

Reference: **SII C591003 Rev 2**  
 Manufacturer: **Seiko Instruments Inc.**  
 Description: **LCD 24 char x 3 lines, + 14 symbols**

- Notes:
- Used in BOSCH Integral phones
  - Based on M50530 LCD driver
  - 13-pin LCD connector
  - 4-bit mode interface via DB4..DB7
  - Optimal contrast at V5 ≈ 8,46V (applied directly to junction R1-C1 via 1.5K resistor)
  - Display bottom same PCB edge as connector
  - LCD connector pin 1 marked on PCB
  - LCD instructions set: cf. M50530 datasheet
  - Although the display shows a 5x8 character dot matrix on 3 lines, the M50530 should be initialized in "Font 12" mode (5x12 dots), 4 lines (x 40 words)
  - Underlining cannot be used for the characters (the underline bit is used to display the symbols)

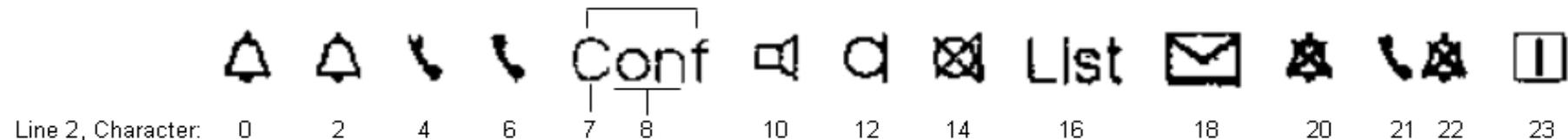
Connector:

LCD connector pin	Signal	M50530 pin
1	VSS, 0V	50
2	VDD, 5V=	49
3	V5 LCD drive	43
4	I/O C1	42
5	I/O C2	41
6	EX	39
7	R/W	40
8	DB4	35
9	DB5	36
10	DB6	37
11	DB7	38
12	?	?
13	?	?

LCD drive voltage (3..14V)  
 I/O control signal input 1  
 I/O control signal input 2  
 Instruction start signal input  
 Read/Write signal input  
 Data bus bit 4 I/O  
 Data bus bit 5 I/O  
 Data bus bit 6 I/O  
 Data bus bit 7 I/O

Symbols:

The underline bits of characters 0,2,4,5,7,8,10,12,14,16,18,20,21,22 and 23 on line 2 are used for displaying the symbols on the top of the display.  
 The "Conf" symbol is divided into "C f" and "on", where as the underline bit of char 7 on line 2 drives the "C f" part and the one of char 8 drives the "on" part.



**Attention: The LCD's DB4..DB7 pins are bi-directional, thus a tri-state interface to the PC is required to avoid short-circuits!**

DB25 pin	DB25 signal	LCD connector pin	LCD Signal	M50530 pin
8..25	GND	1	VSS, 0V	50
N.C.	N.C.	2	VDD, 5V=	49
N.C.	N.C.	3	V5 LCD drive	43
2	D0	4	I/O C1	42
3	D1	5	I/O C2	41
4	D2	6	EX	39
5	D3	7	R/W	40
6 / 10	D4 / ACK	8	DB4	35
7 / 11	D5 / BUSY	9	DB5	36
8 / 12	D6 / PE	10	DB6	37
9 / 13	D7 / SEL	11	DB7	38
N.C.	N.C.	12	?	?
N.C.	N.C.	13	?	?

LCD drive voltage (3..14V)  
 I/O control signal input 1  
 I/O control signal input 2  
 Instruction start signal input  
 Read/Write signal input  
 Data bus bit 4 I/O  
 Data bus bit 5 I/O  
 Data bus bit 6 I/O  
 Data bus bit 7 I/O

Test interface (3-state parallel port buffer):



Test driver (PERL script, using the above test interface):

