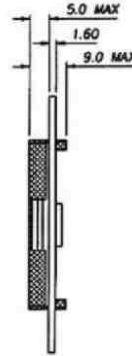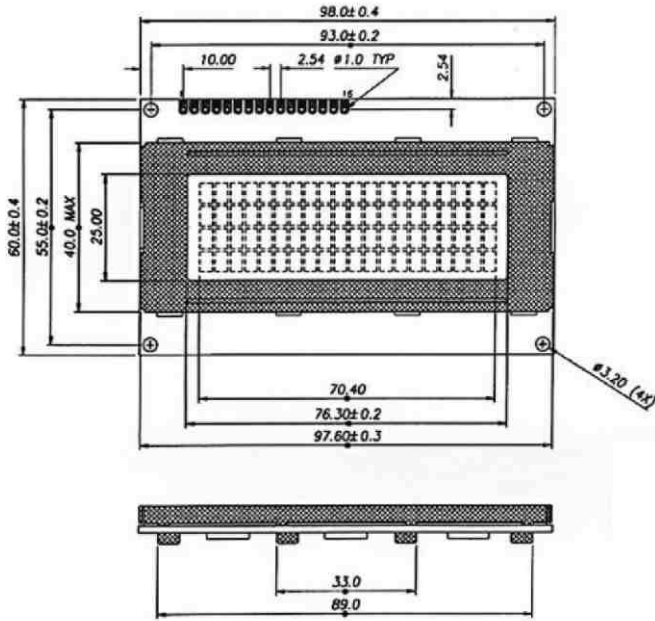# NEUHOLD - ELEKTRONIK INFO

Griesplatz 1 und Griesgasse 33   A 8020 Graz   Fax. 0316/717419   Telefon 0316 - 711245
www.neuhold-elektronik.at

Display 4x20 Zeichen

mit Hintergrundbeleuchtung
Type 20485

PIN NO.	SYMBOL	FUNCTION
1	V_{SS}	Ground terminal of module
2	V_{DD}	Supply terminal of module +5V
3	V_0	Power supply for Liquid crystal Drive
4	RS	Register Select RS = 0 ... Instruction Register RS = 1 ... Data Register
5	R/W	Read/Write R/W = 1 ... Read R/W = 0 ... Write
6	E	Enable
7 - 14	DB0–DB7	Bi-directional Data Bus, Data Transfer is performed once, thru DB0-DB7, in the case of interface data. Length is 8-bits; and twice, thru DB4-DB7, in the case of interface data length is 4-bits. Upper four bits first then lower four bits.
15 16	L- L+	LED or EL lamp power supply terminals.

PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Supply voltage	V_{DD}		4.5	5.0	5.5	V
LCD Drive Voltage Normal Temp Model (TN/STN) Wide Temp Model (STN)	V_{DD}-V_0 (V_{LCD})		4.2 6.4	4.5 6.8	4.8 7.5	V V
Supply Current ¹ 1 x 16 DMM 2 x 16 DMM 1 x 20, 2 x 20 DMM 4 x 20, 2 x 40 DMM	I_{DD}	V_{DD} = 5V V_0 = 0V min	– – – –	1.0 1.0 1.5 2.5	2.0 2.0 3.0 4.0	mA mA mA mA
Input voltage ²	V_{IL} V_{IH}		0 2.0	– –	0.6 V_{DD}	V V
Output voltage ³	V_{OL} V_{OH}	I_{OL} = 1.6 mA I_{OH} = 0.2 mA	– 2.4	– –	0.4 –	V V
LED Lightpipe Current 1 x 8, 1 x 16, 2 x 16 DMM 2 x 20 DMM LED Lightbox Current 1 x 8, 1 x 16 DMM 2 x 16 DMM 1 x 20, 2 x 20, 4 x 20 DMM	I_{LED}	L+ – L- = 5V	20 40 40 40 150		60 80 100 250 300	mA mA mA mA mA

DRIVE VOLTAGE (V_{LCD}) IS NOT IDENTICAL FOR LCD MODULES MANUFACTURES. ACCEPTABLE RESULTS CAN BE OBTAINED BY ADJUSTING V_{LCD}. IF THIS DOES NOT WORK, HITECH CAN MODIFY DISPLAY TO MEET CUSTOM NEEDS.

Note: 1. Applies to DB0 - DB7, E, RS and R/W
       2. Applies to DB0 - DB7
       3. Supply current may slightly exceed MAX.
          Rating if SAMSUNG controller is used
          without pull-up resistor for DB0 - DB7.