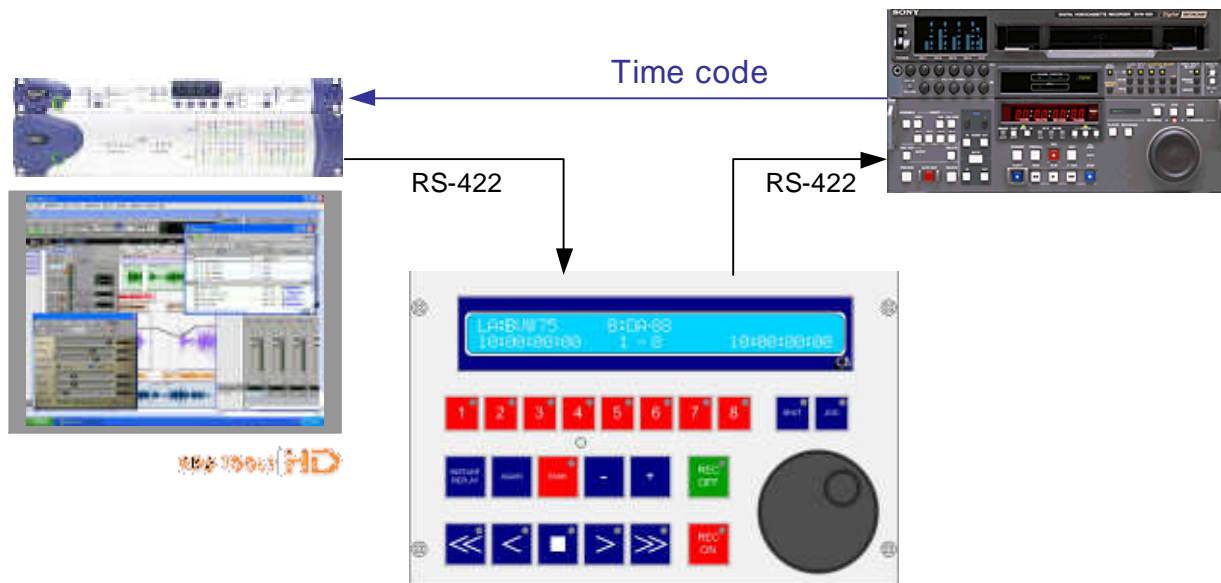
## 1.1 Controlling a Video and recording on a DA-98 with the UR-422



