ESP0

Family	Description	Opcode	Parameters	Notes
	NO OP	0	NONE / SEND BYTE / RCV BYTE	
TERMINAL	VGA ANSI TERM OUT SINGLE CHAR	1	BYTE	
TERMINAL	VGA ANSI TERM OUT NULL TERMINATED STRING	2	BYTE BYTE BYTE BYTE BYTE ... ... NULL	Bytes are Little Endian
TERMINAL	KEYBOARD IN SINGLE BYTE	3	INBYTE	
TERMINAL	Chars in Keyboard Buffer	4	INBYTE	
TERMINAL	Set display cursor	5	BYTE (0=off, 1=on)	
TERMINAL	Set Baud Rate	6	BYTE BYTE BYTE	
SERIAL	Set Serial Mode	7	BYTE (8n1=0,8e1=1,8o1=2,7n1=3,7e1=4,7o1=5)	
SERIAL	Serial TX Single char	8	BYTE	
SERIAL	Serial TX Null Terminated String	9	BYTE BYTE BYTE BYTE BYTE ... ... NULL	
SERIAL	Serial RX	10	INBYTE	
SERIAL	Chars in Serial Buffer	11	INBYTE	
AUDIO	Play Null Terminated String	12	BYTE BYTE BYTE BYTE BYTE ... ... NULL	
AUDIO	Play Sound	13	attack attack attack attack decay decay decay decay Sustain Sustain Release Release Release Release WaveType Volume Volume Duration Duration FreqStart FreqStart FreqEnd FreqEnd ModFreqMode	
AUDIO	Set Volume	14		
GRAPHICS	Set resolution	15	BYTE (see video resolutions tab)	* Takes a second or two to process, leave plenty of time as ESP needs to reset
GRAPHICS	Load Font	16	BYTE (See Fonts tab)	
GRAPHICS	Clear	17		
GRAPHICS	copyRect	18	source x source x source y source y dest x dest x dest y dest y width width height height	
GRAPHICS	drawBitmap	19	x x y y width width height height PixelForma length length byte byte byte ... ... byte	(bitmap size cannot exceed 31.5K) — FORMATS=1:NATIVE DEVICE, 2:MASK(1=OPAQUE 0=TRANSP), 3: 8 BITS PIXEL aabbggrr, 4:32BITS PIXEL RGBA
GRAPHICS	drawChar	20	x x y y char font	
GRAPHICS	drawEllipse	21	x x y y width width height height	
GRAPHICS	drawGlyph	22	x x y y width width height height index index length length byte byte byte ... ... byte	
GRAPHICS	drawLine	23	x x y y end x end x end y end y	
GRAPHICS	drawRectangle	24	x x y y end x end x end y end y	
GRAPHICS	fillEllipse	25	x x y y width width height height	
GRAPHICS	fillRectangle	26	x x y y end x end x end y end y	
GRAPHICS	getPixel	27	x x y y B G R	
GRAPHICS	invertRectangle	28	x x y y end x end x end y end y	
GRAPHICS	lineTo	29	x x y y	
GRAPHICS	moveTo	30	x x y y	
GRAPHICS	scroll	31	x x y y	
GRAPHICS	setBrushColor	32	Color	
GRAPHICS	setLineEnds	33	LineEnds (0=NONE, 1=ROUNDED)	
GRAPHICS	setPenColor	34	Color	
GRAPHICS	setPenWidth	35	Width	
GRAPHICS	setPixel	36	x x y y	
GRAPHICS	setGlyphOptions	37	blank bold doubleWid FillBackgro Invert Italic Underline	
GRAPHICS	setPaletteItem	38	index b g r	
GRAPHICS	setMouseCursor	39	index	
GRAPHICS	setMouseCursorPosition	40	x x y y	
GRAPHICS	removeSprites	41		
GRAPHICS	setSpriteMap	42	index width width height height pixelforma length length byte byte byte ... ... byte	*AWAYS SET THE HIGHEST INDEX SPRITE LAST, AND THE MAX CONFIGURED SPRITE NUMBER IS 31. (0-32)
GRAPHICS	setSpriteLocation	43	x x y y index	
GRAPHICS	setSpriteVisibility	44	index visible	
GRAPHICS	DISCOVER	255	"E" "S" "P" "3" "2" "v" "1"	

