



# SPECIFICATIONS

TITLE: 12,1" TFT COLOR MODULE

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## **DATA DISPLAY AG**

**HLD 1210H HIBRITE - 800  
12.1 INCH (30,75 cm)**

**ACTIVE MATRIX COLOR  
HIGH BRIGHTNESS TFT DISPLAY**

**PRELIMINARY  
SPECIFICATION**

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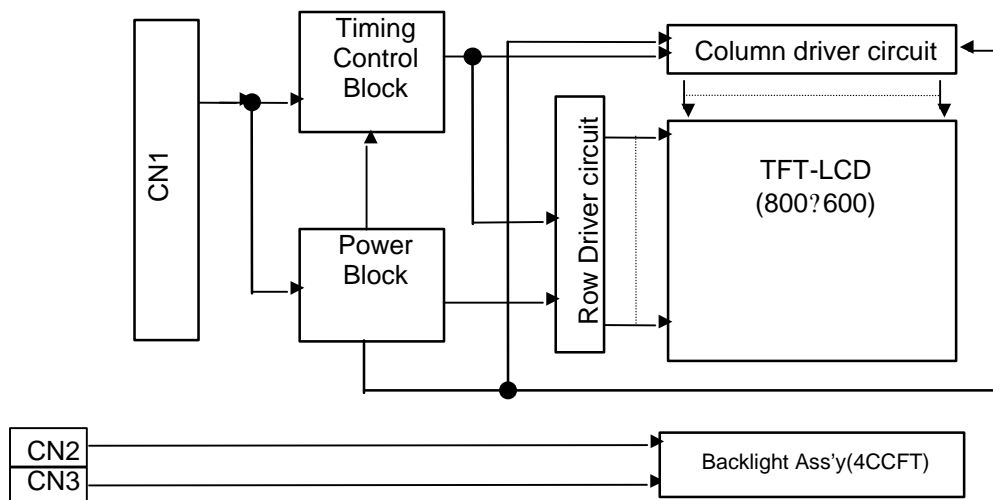
# SPECIFICATIONS

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## 1. GENERAL DESCRIPTION

This specification shall be applied to Data Displays Color Active Dot Matrix Liquid Chrystal Display (ALCD) with CCFL backlight.



### General Features

Active screen size	12.1 inches (30.75 cm) diagonal
Outline dimensions	280 (H) x 218 (V) x 12 (D) mm (typ)
Pixel pitch	0.3075 mm x 0.3075 mm
Pixel	800 horiz. By 600 vert. pixels
	RGB stripe arrangement
Color depth	6-bit, 262,144 colors
Luminance,White	800 cd/m <sup>2</sup> (typ)
Power Consumption	Total 29 Watt, typ (1Watt @ Vcc, 7 Watt @ Lamp)
Weight	795 g (typ), 810 g (max)
Display operating mode	transmissive mode, normally white
Surface treatments	hard coating (3H), anti-glare treatment of the front polarizer



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## 2. MAXIMUM RATINGS

The following are maximum values which, if exceeded, may cause faulty operation or damage to the unit.

Table 1: ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Values		Units	Notes
		Min.	Max.		
Power Input Voltage	$V_{CC}$	- 0.3	+ 3.6	Vdc	at 25°
Operating Temperature	$T_{OP}$	0	+ 50	°C	1,2
Storage Temperature	$T_{ST}$	- 20	+ 60	°C	1,2

Note 1: Temperature at 5mm above display center of LCD-Module

$T_a = 40^\circ$  : 90% RH max.

$T_a > 40^\circ$  : absolute humidity shall be less than 90% RH, these shall be no dew condensation

Note 2: Humidity min. 5% RH, max. 90% RH



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## 3. ELECTRICAL SPECIFICATIONS

### 3.1 Electrical Characteristics

The HLD 1210H requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second input which powers the CCFL, is typically generated by an inverter. The inverter is an external unit to the LCD.

