

## User Protocol CPU-Board V210

### Database Version LC240 LCPU-Firmware LC240

Communication: RS232  
38400Baud, 8, n, 1

Connection: 1:1, RxD, TxD, GND

The communication with the eyevis LC display series is based on an internal database. For interfacing to external controls, there is an easy to use command parser for communication.

The following user commands are available.

<b>SET</b>	Sets parameters and executes commands
<b>GET</b>	Recall actual parameter values
<b>SAVE</b>	Save parameters to permanent memory

As response there will be the **Value**, an **ACK** (success) or **NACK** (error) returned.

Each display needs to be addressed (**ID**) from 1 to 99 using rotary switches.  
Sending commands using ID=0 is a broadcast to all connected devices. Use carefully to avoid unintended overwriting of existing values.  
Flow control needs to be implemented by control system, using ACK reply estimation and waiting time up to 200ms between commands.

#### **Command description = case sensitive!**

##### **SET(ID;Command;Value)**

ID	Display address
Command	Command from the display database
Value	Value of the data

This command will change the values of the variables in the display.

e.g.:

Command	SET(1;Power;0)
Response	ACK(1) or NACK(1)

The display no. 1 will switch off.

**GET(ID;Command)**

ID = Display address

Command = Command from the display database

The actual values of the display will be returned.

e.g.:

Command                      GET(1;Power)  
Response                     DATA(1;Power;1)

The display no. 1 is switched on.

**SAVE(ID;ALL)**

ID = Display address

Response                      ACK(1) or NACK(1)

All actual parameters will be stored in EEPROM. After power on sequence, the Display will boot with this Values.

**If you do not use this SAVE command after changing parameters, from next start up the display will restore previously stored values!** This does not apply for switching in Standby-Mode.

## Command List ECLCPU-Firmware 2.40:

	Function	Command	possible Values	Default Value	Comment
	Switch the LCD On or Off	Power	0=Off, 1=On	1	
Input	Input Source	Input Source	0=DVI-1, 1=DVI-2, 2=RGB-1, 3=RGB-2, 4=CompV1, 5=CompV2, 6=SVideo	0	
	Automatic Input Scanning	Autoscan	0=Off, 1=On	1	

Picture Setup	Color Temperature Selection	Color Temperature	0=9300K, 1=7300K, 2=5000K, 3=User	1	
	Red User Color Temperature	User Color Red	0-255	128	Only when USER is activated
	Green User Color Temperature	User Color Green	0-255	128	Only when USER is activated
	Blue User Color Temperature	User Color Blue	0-255	128	Only when USER is activated
	Manual Backlight Control	Manual BL Control	0=Off, 1=On	1	Only relevant if Ambient Sensor is used
	LCD Backlight Control	Backlight	0-255	200	
	Set Backlight/Ambient-Values Bright	Set Backlight Bright			Only relevant if Ambient Sensor is used
	Set Backlight/Ambient-Values Dark	Set Backlight Dark			
	Video Color	Video Color	0-255	128	
	Video Tint	Video Tint	0-255	128	
	Video Sharpness	Video Sharpness	0-6	3	
	Brightness	Brightness	0-255	128	
Contrast	Contrast	0-255	128		

Scaling	Picture Scaling	Picture Scaling	0=1:1, 1 = FillAll, 2=FillAspect, 3 = User	1	Only applicable with DVI and RGB Sources
	Video Scaling	Video Scaling	0=Fill4:3, 1=Fill16:9, 2=Clip4:3, 3=Clip16:9, 4 =FillAll, 5=Clip4:3LB to 16:9, 6 = User	4	Only applicable with CompV1, CompV2, SVideo
	V-Resolution	V-Resolution			Read Only Value
	H-Resolution	H-Resolution			Read Only Value
	Advanced Scaling H-Size	H-Size	0-5000	2500	Only if Scaling is set to "User" Applicable values depend on input source

	Advanced Scaling V-Size	V-Size	0-5000	2500	Only if Scaling is set to "User" Applicable values depend on input source
	Advanced Scaling H-Offset	H-Offset	0-5000	2500	Only if Scaling is set to "User" Applicable values depend on input source
	Advanced Scaling V-Offset	V-Offset	0-5000	2500	Only if Scaling is set to "User" Applicable values depend on input source
	Advanced Scaling H-Linearity	H-Linearity	0-9990	2500	Only if Scaling is set to "User" Applicable values depend on input source
	Advanced Scaling V-Linearity	V-Linearity	0-9990	2500	Only if Scaling is set to "User" Applicable values depend on input source

Matrix	Matrix On Off	Enable Matrix	0=Off, 1=On	1	
	Matrix Size X	Size X	0-10	1	
	Matrix Size Y	Size Y	0-10	1	
	Matrix X	Element X	0-10	1	
	Matrix Y	Element Y	0-10	1	
	Matrix Frame X	Frame X	0-300	0	
	Matrix Frame Y	Frame Y	0-300	0	
	Matrix Scaling	Matrix Scaling	0=Fill-All, 1=Fill-Ratio	0	
Matrix Execute	Set Matrix	Execute=1	1		

