

LCD'S WITH TEXT MEMORY

2.97

LC-DISPLAYS WITH TEXT MEMORY, RS-232C, LED-BACKLIT, FRONTAL BEZEL



Accessories:
cable EA KV24-9B
length: 1,50 m



FEATURES

- * 12 DIFFERENT SIZES OF DISPLAYS (2x16..4x16..4x20..2x40)
- * INCL. FRONTAL BEZEL WITH ANTIGLARE GLASS
- * HIGH CONTRAST SUPERTWIST LCD INCL. LED-ILLUMINATION
- * ON BOARD PROGRAMMING WITH RS-232C INTERFACE
- * ON BOARD MEMORY STORES UP TO 64 TEXTS/MESSAGES
- * PROGRAMMING IN DOS/WINDOWS/MAC/UNIX...
- * 6 DIGITAL INPUT PORTS FOR STAND-ALONE-OPERATIONS (HIGH ACTIVE)
- * AUTOMATIC TEXT FLOW MANAGEMENT CR/LF/CURSOR POSITIONING
- * BAUDRATE SETTING BY JUMPER: 300,1200,2400 OR 9600BAUD
- * SUPPLY VOLTAGE +5V
- * POTI FOR CONTRAST ADJUSTMENT ON BOARD

ACCESSORIES / OPTIONS

- * OPTIONAL: LOW-ACTIVE INPUT PORTS (EA OPT-LO)
- * CABLE WITH 9-PIN SUB-D FEMALE PLUG FOR DIRECT PC CONNECTION
- * DISK EA DISK9705 WITH EXAMPLES FOR DOS, MS-WORD, MS-WRITE (NOT NEEDED FOR OPERATION)

DISPLAYS WITH TEXT MEMORY, RS-232C AND FRONTAL BEZEL												
ordering information	lines x charact.	charact. height	module dimension			window		frontal bezel	mount. size		curren typ.	figure page
			B	H	T	B	H		B	H		
EA TXT162-CNLED	2 x 16	4.35	80.0	36.0	27.0	64.5	13.8	017-1UKE	69.7	19.2	90	4
EA TXT162-NLED	2 x 16	5.55	84.0	44.0	27.0	61.0	15.8	017-2UKE	66.2	21.2	120	4
EA TXT162-BNLED	2 x 16	9.66	122.0	44.0	27.0	99.0	24.0	017-12UKE	103.6	28.8	360	4
EA TXT202-NLED	2 x 20	5.55	116.5	39.0	27.0	85.0	18.6	017-7UKE	87.7	23.6	210	5
EA TXT202-BHNLED	2 x 20	9.2	146.0	43.0	27.0	123.0	23.0	017-24KE	127.2	28.4	270	5
EA TXT202-CNLED	2 x 20	12.7	182.0	60.0	27.0	147.0	35.2	017-27KE	151.2	40.2	225	5
EA TXT242-NLED	2 x 24	5.55	118.0	36.0	27.0	93.5	15.8	017-14UKE	98.4	21.2	150	6
EA TXT402-NLED	2 x 40	5.55	182.0	33.5	27.0	154.1	15.3	017-4UKE	159.2	21.2	150	6
EA TXT164-NLED	4 x 16	4.75	87.0	60.0	27.0	61.8	25.4	017-8UKE	67.0	30.6	220	6
EA TXT204-NLED	4 x 20	4.75	98.0	60.0	27.0	76.0	25.2	017-9UKE	81.2	30.6	260	7
EA TXT204-BNLED	4 x 20	9.2	146.0	62.5	27.0	123.0	42.5	017-25KE	127.2	47.9	810	7
EA TXT204-CNLED	4 x 20	12.7	182.0	90.0	27.0	147.0	65.4	017-28KE	151.2	70.3	225	7

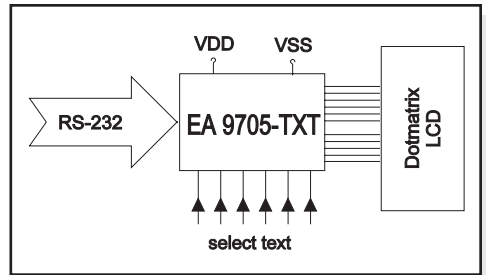
Dimensions in mm
Current in mA

**ELECTRONIC
ASSEMBLY** GMBH

ZEPPELINSTRASSE 19 · D-82205 GILCHING
TEL 08105/778090 · FAX 08105/778099 · <http://www.lcd-module.de>

GENERAL

LCD's with Text memory represent a complete LCD-Dotmatrix family with input circuit and frontal bezel. The LCD-modules will be delivered in one unit. Mounting is done through holes of the LCD-module. Up to 64 texts are programmable per PC. Texts are displayed via 6 digital input lines. Variable datas can be displayed in addition through a RS-232C interface. Data transfer rate can be set by jumper on 300, 1200, 2400 or 9600 Baud. All cursor controls (line feed etc.) are performed automatically.



