

VACUUM FLUORESCENT DISPLAY MODULE CU20029SCPБ-KV90B

SOFTWARE COMMANDS

Instruction (Busy Time)	Data Format	Description																																																																																																																
Backspace 10us	08H	Moves the cursor left by one character. If the cursor is at the left end of the bottom line the cursor moves to the right end of the line above. If the cursor is at the left end of the top line no cursor movement is made.																																																																																																																
Horizontal Tab 10us	09H	Moves the cursor right by one character. If the cursor is at the right end of the top line the cursor moves to the left end of the line below. When the cursor is at the right end of the bottom line the cursor moves to the left end of the top line.																																																																																																																
Line Feed 10us	0AH	Moves the cursor down by one character. If the cursor is at the bottom of the display the cursor moves to the top of the display.																																																																																																																
Cursor Home 10us	0CH	Moves the cursor position to the top left of the display.																																																																																																																
Carriage Return 10us	0DH	Moves the cursor to the left end of the display maintaining the current vertical position.																																																																																																																
Clear Display 304us	0EH	Clear all displayed characters. No cursor movement is made.																																																																																																																
XON (Software Handshaking) 6us	11H	Signal host ready to receive data. 11H will be returned after each byte received to signal module ready. EIN and EOUT must first be linked to enable software handshaking.																																																																																																																
Scroll Write Mode 6us	12H	When the cursor reaches the right end of the current line the contents are scrolled left by one character upon each further character write.																																																																																																																
XOFF (Software Handshaking) 6us	13H	Signal host not ready to receive data. 13H will be returned after each byte received to signal module not ready. EIN and EOUT must first be linked to enable software handshaking.																																																																																																																
Normal Write Mode 6us	14H	Increments the cursor position after every character write. If the cursor is at the right end of the bottom line the cursor will be moved to the left end of the top line. (default)																																																																																																																
Cursor on 6us	15H	5x7 block cursor is displayed.																																																																																																																
Cursor off 6us	16H	No cursor is displayed. (default)																																																																																																																
Set Decimal Point on 10us	17H	Turns on the decimal point at the current cursor position.																																																																																																																
Set Comma Tail on 10us	18H	Turns on the comma tail at the current cursor position.																																																																																																																
Set Arrow on 10us	19H	Turns on the arrow at the current cursor position. (only effective on the bottom line)																																																																																																																
Arrow, Point & Comma off 10us	1AH	Turns the arrow, decimal point and comma off at the current cursor position.																																																																																																																
Report Status 6us (1BH) 4us (41H)	1BH + 41H	A single byte is returned containing the module's status. Bit 7 cursor row 0 = row 1, 1 = row 2 Bit 6 PSU status 0 = PSU on, 1 = PSU off Bit 5 luminance level 0 = 50%, 1 = 100% Bit 4 unused Bit 3 unused Bit 2 unused Bit 1/0 font set 00 = International, 01 = Katakana, 10 = Russian																																																																																																																
Report RAM Checksum 6us (1BH) 20us (41H)	1BH + 43H	A single byte is returned containing the RAM checksum.																																																																																																																
Cursor Position 6us (1BH) 7us (48H) 12us (00H-27H)	1BH + 48H + 00H – 27H	Sets the cursor position 0 – 39.																																																																																																																
Software Reset 6us (1BH) 330us (49H)	1BH + 49H	Resets the display to power on defaults:- - International Font, Cursor Off, Maximum Brightness, Clear Display.																																																																																																																
Set Luminance to 50% 6us (1BH) 10us (4CH)	1BH + 4CH	Sets the display brightness to 50% of maximum brightness.																																																																																																																
Power Down 6us (1BH) 15us (4DH)	1BH + 4DH	Sets the module into power save mode. (40mA typical). Software reset command (1BH 49H) must be given to stop power save mode. Please note: The module will reset to power on defaults after the reset command.																																																																																																																
Report Version 6us (1BH) 18us (53H)	1BH + 53H	The software version is returned as a single byte between 1 and 255.																																																																																																																
Cursor Blink on 6us (1BH) 18us (54H)	1BH + 54H	Cursor is set to blink at a frequency of 1Hz. The block cursor will not appear until 'Cursor on' command has been received.																																																																																																																
User Defined Font 6us (1CH) 6us (data bytes 1-4) 30us (data byte 5)	1CH + data byte 1 + data byte 2 + data byte 3 + data byte 4 + data byte 5	Defines a user character at the current cursor position. All user defined fonts are lost at power on or reset. <table style="margin-left: auto; margin-right: auto;"> <tr> <td colspan="9" style="text-align: center;">Bit / Byte assignment</td> <td colspan="5" style="text-align: center;">Dot assignment</td> </tr> <tr> <td></td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td> <td>P1</td><td>P2</td><td>P3</td><td>P4</td><td>P5</td> </tr> <tr> <td>Byte 1</td><td>P1</td><td>P2</td><td>P3</td><td>P4</td><td>P5</td><td>P6</td><td>P7</td><td>P8</td> <td>P6</td><td>P7</td><td>P8</td><td>P9</td><td>P10</td> </tr> <tr> <td>Byte 2</td><td>P9</td><td>P10</td><td>P11</td><td>P12</td><td>P13</td><td>P14</td><td>P15</td><td>P16</td> <td>P11</td><td>P12</td><td>P13</td><td>P14</td><td>P15</td> </tr> <tr> <td>Byte 3</td><td>P17</td><td>P18</td><td>P19</td><td>P20</td><td>P21</td><td>P22</td><td>P23</td><td>P24</td> <td>P16</td><td>P17</td><td>P18</td><td>P19</td><td>P20</td> </tr> <tr> <td>Byte 4</td><td>P25</td><td>P26</td><td>P27</td><td>P28</td><td>P29</td><td>P30</td><td>P31</td><td>P32</td> <td>P21</td><td>P22</td><td>P23</td><td>P24</td><td>P25</td> </tr> <tr> <td>Byte 5</td><td>P33</td><td>P34</td><td>P34</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td> <td>P26</td><td>P27</td><td>P28</td><td>P29</td><td>P30</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>P31</td><td>P32</td><td>P33</td><td>P34</td><td>P35</td> </tr> </table>	Bit / Byte assignment									Dot assignment						7	6	5	4	3	2	1	0	P1	P2	P3	P4	P5	Byte 1	P1	P2	P3	P4	P5	P6	P7	P8	P6	P7	P8	P9	P10	Byte 2	P9	P10	P11	P12	P13	P14	P15	P16	P11	P12	P13	P14	P15	Byte 3	P17	P18	P19	P20	P21	P22	P23	P24	P16	P17	P18	P19	P20	Byte 4	P25	P26	P27	P28	P29	P30	P31	P32	P21	P22	P23	P24	P25	Byte 5	P33	P34	P34	-	-	-	-	-	P26	P27	P28	P29	P30										P31	P32	P33	P34	P35
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Select Font Table 7us	1DH/1EH/1FH	1DH = International Font (default). 1EH = Katakana Font. 1FH = Russian Font																																																																																																																
Selected Font Characters 28us	20H – FFH	Display character from selected font.																																																																																																																

Notes:- Busy times are not inclusive of a 500us scan period, this must be taken into consideration. If the cursor is enabled, busy times will increase by a further 50us. Cursor position (00H) is the top left of the display. All data shown is in hexadecimal format.