## 1.2 Controlling a Video and recording on a DAW(Pyramix) with the UR-422

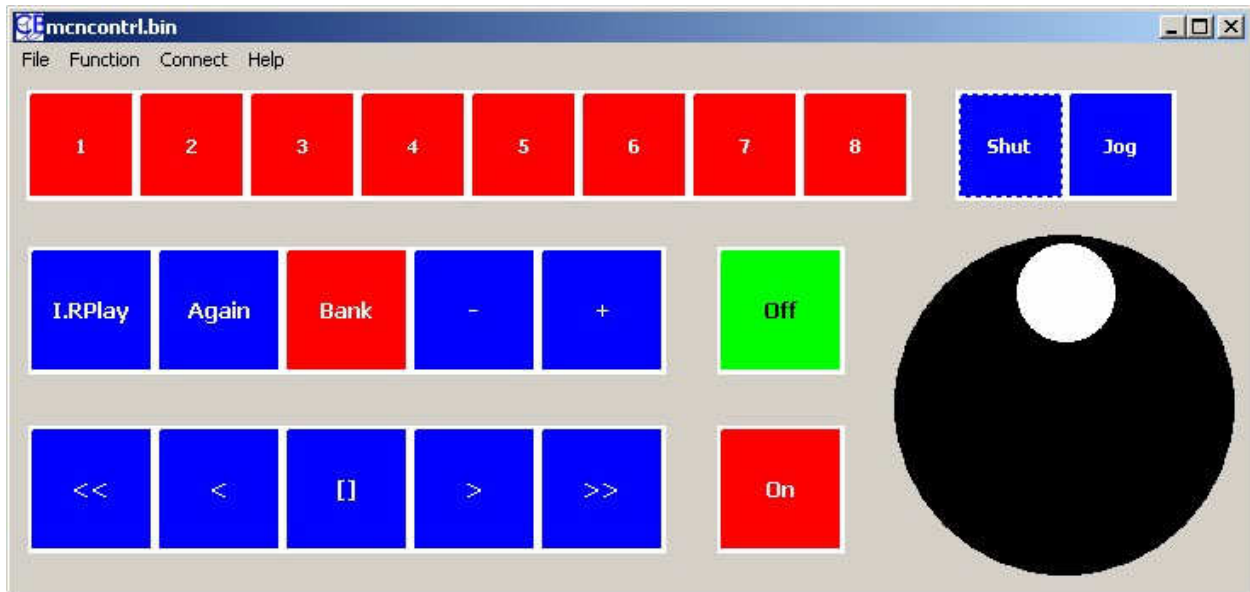


## 1.3 Using the UR422 in line between a DAW and Video

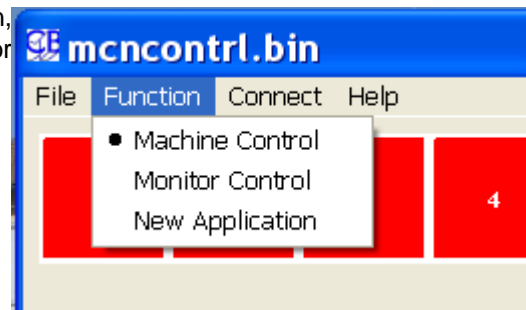


## 2 Programming the UR422 key functions

All the keys on the UR422 are user programmable, a free visual programming tool is available from web site [www.colinbroad.com](http://www.colinbroad.com).

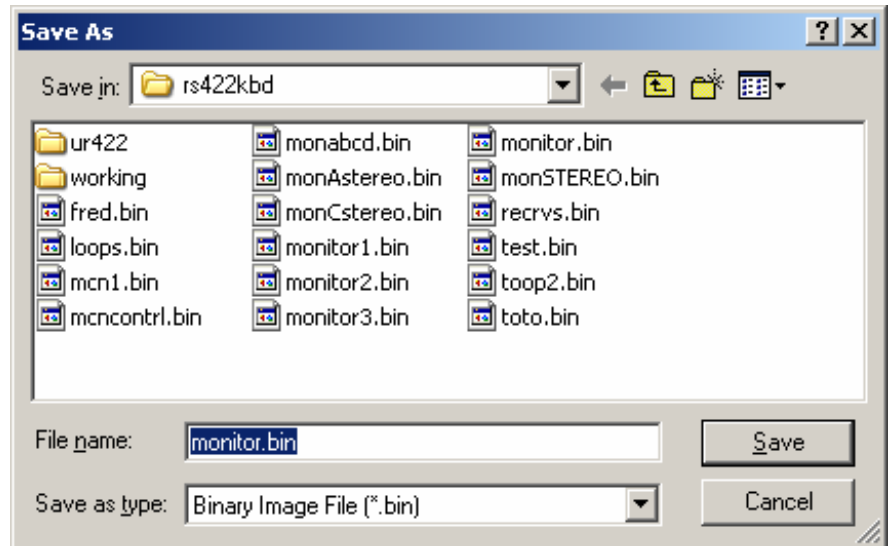
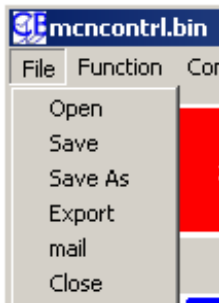
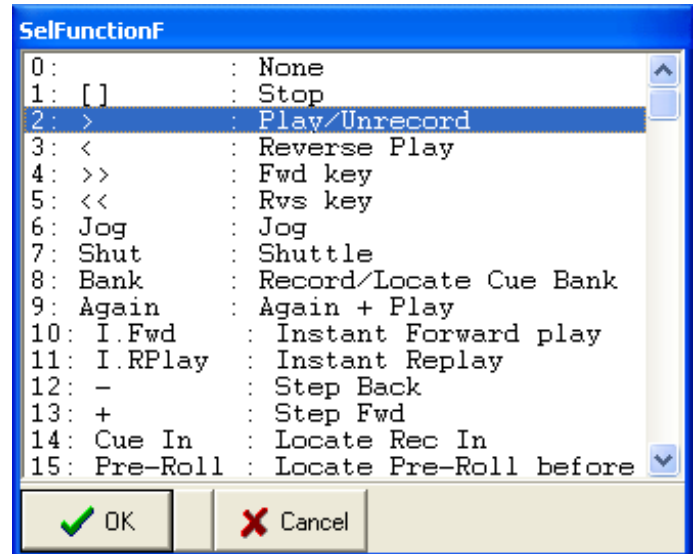


- 1 Install the ur422 keyboard definition program on your computer.
- 1 Launch the program.
- 1 In the menu select 'Machine Control' from the function column, select monitor control when defining the keys on our new Monitor Control Unit.