All displays feature LED-backlight illumination. Matching frontal bezels with antiglare glass is included also. With accessories cable EA KV24-9B (aro. 1,50m) the EA 9705-TXT can be plugged directly into the 9-pin. SUB-D socket of a PC.

RS-232C DATA TRANSFER, COMMANDS

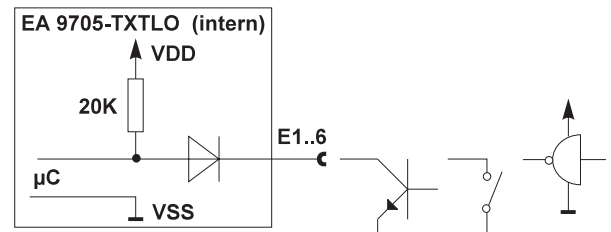
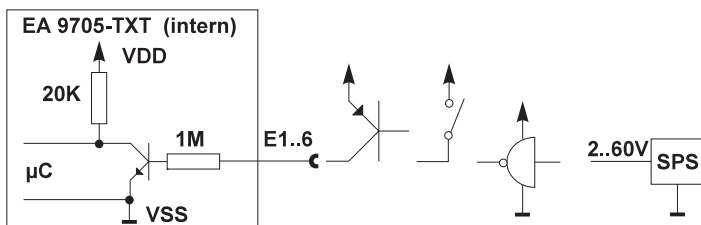
The display will be initialized as shown in programming table on the right hand. All received characters will be largely interpreted as ASCII datas. When display is filled up, the content will be erased and the cursor will be placed to start position (1,1;mode 2). CR/LF will be recognized and executed. FF (=12d,\$0C) clears the display. Cursor can be set manually by command "ESC O" (ESC=27d,\$1B). More commands can be found in command table below.

COMMAND TABLE FOR RS-232C OPERATION

Command	Code				Remark
Formfeed FF (dec.:12)	^L				Clear screen and place cursor to home position (1,1)
Carriage Return CR (13)	^M				Set cursor into first column left hand
Linefeed LF (dec.:10)	^J				Move cursor down to next line
Cursor positioning	ESC	O	n1	n2	n1=column; n2=line; home-position (1,1) top left hand
Cursor Form	ESC	C	0		Hidden cursor
			1		Cursor in form of a flashing block
Display Mode	ESC	M	1		Clear-mode; auto lineflow OFF
			2		Clear-mode; auto lineflow ON
			3		Overwrite-mode; auto lineflow OFF
			4		Overwrite-mode; auto lineflow ON
Call permanent text	ESC	T	nr		Call text by number (nr: 0..63) from memory

CALL UP TEXT

All 6 inputs E1..6 are on screw terminals. Valency of E1 is 2⁰ and E6 2⁵. When all inputs are open, text 0 will be displayed. Message 1 can be achieved by supplying a level > 2V on E1 with the standard version; versions with LOW-active inputs need low-levels on E1. Low level is recognized under 0,7V; high level over 2V. This messages can be also accessed via RS-232.



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PROGRAMMING THE TEXT MEMORY

For programming your individual text's you need a PC with a text program like Windows *Write*, *Word* or similar. For loading the permanent text memory, a free available serial port must be on the PC. For connecting we recommend you the cable EA KV24 9B.

With the text editor you can create a program file according to the example below. First line must have approx. 50 round brackets `)` for identification. In order to design a well readable program file you can fill in comments and empty lines. A comment is leaded by a semicolon `(;)`. Starting from here up to the line end all characters will be disabled.

Next lines will define type of display (here: 2-lines by 16 characters). The block cursor of display can be switched off with `'0'` and switched on with `'1'`.

Additional to the fixed character set of the display there is a choice to define 8 free designed characters more. For starting re-defining the program line begins with command **define=**, followed by the character which should be redefined put between quotation marks. Per character always 8 lines with 5 "pixel" each must be filled in (use `#` and `.` only).