Table 2: ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Values			Units	Notes
		Min.	Typ.	Max.		
<b>MODULE:</b>						
Power Supply Input Voltage	$V_{CC}$	3.0	3.3	3.6	Vdc	
Power Supply Input Current	$I_{CC}$	-	0.310	0.355	A	1
Power Consumption	$P_C$	-	1.0	1.2	Watts	1
Rush current	$I_{RUSH}$			1.8	A	2
<b>LAMP</b>						
Operating Voltage	$V_{BL}$	540	580	665	$V_{RMS}$	3
Operating Current	$I_{BL}$	3.0	6.0	8.0	mA	
Established Starting Voltage						4
at 25°				875	$V_{RMS}$	
at 0°				1300	$V_{RMS}$	
Operating Frequency	$f_{BL}$	30	55	60	kHz	
Power Consumption	$P_{BL}$	4.0	7.0	8.6	Watts	5
Half Life Time		25,000	-		Hrs	6

Note 1: The current draw and power consumption specified is for 3.3 Vdc at 25° and  $f_v$  at 60Hz (at Black pattern displayed)

Note 2: The duration of rush current is about 20 ms

Note 3: The variance of the voltage is  $\pm 10\%$ .

Note 4: The output voltage at the transformer in the inverter must be high considering to the loss of the ballast capacitor in the inverter.

Note 5: The lamp power consumption shown above does not include loss of external inverter.

Note 6: The life time is determined as the time at which brightness of lamp is 50 % compare to that of initial value at the max. lamp current.



## 3.2 Interface Connections

This LCD employs three interface connections, a 41 pin connector is used for the module electronics and two connectors, a three pin connector is used for the integral backlight system. The electronics interface connector is model DF9B-41P-1V manufactured by Hirose and its mate is DF9B-41S-1V. The pin configuration for the connector is shown in the table below.

Table 3: MODULE CONNECTOR PIN CONFIGURATION

Pin	Symbol	Description	Notes
1	Vss	Ground	Connect to Vss, see Note 1
2	CLK	Main clock	
3	Vss	Ground	Connect to Vss, see Note 1
4	Hsync	Horizontal sync.	
5	Vsync	Vertical sync.	
6	Vss	Ground	Connect to Vss, see Note 1
7	Vss	Ground	Connect to Vss, see Note 1
8	Vss	Ground	Connect to Vss, see Note 1
9	R0	Red data	Red data least significant bit (LSB)
10	R1	Red data	
11	R2	Red data	
12	Vss	Ground	Connect to Vss, see Note 1
13	R3	Red data	
14	R4	Red data	
15	R5	Red data	Red data most significant bit (MSB)
16	Vss	Ground	Connect to Vss, see Note 1
17	Vss	Ground	Connect to Vss, see Note 1
18	Vss	Ground	Connect to Vss, see Note 1
19	G0	Green data	Green data least significant bit (LSB)
20	G1	Green data	
21	G2	Green data	
22	Vss	Ground	
23	G3	Green data	
24	G4	Green data	
25	G5	Green data	Green data most significant bit (MSB)
26	Vss	Ground	Connect to Vss, see Note 1
27	Vss	Ground	Connect to Vss, see Note 1
28	Vss	Ground	Connect to Vss, see Note 1
29	B0	Blue data	Blue data least significant bit (LSB)
30	B1	Blue data	
31	B2	Blue data	
32	Vss	Ground	Connect to Vss, see Note 1
33	B3	Blue data	
34	B4	Blue data	
35	B5	Blue data	Blue data most significant bit (MSB)
36	Vss	Ground	Connect to Vss, see Note 1
37	DTMG	Data timing signal	
38	L_R	Horiz. display mode select signal	see Note 3
39	VCC	Power input	+3.3 Vdc power supply input, see Note 2
40	VCC	Power input	+3.3 Vdc power supply input, see Note 2
41	U D	Vertical display mode select signal	see Note 4

Note 1: All GND (ground) pins should be connected together and the LCD's metal frame.

Note 2: All Vcc (power input) pins should be connected together. The mating connector part number is SM02(8.0)B-BHS-1-TB or equivalent. The pin configuration for the connector is shown in the table below.

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