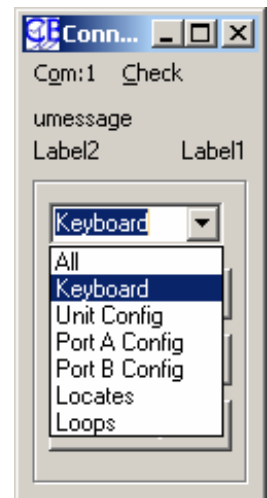
You are now ready to define the keys.

1. Right clicking on any key will bring up a key definition window; select the function for that key.
2. The paper key labels may be changed to suit your desired keyboard layout.
3. For exhibition and fixed locates the loops and fixed locate points may be programmed by left clicking on the appropriate keys.
4. Once your keyboard definition file is finished you should save it to disk using 'Save As' . Alternatively you can load and modify an existing file
5. Once you have named or loaded a named file the file name is shown in the title bar.



Once your keyboard definition file is finished click on 'Connect' in the menu to display the download window.

1. The first time that you use the program you will need to select the comm port number, Click on 'Com' to set, usually '1'.
2. Connect your computer to the UR422 interface port A. The UR422 has a RS422 port, you will need an RS232-RS422 converter. We use the K2 Systems part, these are available from Rapid Electronics in the UK .
3. Ensure that the A port on the UR422 is selected to Input. With the K2 RS422 converter use the Tx-Rx Invert cable at the end of this manual.
4. When sending data to the keyboard (Download) either all data or one section of data may be sent.



## **2.1 Operation**

The keyboard layout may be user defined to suit the application for which you need the remote. As this may be changed at any time, you do not have to get it right first time, but it helps. The Menu may also be used to change the way in which the unit operates, however if you are switching between the two ports continuously then fit a port select key!

## **2.2 Transport control**

The transport commands may be sent to either output port or to both at the same time. Basic Transport functions include

Fast Reverse, Reverse Play, Stop, Pause, Play, Fast Forward, Jog, Shuttle

## **2.3 Locate Commands**

The user may select different locate functions as follows

### **2.3.1 Again Play**

Locate to the last point at which a play command was issued and go into play.

### **2.3.2 Instant Replay**

Go back 10 Seconds and Enter play

### **2.3.3 Locate to entry**

First depression selects keyboard entry and flashes LED, enter the required timecode value using the top row of keys (1..8, 9, 0). Depress the locate key again to locate the displayed value. Double clicking the Locate key will repeat locates.

### **2.3.4 Step Forward**

Locate to the next frame

### **2.3.5 Step Reverse**

Locate to the previous frame

### **2.3.6 Cue to In**

Locate to a pre-defined record in point (Define using the [Mark In] key).

### **2.3.7 Preroll**

Locate to pre-roll before the record in point.

### **2.3.8 Locate to Cue (1-8)**

Eight keys that may be used as cue and locate keys. Hold the key depressed to capture the current timecode value. Depress and release to locate the stored value.

### **2.3.9 Locate to Constant (1-8)**

The Timecode cue point is entered using the Windows program, use for constant timecode values, for example if you always start at 00:59:58:00.

## **2.4 Track arming**

The Track arming is determined by both key selection and by the setup menu.

### **2.4.1 Assignable Record Keys**

Record keys 1-8 are assignable, their function is determined by the menu entries for each port ('Record Tracks' and 'Analog and Video Record Ready'), the Unit 'Record Cmds' menu, and the Record Bank key. The Record Bank key will cycle through the available tracks on one or both ports dependant on these settings.

Use these keys if you record on more than eight tracks.

