

Family	Description	Opcode	Parameters																																															
ESP0	NO OP	0	NONE																											SEND BYTE	RCV BYTE																			
	VGA ANSI TERM OUT SINGLE CHAR	1 BYTE	Bytes are Little Endian																																															
	VGA ANSI TERM OUT NULL TERMINATED STRING	2 BYTE	BYTE	BYTE	BYTE	BYTE	BYTE																						
	KEYBOARD IN SINGLE BYTE	3 INBYTE																																																
	Chars in Keyboard Buffer	4 INBYTE																																																
	Set display cursor	5 BYTE	(0=off, 1=on)																																															
	Set Baud Rate	6 BYTE	BYTE	BYTE	BYTE	BYTE																																												
	Set Serial Mode	7 BYTE	(8n1=0,8e1=1,8o1=2,7n1=3,7e1=4,7o1=5)																																															
	Serial TX Single char	8 BYTE																																																
	Serial TX Null Terminated String	9 BYTE	BYTE	BYTE	BYTE	BYTE	BYTE	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
	Serial RX	10 INBYTE																																																
	Chars in Serial Buffer	11 INBYTE																																																
	Play Null Terminated String	12 BYTE	BYTE	BYTE	BYTE	BYTE	BYTE	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
	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																									
	Set Volume	14 Volume																																																
	Set resolution	15 BYTE	(see video resolutions tab) * Takes a second or two to process, leave plenty of time as ESP needs to reset																																															
	Load Font	16 BYTE	(See Fonts tab)																																															
Clear	17																																																	
copyRect	18 source x	source x	source y	source y	dest x	dest x	dest y	dest y	width	width	height	height	PixelFormat	length	length	length	length	byte	byte	...	...	...	...	...	...	...	...															
drawBitmap	19 x	x	y	y	width	width	height	height	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
drawChar	20 x	x	y	y	char	font																																												
drawEllipse	21 x	x	y	y	width	width																					height	height	index	index	length	length	byte	byte	byte					
drawGlyph	22 x	x	y	y	width	width																					height	height				
drawLine	23 x	x	y	y	end x	end x																					end y	end y				
drawRectangle	24 x	x	y	y	end x	end x																					end y	end y				
fillEllipse	25 x	x	y	y	width	width	height	height	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
fillRectangle	26 x	x	y	y	end x	end x	end y	end y	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
getPixel	27 x	x	y	y	B	G	R	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
invertRectangle	28 x	x	y	y	end x	end x	end y	end y	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
lineTo	29 x	x	y	y																																														
moveTo	30 x	x	y	y																																														
scroll	31 x	x	y	y																																														
setBrushColor	32 Color																																																	
setLineEnds	33 LineEnds	0=NONE, 1=ROUNDED																																																
setPenColor	34 Color																																																	
setPenWidth	35 Width																																																	
setPixel	36 x	x	y	y	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
setGlyphOptions	37 blank	bold	doubleWid	FillBackgro	Invert	Italic	Underline																																											
setPaletteItem	38 index	b	g	r																																														
setMouseCursor	39 index																																																	
setMouseCursorPosition	40 x	x	y	y																																														
removeSprites	41																																																	
setSpriteMap	42 index	width	width	height	height	pixelFormat	length	length	byte	byte	byte	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...							
setSpriteLocation	43 x	x	y	y	index																																													
setSpriteVisibility	44 index	visible																																																
DISCOVER	255 "E"	"S"	"P"	"3"	"2"																						"V"	"1"																						

Family	Description	Opcode	Parameters																																															
ESP1	NO OP	0	NONE																											SEND BYTE	RCV BYTE																			
	WiFi Set SSID	1 BYTE	BYTE	BYTE	BYTE	BYTE	BYTE	BYTE	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
	WiFi Set Password	2 BYTE	BYTE	BYTE	BYTE	BYTE	BYTE	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
	WiFi Connect	3																																																
	WiFi Get Status	4 BYTE																																																
	WiFi Get Signal Strength	5 BYTE																																																
	Set Baud Rate	6 BYTE	BYTE	BYTE	BYTE																																													
	Set Serial Mode	7 BYTE	(8n1=0,8e1=1,8o1=2,7n1=3,7e1=4,7o1=5)																																															
	Serial TX Single char	8 BYTE																																																
	Serial TX Null Terminated String	9 BYTE	BYTE	BYTE	BYTE	BYTE	BYTE	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
	Serial RX	10 INBYTE																																																
	Chars in Serial Buffer	11 INBYTE																																																
	Get IP Address	12 BYTE	BYTE	BYTE	BYTE																																													
	Get Subnet Mask	13 BYTE	BYTE	BYTE	BYTE																																													
	Get Gateway	14 BYTE	BYTE	BYTE	BYTE																																													
	Get Primary DNS	15 BYTE	BYTE	BYTE	BYTE																																													
	Get Secondary DNS	16 BYTE	BYTE	BYTE	BYTE																																													
Set IP Address	12 BYTE	BYTE	BYTE	BYTE																																														
Set Subnet Mask	13 BYTE	BYTE	BYTE	BYTE																																														
Set Gateway	14 BYTE	BYTE	BYTE	BYTE																																														
Set Primary DNS	15 BYTE	BYTE	BYTE	BYTE																																														
Set Secondary DNS	16 BYTE	BYTE	BYTE	BYTE																																														
Set Hostname	17 BYTE	BYTE	BYTE	BYTE	BYTE	BYTE	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
Create Outgoing Connection	18 Conn#	Port	Port	Hostname	Hostname	Hostname																																												
Set Incoming Port	19 Port	Port																																																
Out Byte to Connection#	20 Conn#	BYTE																																																
Out String to Connection#	21 Conn#	BYTE	BYTE	BYTE	BYTE				
In Byte From Connection#	22 Conn#	BYTE																																																
Chars in Buffer from Connection#	23 Conn#	BYTE	BYTE																																															
Out Byte to Incoming Port	24 BYTE																																																	
Out String to Incoming Port	25 BYTE																																																	
In Byte From Incoming Port	26 BYTE	BYTE	BYTE																									BYTE	BYTE		
Chars in Buffer from Incoming Port	27 BYTE	BYTE																																																
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 */
```