Analogue RGB Settings	Source Auto Adjust	Autoadjust	Execute = 1		
	Phase	Phase	0-63	0	Applicable Values depend on Input
	Frequency	Frequency	0-5000	2500	Applicable Values depend on Input
	H-Position	H Position	0-5000	0	Applicable Values depend on Input
	V-Position	V Position	0-5000	0	Applicable Values depend on Input
	Options	Options	0=Disabled 1=Mode 1 2=Mode 2 3=Mode 3	0	
	H-Visible	H Visible	0-5000	0	Applicable Values depend on Input
	V-Visible	V Visible	0-5000	0	Applicable Values depend on Input
	H-Total	H Total	0-5000	0	Applicable Values depend on Input
	H-Start	H Start	0-5000	0	Applicable Values depend on Input
	V-Start	V Start	0-5000	0	Applicable Values depend on Input
	Install RGB Options	Install RGB	Execute=1		

Tools	Screensaver "Line Move"	Line Move	0=Off, 1=On	0	
	Screensaver "PSR"	PSR	0=Off, 1=On	0	
	Input Board Reset	Input Board Reset	Execute=1		
	RGB Framelock	Framelock RGB	0=Off, 1=On	1	
	Video Framelock	Framelock Video	0=Off, 1=On	1	
	Testpattern	Testpattern	0=Off, 1-6=Various Patterns	0	Use „Testpattern Off“ to deactivate
	Testpattern Off	Testpattern Off	Execute=1	1	

Status	Fan 1 Speed	Fan 1 Speed	24-63	25	Read Only
	Fan 2 Speed	Fan 2 Speed	24-63	25	Read Only
	Fan 3 Speed	Fan 3 Speed	24-63	25	Read Only
	Fan 4 Speed	Fan 4 Speed	24-63	25	Read Only [only in devices with 4 fans]
	Fan 1 Status	Fan 1 Status	0=Not Working 1=Working		Read Only
	Fan 2 Status	Fan 2 Status	0=Not Working 1=Working		Read Only
	Fan 3 Status	Fan 3 Status	0=Not Working 1=Working		Read Only
	Fan 4 Status	Fan 4 Status	0=Not Working 1=Working		Read Only
	CPU Temperature	CPU Temperature			Read Only
	DVBPM Temperature	DVBPM Temperature			Read Only
	Fan Sensor 1 Temperature	Fan Sensor 1 Temperature			Read Only
	Fan Sensor 2 Temperature	Fan Sensor 2 Temperature			Read Only
	Fan Sensor 3 Temperature	Fan Sensor 3 Temperature			Read Only
	Fan Sensor 4 Temperature	Fan Sensor 4 Temperature			Read Only [only in devices with 4 fans]
	Power Time	Power Time			Read Only
Power Time	Backlight Time			Read Only	

Info	LCD Type	LCD Panel			Read Only
	CPU Hardware	CPU HW Version			Read Only
	ECLCPU Database Version	DB Version			Read Only
	Scalerboard Firmware Version	SB FW Version			Read Only [Correct value can only be seen in the OSD]

Misc	Reset ECLCPU Board	Reset CPU	Execute=1		
	Emergency Temperature Threshold	Emergency Temp Threshold	45-65	55	Detected temperature at which safety functions (Emergency backlight reduction and emergency power off) apply
	Dummy Gammy Points	GAMMA_POINTS			Only for compatibility with EyeCube

Scheduler	Time of the integrated realtime clock	RTC Time	HH:MM:SS		Use Block Commands: SETBLOCK(1,RTC Time;12:00:00) [GETBLOCK can be used to read current RTC Time]
	Date of the integrated realtime clock	RTC Date	DD/MM/YYYY		Use Block Commands SETBLOCK(1,RTC Date;01/04/2011) [GETBLOCK can be used to read current RTC Time]
	Power Scheduler Time and Day of week range entry 1	Scheduler 1	WWW-WWW,HH:MM:SS-HH:MM:SS [WWW = Mon   Tue   Wed   Thu   Fri   Sat  Sun]		Use Block Command to set range: SETBLOCK(1,Scheduler 1;Mon-Fri,08:00:00-12:00:00) Use Set Command to activate: SET(1,Scheduler 1;1)
	Power Scheduler Time and Day of week range entry 2	Scheduler 2	WWW-WWW,HH:MM:SS-HH:MM:SS		Use Block Command to set range: SETBLOCK(1,Scheduler 2;Mon-Fri,08:00:00-12:00:00) Use Set Command to activate: SET(1,Scheduler 2;1)
	Power Scheduler Time and Day of week range entry 3	Scheduler 3	WWW-WWW,HH:MM:SS-HH:MM:SS		Use Block Command to set range: SETBLOCK(1,Scheduler 3;Mon-Fri,08:00:00-12:00:00) Use Set Command to activate: SET(1,Scheduler 3;1)
	Power Scheduler Time and Day of week range entry 4	Scheduler 4	WWW-WWW,HH:MM:SS-HH:MM:SS		Use Block Command to set range: SETBLOCK(1,Scheduler 4;Mon-Fri,08:00:00-12:00:00) Use Set Command to activate: SET(1,Scheduler 4;1)
	Power Scheduler Time and Day of week range entry 5	Scheduler 5	WWW-WWW,HH:MM:SS-HH:MM:SS		Use Block Command to set range: SETBLOCK(1,Scheduler 5;Mon-Fri,08:00:00-12:00:00) Use Set Command to activate: SET(1,Scheduler 5;1)