### **2.4.2 Fixed Record Keys**

Keys A-1..A8, A-A1, A-A2, A-TC, A-A4, A-Video, A-Asmb and B-1..B8, B-A1, B-A2,BA-TC, B-A4, B-Video, B-Asmb are port specific and permanently assigned to the specified track. Use these keys if you record on a limited number of tracks.

### **2.4.3 Port Record Keys**

Keys M-1..M8, M-A1, M-A2, M-TC, M-A4, M-Video, M-Asmb are permanently assigned to the specified track but switch to the current machine port. Use these keys if both machines are the same and you are recording on more than 4 tracks per machine.

## **3 Setup Menu**

The menu is controlled by the top row of keys, the eight keys to the left are the 1-8 numeric keys, the two keys to the right are previous and next keys ([Shut] & [Jog] on Page 1).

To enter the menu depress the two keys to the right simultaneously.

To step forward through the menus use the next (right) key.

To step backward through the menus use the previous (left) key.

To return to the Root menu depress the two keys (Next+Prev) to the right simultaneously

To Exit from the menu depress the two keys to the right simultaneously when in the root menu.



## 3.1 Root Menu

Root Menu, Hyperlink to different menu sections, depress previous & next together to exit from setup menu.

Menu 1 - ROOT: Select Setup Required  
1= Unit 2= Port-A 3= Port-B

## 3.2 Unit Parameters

The unit parameters control the operation of the unit.

### 3.2.1 Serial Port A

Serial Port A, This port may be configured as an input (Machine Emulation) or as an output (Controller).

Menu 2 - Port A type  
1= O/P 2= I/P

### 3.2.2 Display /Bank

The user may select to display and bank key function, the display is dependant on the software fitted

Normal Software

Menu 3 – Display/Bank  
1=Rec 2=TwoMcn 3=Goto 4=Loop

UR422-CBServer Software for use as a remote to SR-4/RM-6 or CBServer

Menu 3 – Display/Bank  
1=Rec 2=TwoMcn 3=Goto 4=CBMac 5=CBServer

<b>Rec</b>	Record Bank, Switch though Record tracks
<b>TwoMcn</b>	Display Machine Name and Position for Both Ports
<b>Goto</b>	Track Arm and Bank Keys access up to 32 locate points
<b>Loop</b>	Track Arm and Bank Keys access up to 16 Loops
<b>CBMac</b>	Track arm keys access 8 SR/MR Macros, Macros are defined by UR422Config
<b>CBServer</b>	Track Arm keys access 8 CBServer Macros, Marcos defined by CBServer

### 3.2.3 Transport Commands

The transport commands may be sent to either or both machines

Menu 4 - Transport Cmds  
1= Port-A, 2= Port-B, 3= Ports A&B

### 3.2.4 Record Cmds

This selects the range of the record bank key.

Menu 5 - Record Cmds  
1=Off 2=Port-A 3=Port-B 4=Ports A&B

### 3.2.5 Wind Speed

This controls the command sent to the machine when the FWD and RWD keys are depressed.

Menu 6 - Wind Speed 1= Wind, 2= 4*, 3= 6*, 4= 8*, 5= 10*
---

### 3.2.6 Jog Response

This controls the response of the jog wheel,

Menu 7 - Jog Response 1= 2= 3= 4= 5= 6= 7= 8=
--

### 3.2.7 Jog Wheel

Menu 8 - Jog Wheel 1=On Cmd 2=Always
---

<b>On Cmd</b>	Jog Wheel is only active after Jog or Shuttle Cmd
<b>Always</b>	Jog Wheel active when turned unless recording

### 3.2.8 Jog Cmd

Menu 9 - Jog Cmd 1=Jog 2=Step
----------------------------------

<b>Jog</b>	Sony Jog command = Speed, for tape based machines
<b>Step</b>	Jog wheel sends Locate commands, for Non Linear video

### 3.2.9 PreRoll

Menu 10 - PreRoll 1=None 2=3 3=4 4=5 5=6 6=7 7=8 8=9 Secs
--

PreRoll subtracted from Locate command in Seconds

### 3.2.10 Record In/Out keys

Menu 11 -Rec-In/Out 1=Mark 2=Capture 3=Recall
--

Determines the action of the Record In/out keys

<b>Mark</b>	Capture current position and send Set Out Command to controlled machine
<b>Capture</b>	If In/Out Led is Off then Capture current position and edit If In/Out Led is flashing Send Set Out Command to controlled machine
<b>Recall</b>	If In/Out Led is Off then Recall last I/Out point and edit If In/Out Led is flashing Send Set Out Command to controlled machine

### 3.2.11 Timecode Capture

Menu 12 – Timecode Capture  
1= Normal 2=1-4 locked 3=All locked

When the track arm keys are used as locate keys the locate points are captured by depressing the key for approximately two seconds (Car Radio). You can prevent accidental corruption of the locate points by locking the keys.