ESP1

Family	Description	Opcode	Parameters	Notes
	NO OP	0	NONE / SEND BYTE / RCV BYTE	
WiFi	WiFi Modem TX Single char	1	BYTE	
WiFi	WiFi Modem TX Null Terminated String	2	BYTE BYTE BYTE BYTE BYTE ... ... NULL	
WiFi	WiFi Modem RX	3	INBYTE	
WiFi	Chars in Wifi Buffer	4	INBYTE	
SERIAL	Set Baud Rate	6	BYTE BYTE BYTE	
SERIAL	Set Serial Mode	7	BYTE (8n1=0,8e1=1,8o1=2,7n1=3,7e1=4,7o1=5)	
SERIAL	Serial TX Single char	8	BYTE	
SERIAL	Serial TX Null Terminated String	9	BYTE BYTE BYTE BYTE BYTE ... ... NULL	
SERIAL	Serial RX	10	INBYTE	
SERIAL	Chars in Serial Buffer	11	INBYTE	
MOUSE	MOUSE			
MOUSE	DISCOVER	255	"E" "S" "P" "3" "2" "v" "1"	

ID	Font Name	
0	FONT_4X6	0
1	FONT_5X7	1
2	FONT_5X8	2
3	FONT_6X8	3
4	FONT_6X9	4
5	FONT_6X10	5
6	FONT_6X12	6
7	FONT_6X13	7
8	FONT_7X13	8
9	FONT_7X14	9
10	FONT_8X8	A
11	FONT_8X9	B
12	FONT_8X13	C
13	FONT_8X14	D
14	FONT_8X16	E
15	FONT_8X19	F
16	FONT_9X15	10
17	FONT_9X18	11
18	FONT_10X20	12
19	FONT_BIGSERIF_8X14	13
20	FONT_BIGSERIF_8X16	14
21	FONT_BLOCK_8X14	15
22	FONT_BROADWAY_8X14	16
23	FONT_COMPUTER_8X14	17
24	FONT_COURIER_8X14	18
25	FONT_LCD_8X14	19
26	FONT_OLDENGL_8X16	1A
27	FONT_SANSERIF_8X14	1B
28	FONT_SANSERIF_8X16	1C
29	FONT_SLANT_8X14	1D
30	FONT_WIGGLY_8X16	1E

ID	Mode Name
0	VGA_320x200_70Hz
1	VGA_320x200_75Hz
2	VGA_320x200_75HzRetro
3	QVGA_320x240_60Hz
4	VGA_400x300_60Hz
5	VGA_480x300_75Hz
6	VGA_512x192_60Hz
7	VGA_512x384_60Hz
8	VGA_512x448_60Hz
9	VGA_512x512_58Hz
10	VGA_640x200_60HzD
11	VGA_640x200_70Hz
12	VGA_640x200_70HzRetro
13	VGA_640x240_60Hz
14	VGA_640x350_70Hz
15	VGA_640x350_70HzAlt1
16	VESA_640x350_85Hz
17	VGA_640x382_60Hz
18	VGA_640x384_60Hz
19	VGA_640x400_70Hz
20	VGA_640x400_60Hz
21	VGA_640x480_60Hz
22	VGA_640x480_60HzAlt1
23	VGA_640x480_60HzD
24	VGA_640x480_73Hz
25	VESA_640x480_75Hz
26	VGA_720x348_50HzD
27	VGA_720x348_59HzD
28	VGA_720x348_73Hz
29	VGA_720x350_70Hz
30	VGA_720x400_70Hz
31	VESA_720x400_85Hz
32	PAL_720x576_50Hz
33	VESA_768x576_60Hz
34	SVGA_800x300_60Hz
35	SVGA_800x600_56Hz
36	SVGA_800x600_60Hz
37	SVGA_960x540_60Hz
38	SVGA_1024x768_60Hz
39	SVGA_1024x768_70Hz
40	SVGA_1024x768_75Hz
41	SVGA_1280x600_60Hz
42	SVGA_1280x720_60Hz
43	SVGA_1280x720_60HzAlt1
44	SVGA_1280x768_50Hz