Text begins with corresponding text number; **text=0** all inputs E1..E6 are open; **text=63** all inputs are activated. Each text line must be placed between two identical quotation marks. Double (`"`) or single (`'`) quotation marks in ASCII-code may be used. This way of spelling enables e.g. also showing quotation marks on the LC-display.

Command **wait** enables a pause in between several text pages which will be displayed automatically in sequence. If there is placed a **wait** at the end of several text's, than display repeats in cycles; if there is no **wait** instruction at the end, than text is displayed only one time and stops after last page is shown. A time duration from 0,1 sec. (**wait=1**) up to 23,9 sec. (**wait=239**) can be assigned to the wait instruction. If **wait** is used without an assignement, than the previous assigned pause is executed.

At the very end of the program file a **quit** closes the file. More programming examples (e.g. cursor positioning, a terminal program for DOS) can be found on the optional available disc EA DISK9705 (comments are in german language only).

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LOADING THE FILE

The program file will be copied under DOS via the serial port. The interface must be configurated before with command `MODE` (e.g. `MODE COM2:96,N,8,1`). Word and Word Perfect files must be exported as a plain text file `*.TXT`.

An elegant way loading the program file under Windows is to install the printer driver *Universal/textonly* and link it to the appropriate port. This way you can "print" directly from your text program onto the display memory of the module.

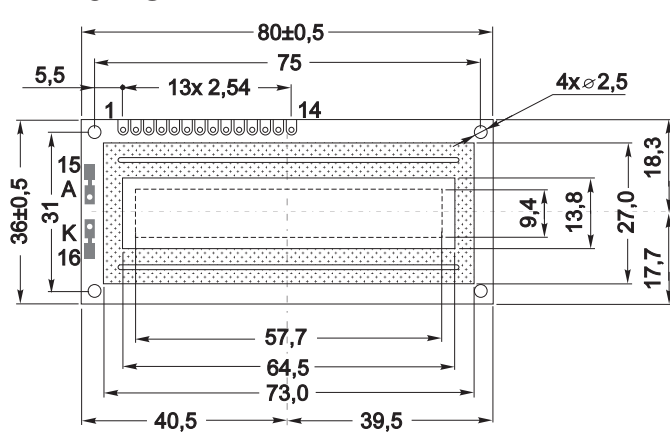
During transfer of the program file to the display, the actual text number is shown on display. Display shows "ERR:1xx" when memory (8k-Byte) is not sufficient enough, at which xx represents the text number of the incident. This error happens only when many multipage text's have been designed (**wait**). Around 240 screen pages can be filed when using a 2x16 display.

```
))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))))
; 50x ) for changing into programming mode
;-----
; this settings are effective after Power On
lines      = 2      ;2 line display
characters  =16     ;and 16 characters per lline
blockcursor = 0    ;cursor off
mode       = 2     ;display mode (RS232 operation)
inputlogic = 1    ;inputs HIGH-active
;-----
; Define and assign your own designed characters
(max.8) define e.g. ='ä'
.##.
.....
.###.
....#
.####
#...#
.####
.....
;-----
text=0      ;define text number 0
"1st line text 0 "
"2nd line text 0 "
;-----
text=4      ;define text number 4
" ELECTRONIC " ;first part of text
" ASSEMBLY "
wait=20     ;wait 2 seconds
" presents: " ;second part of text
" EA 9705-TXT "
wait       ;wait and repeat 1st text
;-----
; quit finishes program mode
quit
```