<b>Normal</b>	No Capture lock
<b>1-4 locked</b>	Locate (Track arm) keys 1-4 locked
<b>All locked</b>	All Locate keys Locked

### 3.2.12 Test Display

Used to check the keyboard and jog wheel for faults

Menu 13 - Test Display  
1= Norm 2= Key 3= Jog 4=Fact1 5=Fac2

<b>Key</b>	Test Keyboard
<b>Jog</b>	Test JogWheel
<b>Fac1</b>	Install Factory keyboard layout 1 on Exit
<b>Fac2</b>	Install Factory keyboard Layout 2 on Exit

## 3.3 Port Parameters

The port parameters are set individually for each port. The port parameters are set from the factory setup when a new machine is discovered, they may then be modified by the user.

### 3.3.1 Record Tracks

This value is used by the bank switch to determine how many record tracks to display. The Track armring command and track arm data request are also controlled by this command.

Menu 14 - Record Tracks  
1=Off 2=Alg 3=8 4=16 5=24 6=32 7=40 8=48

### 3.3.2 Analog and Video Rec Rdy

Enable or mask record commands to analog and video tracks.

Menu 15 - Analog and Video Rec Rdy  
1= Disable 2= A1-A2 3= A1-A2+V 4=Asmb

### 3.3.3 Position

This menu selects the position request command sent to the machine and will determine the displayed position of the machine.

Menu 16 - Position  
1= LTC 2= VITC 3= L+V 4= Tim-1 5= L+V+T

### 3.3.4 Stop Command

Menu 17 – Position 1= Stop 2=Jog@Zero
--

Some video machines unlace when receiving a stop command, using Jog@Zero the tape remains laced and the picture displayed

### 3.3.5 CB SR/MR (Macro A-Macro H) Key Functions

When used with CB SR/RM Systems or CB Server up to 8 keys may be defined as macro keys.

To program from the UR422, hold the key depressed until the macro number is requested, then enter the macro number using the numeric keys (The number keys may not be used as macro keys unless selected from menu but must be defined by UR422Config) enter the required macro number. Once the number is entered depress the macro key again to store.

These keys may also be programmed from the UR422 keyboard programming utility. If the Numeric keys are defined as macro keys they may only be programmed by the programming utility.

### 3.3.6 CBServer Macros (CBSrvr A – CBSrvr H)

CBServer has eight Macro functions that can be programmed on the Serial input window. These may be accessed by programming the Numeric Input keys as WinMac keys (Menu 3 Display/Bank) or by programming a key directly as WinMac1..WinMac8. The function of these keys is defined within CBServer and not the UR422.

### 3.3.7 GPIO (Option)

Version II of the UR422 has an optional GPIO connection. The 9 pin 'D' Male on the rear provides 4 GP Inputs and 3 GP Outputs or 4 GP Outputs and 3 GP Inputs. The connections are as follows:-

D9 Male	J22	Function	Normal	Biphase	Generator	MWA
1	1	0v	0v	0v	Ground	Ground
	6	2 Input 1 (SP1 Open) Output 1 (Link SP1)	Stop	Biphase A (Link SP2)		Bi-A
2	3	3 Input 2	Play			Bi-B
	7	4 Output 2	Recording			Stop
3	5	5 Input 3	Record Off			
	8	6 Output 3			Timecode +	
4	7	7 Input 4	Record On	Biphase B		
	9	8 Output 4			Timecode -	Play
5	9	9 +5v	+5v	+5v		

The GP inputs are TTL Level, active low and normally connected to Record On/Off. A GP Output Active Low, TTL Level is used to indicate that record is active.