Description
320x200@70Hz resolution - the same of VGA_640x200_70Hz with horizontal halved
320x200@75Hz resolution
320x200@75Hz retro resolution
320x240@60Hz resolution
400x300@60Hz resolution
480x300@75Hz resolution
512x192@60Hz resolution
512x384@60Hz resolution
512x448@60Hz resolution
512x512@58Hz resolution
640x200@60Hz doublescan resolution
640x200@70Hz resolution - the same of VGA_640x400_70Hz with vertical halved
640x200@70Hz retro resolution
640x240@60Hz (DoubleScan) resolution
640x350@70Hz resolution
640x350@70HzAlt1 resolution
640x350@85Hz resolution
640x382@60Hz resolution
640x384@60Hz resolution
640x400@70Hz resolution
640x400@60Hz (actually 640x480 but with less lines)
640x480@60Hz resolution
640x480@60HzAlt1 resolution
640x480@60Hz doublescan resolution
640x480@73Hz resolution
640x480@75Hz resolution
720x348@50Hz doublescan resolution
720x348@59Hz doublescan resolution
720x348@73Hz resolution
720x350@70Hz resolution - thanks Stan Pechal
720x400@70Hz resolution
720x400@85Hz resolution
720x576@50Hz resolution
768x576@60Hz resolution
800x300@60Hz resolution
800x600@56Hz resolution
800x600@60Hz resolution
960x540@60Hz resolution
1024x768@60Hz resolution
1024x768@70Hz resolution
1024x768@75Hz resolution
1280x600@60Hz resolution
1280x720@60Hz resolution
1280x720@60Hz resolution
1280x768@50Hz resolution

Color Mode

64	0	320	200	8	64000	64	162256
64	1	320	200	8	64000	64	162256
64	2	320	200	8	64000	64	162256
64	3	320	240	8	76800	76.8	149456
64	4	400	300	8	120000	120	106256
64	5	480	300	8	144000	144	82256
16	6	512	192	4	49152	49.152	177104
16	7	512	384	4	98304	98.304	127952
16	8	512	448	4	114688	114.688	111568
16	9	512	512	4	131072	131.072	95184
16	A	640	200	4	64000	64	162256
16	B	640	200	4	64000	64	162256
16	C	640	200	4	64000	64	162256
16	D	640	240	4	76800	76.8	149456
16	E	640	350	4	112000	112	114256
16	F	640	350	4	112000	112	114256
16	10	640	350	4	112000	112	114256
16	11	640	382	4	122240	122.24	104016
16	12	640	384	4	122880	122.88	103376
16	13	640	400	4	128000	128	98256
16	14	640	400	4	128000	128	98256
16	15	640	480	4	153600	153.6	72656
16	16	640	480	4	153600	153.6	72656
16	17	640	480	4	153600	153.6	72656
16	18	640	480	4	153600	153.6	72656
16	19	640	480	4	153600	153.6	72656
16	1A	720	348	4	125280	125.28	100976
16	1B	720	348	4	125280	125.28	100976
16	1C	720	348	4	125280	125.28	100976
16	1D	720	350	4	126000	126	100256
16	1E	720	400	4	144000	144	82256
16	1F	720	400	4	144000	144	82256
8	20	720	576	3	155520	155.52	70736
8	21	768	576	3	165888	165.888	60368
8	22	800	300	3	90000	90	136256
4	23	800	600	2	120000	120	106256
4	24	800	600	2	120000	120	106256
4	25	960	540	2	129600	129.6	96656
2	26	1024	768	1	98304	98.304	127952
2	27	1024	768	1	98304	98.304	127952
2	28	1024	768	1	98304	98.304	127952
2	29	1280	600	1	96000	96	130256
2	2A	1280	720	1	115200	115.2	111056
2	2B	1280	720	1	115200	115.2	111056
2	2C	1280	768	1	122880	122.88	103376

```
0   CursorPointerAmigaLike,    /**< 11x11 Amiga like colored mouse pointer */
1   CursorPointerSimpleReduced, /**< 10x15 mouse pointer */
2   CursorPointerSimple,      /**< 11x19 mouse pointer */
3   CursorPointerShadowed,     /**< 11x19 shadowed mouse pointer */
4   CursorPointer,          /**< 12x17 mouse pointer */
5   CursorPen,           /**< 16x16 pen */
6   CursorCross1,          /**< 9x9 cross */
7   CursorCross2,          /**< 11x11 cross */
8   CursorPoint,          /**< 5x5 point */
9   CursorLeftArrow,        /**< 11x11 left arrow */
10  CursorRightArrow,        /**< 11x11 right arrow */
11  CursorDownArrow,         /**< 11x11 down arrow */
12  CursorUpArrow,          /**< 11x11 up arrow */
13  CursorMove,           /**< 19x19 move */
14  CursorResize1,          /**< 12x12 resize orientation 1 */
15  CursorResize2,          /**< 12x12 resize orientation 2 */
16  CursorResize3,          /**< 11x17 resize orientation 3 */
17  CursorResize4,          /**< 17x11 resize orientation 4 */
18  CursorTextInput,         /**< 7x15 text input */
```