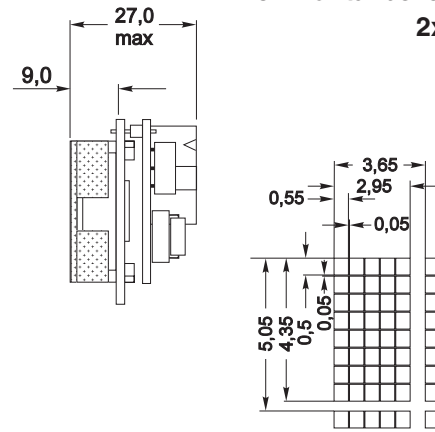
LCD'S WITH TEXT MEMORY

ELECTRONIC ASSEMBLY

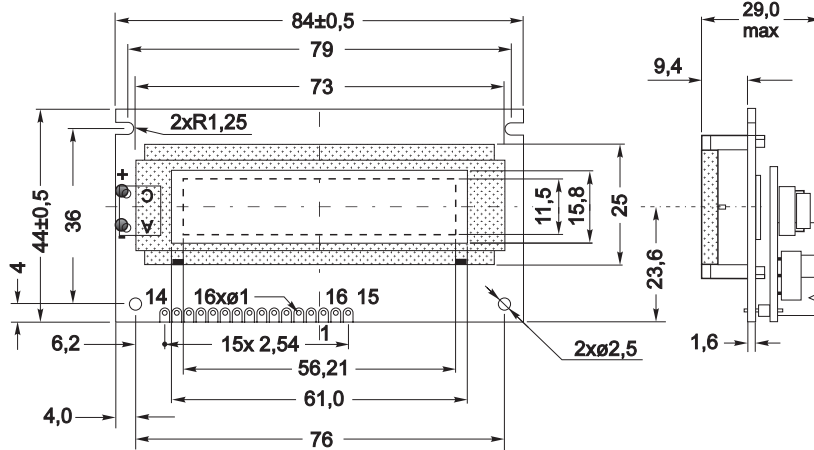
EA TXT162-CNLED



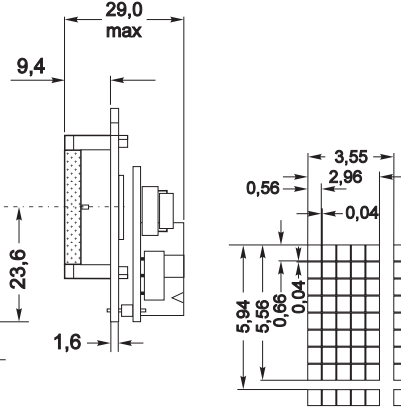
incl. frontal bezel EA 017-1UKE
2x16,ZH4.35mm



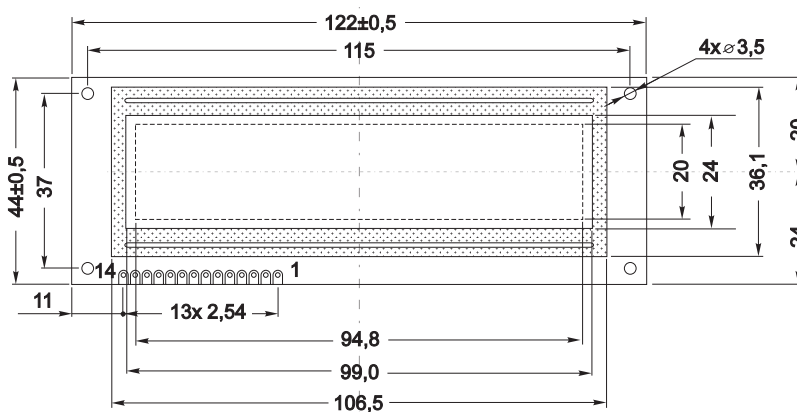
EA TXT162-NLED



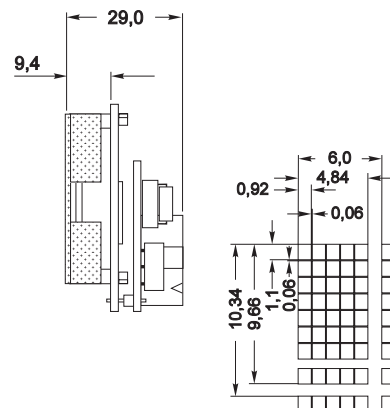
incl. frontal bezel EA 017-2UKE
2x16,ZH5.55mm