### 3.3.8 Bi-phase Synchronizer (Option)

The Bi-phase inputs are GPI inputs 1 and 4, Internal 10K pull ups to +5volts are fitted. If the direction is incorrect then reverse the inputs. The Biphas input frequency must be 10 pulses per Frame (240 / 250Hz). Two Special Macros are fitted Offset/Chase and Chase type. Two types are chase are available, Audio Lock and Tight Lock. Audio uses vari-speed commands to maintain lock +/- 2 frames, tight lock uses locate commands to maintain lock

When the Bi-phase option is fitted SP2 must be linked on the board and SP1 should be left open.

### 3.3.9 Video Reference input (Option)

When fitted the Bi/TriLevel Sync Detector card is connected as follows

+5v – Red – C4+

0v – Black – C4-

Frame – Yellow – U8 pin 3 or U1 pin 31

## 4 Connections

<b>4.1.1 T5.03 RS422 (Sony 9 pin) CABLE</b>			
Use on UR422 Ports A, B as Controller Outputs			
Function UR422 (Controller)	9 pin 'D' Male on cable (Both Ends)	Cable Colour	Function (Controlled Device)
	1		
Rx-	2	Red	Tx-
Tx+	3	Yellow	Rx+
Ground	4	Screen	Ground
	5		
	6		
Rx+	7	Blue	Tx+
Tx-	8	White	Rx-
	9		

### 4.1.2 T5.04 RS422 Tx-Rx Invert CABLE

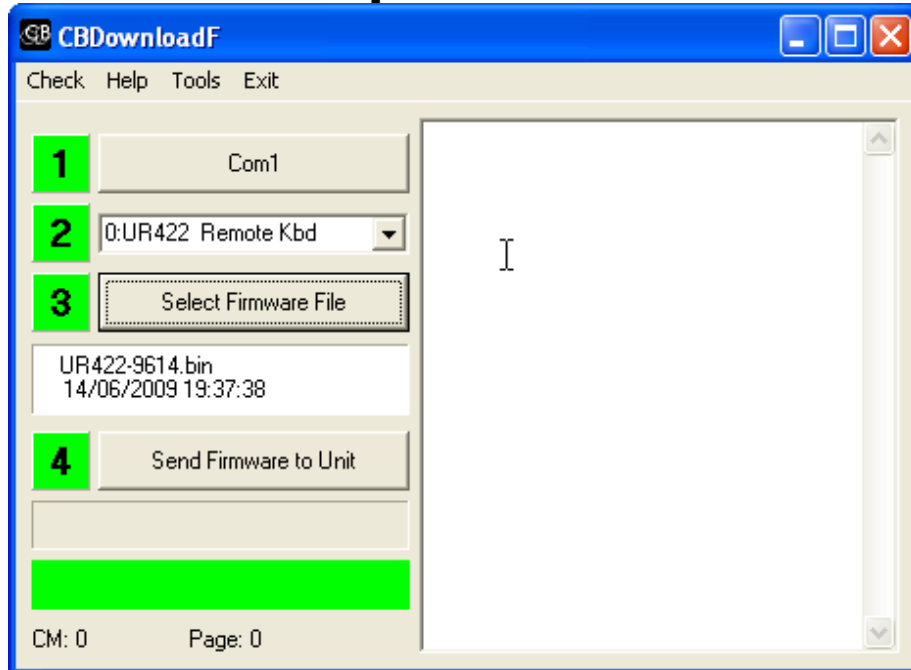
Use on Port A when connected to a Controller

Function	9 pin 'D' Male on Cable	9 pin 'D' Male on cable	Cable Colour
	1	1	
Tx-	2	8	Red
Rx+	3	7	Yellow
Ground	4	4	Screen
	5	5	
	6	6	
Tx+	7	3	Blue
Rx-	8	2	White
	9	9	

### 4.1.3 GPIO Connector

Function	9 pin 'D' Male on cable (Both Ends)	Colour	Function
Ground	1		
In 1	2		Tx-
In 2	3		Rx+
In 3	4		Ground
In 4	5		
Out 1	6		
Out 2	7		Tx+
Out 3	8		Rx-
Out 4	9		

## 5 Software updates



The flash rom of the UR422 may be programmed via the serial port. Software updates are available on the UR-422 product page <http://www.colinbroad.com/cbsoft/ur422/UR422.html> . Use the Download program distributed with this program to update the software via serial port 'A'.