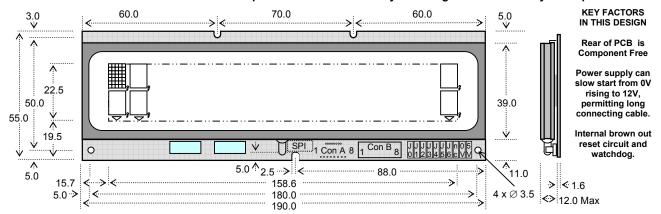
VACUUM FLUORESCENT DISPLAY MODULE CU20029SCPB-KV90B

- 2 Lines of 20 Characters
- □ 9mm High 5 x 7 Dot Matrix Font
- ☐ Single 12V DC Supply
- ☐ High Brightness Blue Green Display
- □ ASCII + Extended Character Font
- □ Low Profile Construction
- □ Asynchronous Serial Interface
- □ User Defined Display Pixels

The module includes the VFD glass, VF drivers and micro-controller with refresh RAM, character generation and interface logic. The RS232 serial interface is suitable for connection to a host PC serial port and accepts baud rates up to 19,200 with or without parity. Optional user SPI & I/O interfaces. User defined characters can be down loaded to the display RAM allowing any character pattern to be shown. The module features a low profile design with numerous custom options available including special fonts, application specific commands and key scanning. Please send us your request.



Con B is Molex 90814-0008 which mates with Molex 90327-0308. The 5V outputs on the jumper pads are for 15mA slave logic connection.

Dimensions in mm

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Condition
Power Supply Voltage	VDD	12.0VDC +/- 10%	G _{ND} =0V
Power Supply Current	IDD	260 mA DC Typ.	VDD=12V
RS232 Serial High Input	VIH	3.5VDC min.	
RS232 Serial Low Input	VIL	1.5VDC max.	
RS232 Serial High Output	Vон	4.5VDC min.	
RS232 Serial Low Output	Vol	0.33VDC max.	

Optical filters can provide violet, red, yellow, blue and green output.

OPTICAL CHARACTERISTICS

Character Size/Pitch (XxY mm)	5.25 x 9.0 / 8.0 x 10.5
Dot Size/Pitch (XxY mm)	0.85 x 1.05 / 1.1 x 1.33
Luminance	700 cd/m ² (200 fL) Typ.
Colour of Illumination	Blue-Green (505nm)

ENVIRONMENTAL SPECIFICATION

Operating Temperature	-30°C to +80°C
Storage Temperature	-40°C to +85°C
Operating Humidity	20 to 85% RH @ 25°C

SOFTWARE COMMANDS

SUFTWARE CUMMANDS			CHARACTER FUNTS								International Font								Katakana Font							
Command Name	Hex		00	10 :	20	30	40	50	60	70	80	90	AO	В0	со	DO	EO	FO	l	Γ	l		_			_
Back Space	08	00		\Box	\neg	0	a	P	7.	j ::-	Ë	Σ		13	À	Ð	3	.4,	80	90	A0	BO	CO	DO	I I	F0
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Line Feed	0A	02			÷	#	B	R	123		Ť	3.2	4	2	A		=	H	Ī	3	:::	Ţ	#	4	Я	
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Carriage Return	0D	03		:	#	3	<u> </u>	S	C	:::	1.	×	£	9	Ħ				*	Я	J.	rh	Ť	€	#.	
Clear Display*	0E	04		:	#	4	D	T	d	+:	<u></u>	÷		Ľ.	Ħ	Ö	3	ö		Ħ		İ	į.	Ħ	*	
XON (software handshaking)	11	05		:	1	5	E	U		U	O.	0	#	Ж	A	Ö	å	O	й	m		Ŧ	÷	i		i
Scroll Write Mode	12	06		:	3.	6	F	Ų	f	ij.	T	়	I	1	Æ	Ö	20	ö	П	#		77	-	-		╫
XOFF(software handshaking)	13	07				7	Ħ	Ú	ġ	1	á	Ė		-	Ţ		Ģ		Щ	000	Ą	!!			1	╨
Normal Write Mode*	14	08				8	Ħ	X	H	×	=	4			Ė		ė				7	#	77	÷,	Ħ	
Cursor On	15	09			Ì	ğ	Ϊ	Ŷ			ħ			1		-	=	C.C.B	Ш	uh.	4	9	7	IJ.	Ĥ	
Cursor Off*	16	1					4	<u> </u>	į.	7		<u> </u>	122	l	<u> </u>	그	é	1	3	1	÷	Ť	J	16	H	#
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Arrow, Point & Comma Off	1A	OD.		١.		===	M	I	m		Ţ	Ĵ,		12	Í	Ÿ	í	Ÿ		111						
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Mixing Fonts is Permitted	FF]							2.01																	

CHARACTER FONTS

INTERFACE CONNECTORS

	Α	В	Signal	Function
1	5	1	DIN	Receive
1	1	2	EIN	Host Busy
	3	3	DOUT	Transmit
1	2	4	EOUT	Module Busy
1	4	5	GND	0V
1	7	6	GND	0V
1	6	7	VDD	+12V
1	8	8	VDD	+12V

Link EIN and EOUT for XON/XOFF CONA is a dual hole 2mm/2.54mm pitch array

PCB JUMPERS (O)pen (L)ink

Baud	J2	J1	J0	Parity	J4	J3
19200	0	0	0	EVEN	0	0
9600	0	0	L	ODD	0	L
4800	0	L	0	NONE	L	L
2400	0	L	L			
1200	L	0	0	Test	J6	
				ON	L	

CONTACT

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VACUUM FLUORESCENT DISPLAY MODULE CU20029SCPB-KV90B

SOFTWARE COMMANDS

Instruction	Data Format	Description												
(Busy Time) Backspace	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												
Horizontal Tab	09H	right end of the line above If the cursor is at the left end of the top line no cursor movement is made. 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	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	0CH	Moves the cursor position to the top left of the display.												
Carriage Return	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)	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	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)	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	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	15H	5x7 block cursor is displayed.												
Cursor off	16H	No cursor is displayed. (default)												
Set Decimal Point on	17H	Turns on the decimal point at the current cursor position.												
Set Comma Tail on	18H	Turns on the comma tail at the current cursor position.												
Set Arrow on	19H	Turns on the arrow at the current cursor position. (only effective on the bottom line)												
Arrow, Point & Comma off	1AH	Turns the arrow, decimal point and comma off at the current cursor position.												
6us (1BH) 4us (41H)	+ 41H	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	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.												
18us (54H) 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.												
		Byte 1 P1 P2 P3 P4 P5 P6 P7 P8 P16 P17 P18 P19 P20												
		Byte 2 P9 P10 P11 P12 P13 P14 P15 P16 Byte 3 P17 P18 P19 P20 P21 P22 P23 P24 P21 P22 P23 P24 P25												
		Byte 4 P25 P26 P27 P28 P29 P30 P31 P32 P26 P27 P28 P29 P30												
		Byte 5 P33 P34 P34 P31 P32 P33 P34 P35												
Select Font Table	1DH/1EH/1FH	1DH = International Font (default). 1EH = Katakana Font. 1FH = Russian Font												
Selected Font Characters	20H – FFH	Display character from selected font.												
	1	Is scan period, this must be taken into consideration. If the cursor is enabled, busy times will increase by a												

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.