EA TXT162-BNLED



incl. frontal bezel EA 017-12UKE
2x16,ZH9.66mm

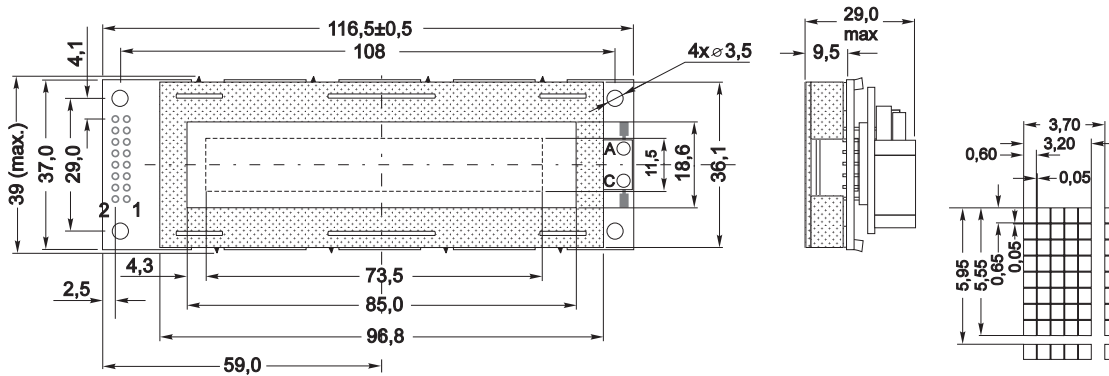


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ELECTRONIC ASSEMBLY

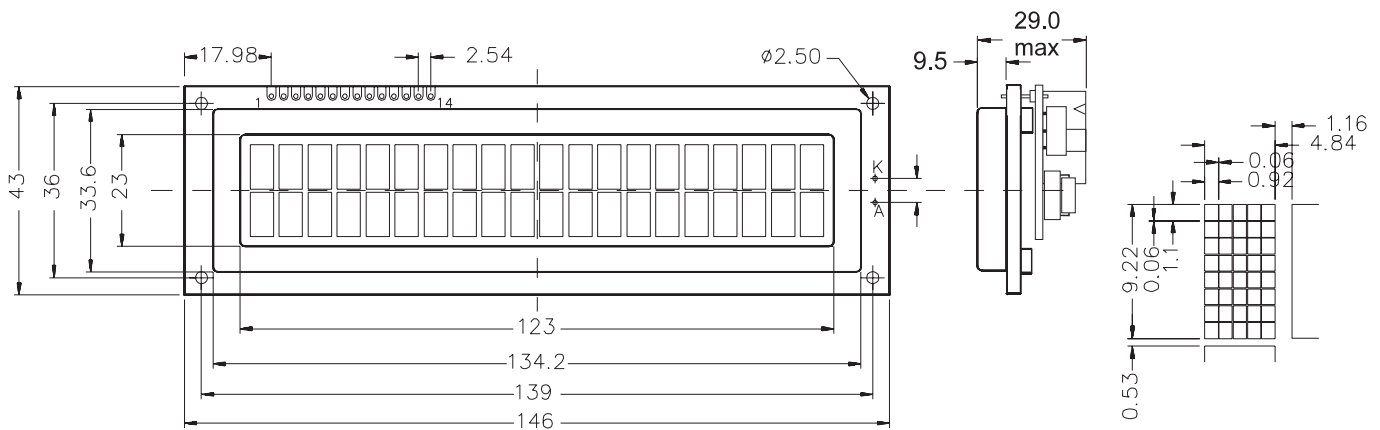
EA TXT202-NLED

incl. frontal bezel EA 017-7UKE
2x20, ZH 5.55mm



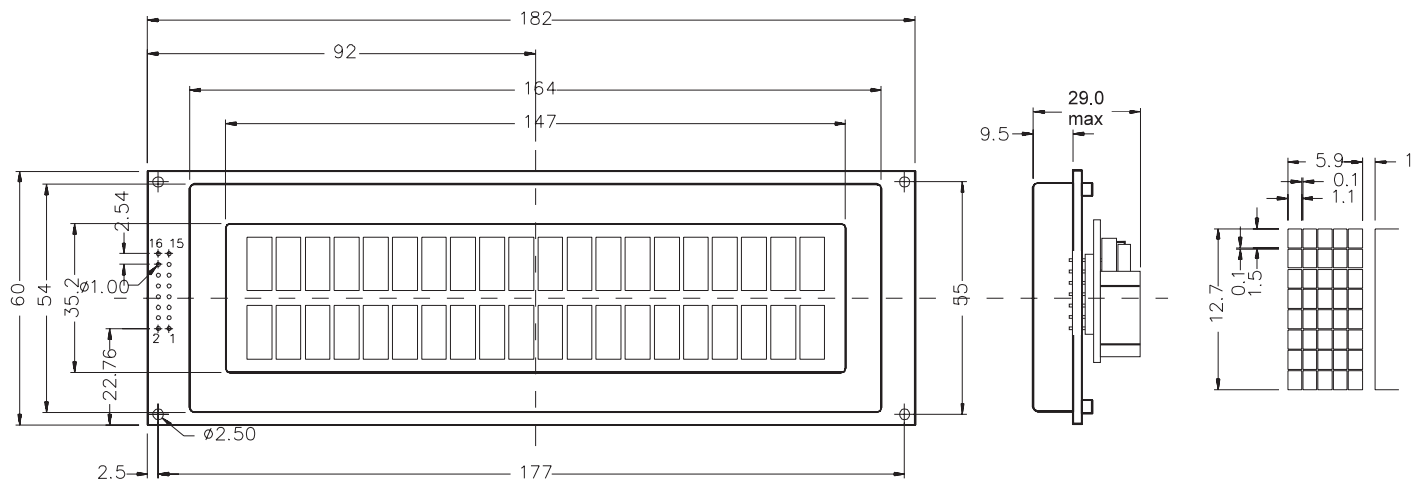
EA TXT202-BHNLED

incl. frontal bezel EA 017-24KE
2x20, ZH 9.2mm



EA TXT202-CNLED

incl. frontal bezel EA 017-27KE
2x20, ZH 12.7mm

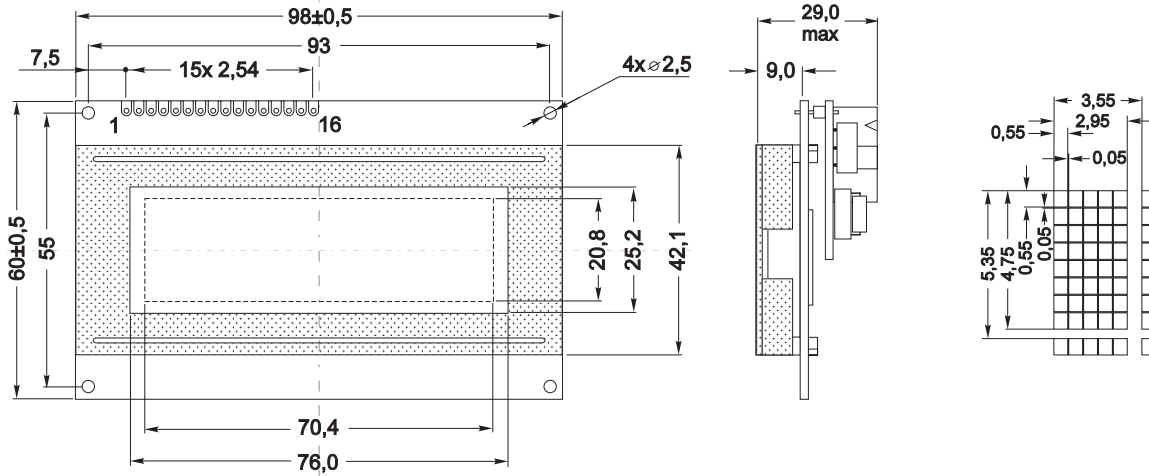


LCD'S WITH TEXT MEMORY

ELECTRONIC ASSEMBLY

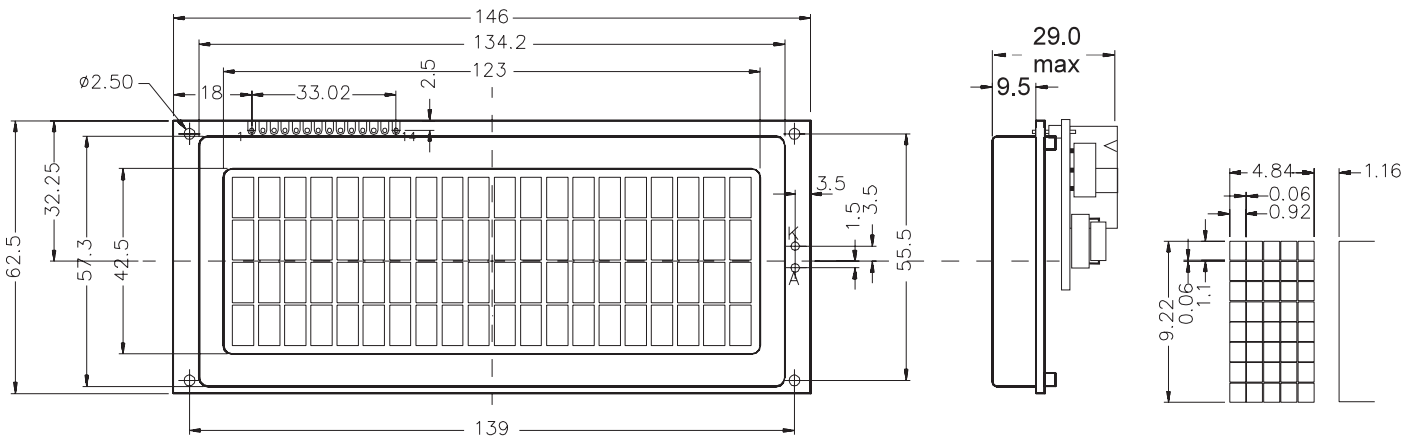
EA TXT204-NLED

incl. frontal bezel EA 017-9UKE
4x20,ZH4.75mm



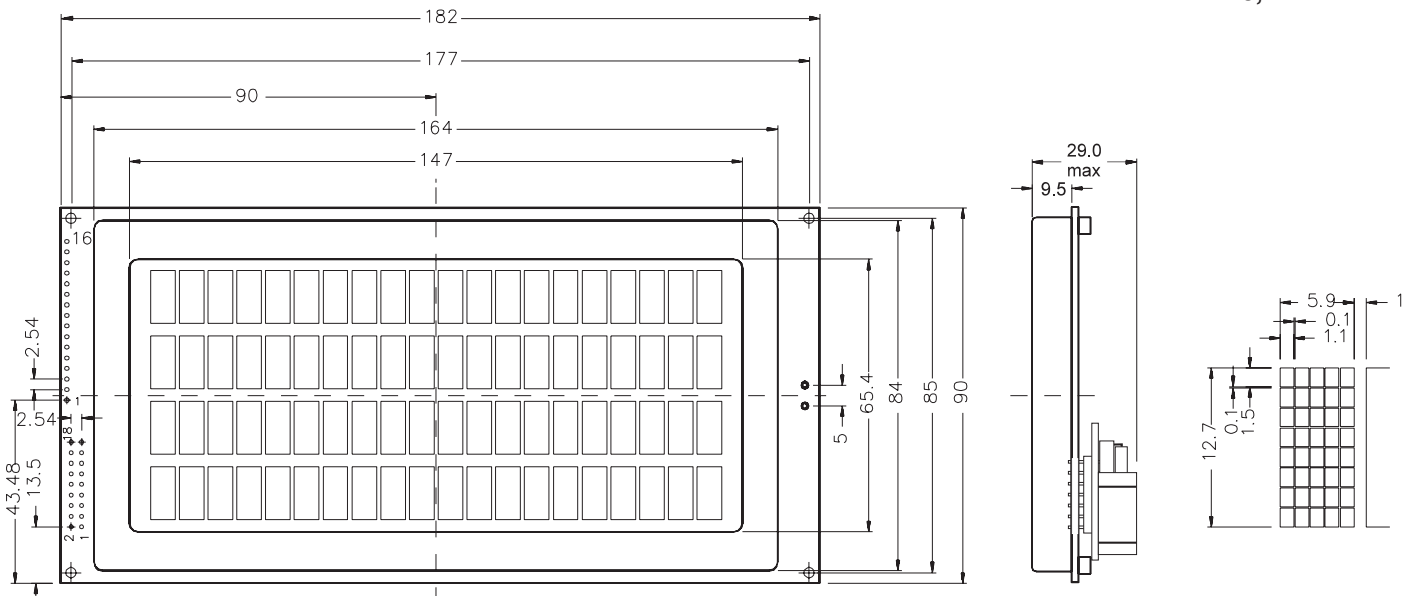
EA TXT204-BNLED

incl. frontal bezel EA 017-25KE
4x20,ZH9.2mm



EA TXT204-CNLED

incl. frontal bezel EA 017-28KE
4x20,ZH12.7mm



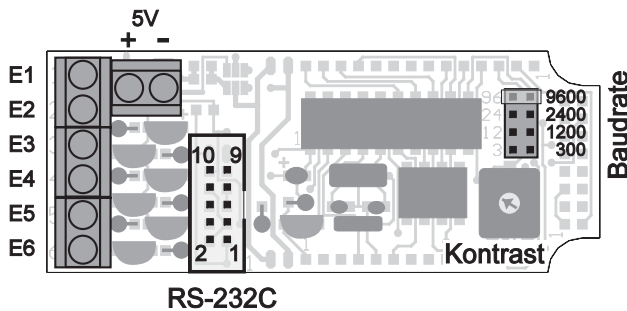
LCD'S WITH TEXT MEMORY

POWER SUPPLY / CONTRAST ADJUSTMENT

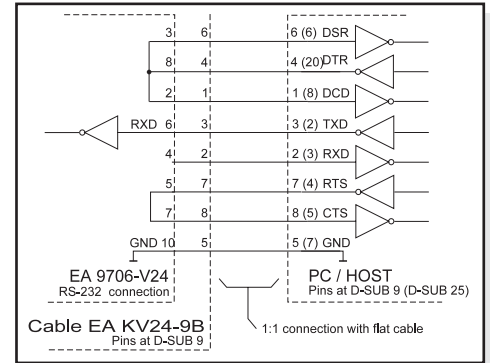
Supply voltage is +5V. Current consumption depends on type of display and its illumination (100-800 mA see table on page 1). Displays can be provided with power either on screw terminals or by RS-232 connector. Contrast adjustment is made with potentiometer.

RS-232C CONNECTOR/ BAUD RATES

Connection to RS-232C interface is made onto a 2x5 pin socket. Displays are connected directly onto the PC with cable EA KV24-9B (available as accessory). Baud rate can be set by jumper on 300, 1200, 2400 or 9600 Baud.

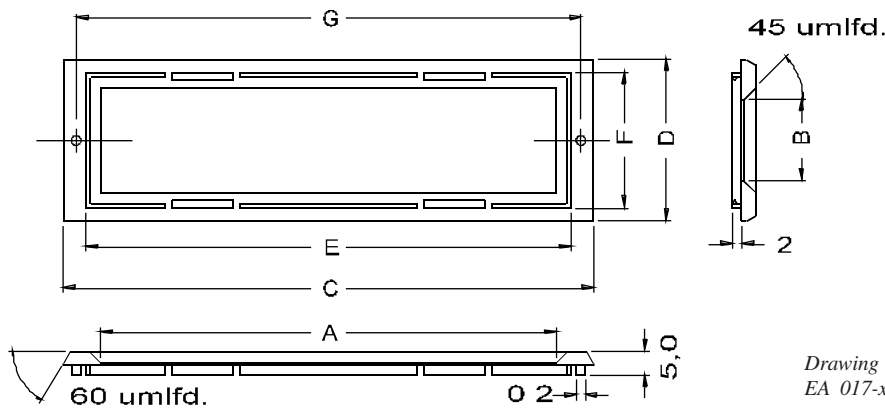


RS-232C socket (2x5 pins)					
Pin	Symbol	Function	Pin	Symbol	Function
1	VDD	+5V	2	DCD	connection to DSR and DTR
3	DSR	connection to DCD and DTR	4	NC	not connected
5	CTS	CTS and RTS bridged	6	RXD	data input
7	RTS		8	DTR	connection to DSR and DCD
9	NC	not connected	10	VSS	0V



CAUTION!
Use ESD precautionary procedures
Electrostatic sensitive components

FRONTAL BEZEL / DIMENSIONS



Drawing shows the nose piece for frontal bezels EA 017-xxUKE;
EA 017-xxKE have a rim on full circumference.

Display Type	Viewing area		Outside dim.		Mounting size			Frontal Bezel
	A	B	C	D	E	F	G	
EA SER162-CNLED	63,5	12,8	79,5	25,0	69,7	19,2	74,5	EA 017-1UKE
EA SER162-NLED	60,0	14,8	76,0	27,0	66,2	21,2	71,0	EA 017-2UKE
EA SER162-BNLED	97,4	22,4	113,4	34,6	103,6	28,8	108,4	EA 017-12UKE
EA SER202-NLED	81,5	17,2	97,5	29,4	87,7	23,6	92,5	EA 017-7UKE
EA SER202-BHNLED	121,0	22,0	137,0	34,2	127,2	28,4	132,0	EA 017-24KE
EA SER202-CNLED	145,0	33,8	161,0	46,0	151,2	40,2	156,0	EA 017-27KE
EA SER242-NLED	92,0	14,8	108,0	27,0	98,4	21,2	103,0	EA 017-14UKE
EA SER402-NLED	153,0	14,8	169,0	27,0	159,2	21,2	164,0	EA 017-4UKE
EA SER164-NLED	60,8	24,2	76,8	36,4	67,0	30,6	71,8	EA 017-8UKE
EA SER204-NLED	75,0	24,2	91,0	36,4	81,2	30,6	86,0	EA 017-9UKE
EA SER204-BNLED	121,0	41,5	137,0	53,7	127,2	47,9	132,0	EA 017-25KE
EA SER204-CNLED	145,0	63,9	161,0	76,1	151,2	70,3	156,0	EA 017-28KE
EA SER404-HNLED	145,0	28,0	161,0	40,2	151,2	34,4	156,0	EA 017-13UKE
EA SER408-NLED	131,0	38,0	147,0	50,2	137,2	44,4	142,0	EA 017-10UKE

Dimensions in mm