



(11) **EP 2 166 405 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
25.08.2010 Bulletin 2010/34

(51) Int Cl.:
G02F 1/13357^(2006.01) G02B 6/00^(2006.01)

(43) Date of publication A2:
24.03.2010 Bulletin 2010/12

(21) Application number: **09251394.4**

(22) Date of filing: **27.05.2009**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK TR**
Designated Extension States:
AL BA RS

- **Morishima, Akitoshi**
Tokyo 100-8220 (JP)
- **Sato, Katsunari**
Tokyo 100-8220 (JP)
- **Nishijima, Abiko**
Tokyo 100-8220 (JP)
- **Ohashi, Shigeo**
Tokyo 100-8220 (JP)

(30) Priority: **18.09.2008 JP 2008238821**
18.09.2008 JP 2008238803
16.04.2009 JP 2009099520

(71) Applicant: **Hitachi, Ltd.**
Chiyoda-ku
Tokyo (JP)

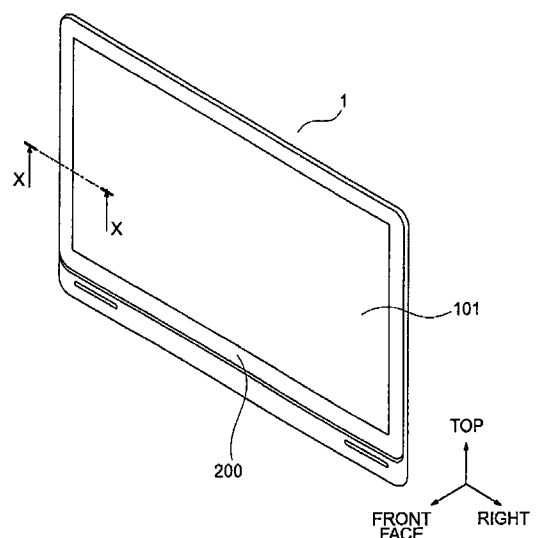
(74) Representative: **Calderbank, Thomas Roger et al**
Mewburn Ellis LLP
33 Gutter Lane
London
EC2V 8AS (GB)

(72) Inventors:
• **Yamashita, Yoshiharu**
Tokyo 100-8220 (JP)

(54) **Liquid crystal display unit**

(57) There is provided a slim liquid crystal display unit having a large screen by providing a slim structure capable of sufficiently radiating the heat from a light source. The liquid crystal display unit 1 according to the present invention includes: a liquid crystal panel 101; an optical guiding board 121 installed on a rear face thereof; a pair of light source-mounted substrate 132 disposed, opposing right and left side faces thereof; a light source 131 mounted on the light source-mounted substrate 132; a metal frame 133 connected on the opposite side to the optical guiding board 121 of the light source-mounted substrate 132; a chassis member 111 for supporting the optical guiding board 121 and a reflection sheet group 150; and a thermal diffusion member 161 fixed onto the metal frame 133 along with the chassis member 111. The chassis member 111 has a stepped portion 111a in the vicinity of the light source 131. Between the stepped portion 111a and the reflection sheet group 150, a thermal insulation member 112 is attached.

FIG. 1



EP 2 166 405 A3



EUROPEAN SEARCH REPORT

Application Number
EP 09 25 1394

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	WO 2007/129419 A1 (SHARP KK [JP]; HAMADA TETSUYA) 15 November 2007 (2007-11-15) * paragraphs [0022], [0028], [0030], [0033], [0035], [0036]; figures 1,2,5 * -----	1-16	INV. G02F1/13357 G02B6/00
Y	WO 2008/103437 A1 (LUMINUS DEVICES INC [US]; KARLICEK ROBERT F JR [US]; CHU DANIEL YEN [U]) 28 August 2008 (2008-08-28) * page 5, line 1 - page 6, line 28; figure 1a * * page 8, line 11 - line 26; figure 2 * * page 12, line 14 - line 25; figure 7 * -----	1-16	
A	JP 2006 227074 A (DENSO CORP) 31 August 2006 (2006-08-31) * the whole document * -----	1-16	
A	JP 2008 047396 A (FUJIFILM CORP) 28 February 2008 (2008-02-28) * the whole document * -----	1-16	
A	GB 2 430 071 A (SHARP KK [JP]) 14 March 2007 (2007-03-14) * the whole document * -----	1-16	TECHNICAL FIELDS SEARCHED (IPC)
A	EP 0 607 453 A1 (SEIKO EPSON CORP [JP]) 27 July 1994 (1994-07-27) * the whole document * -----	1-16	G02F G02B
A	US 2005/073626 A1 (YEOM MOON-SOO [KR]) 7 April 2005 (2005-04-07) * the whole document * -----	1-16	
A	WO 2008/090642 A1 (SHARP KK [JP]; HAMADA TETSUYA) 31 July 2008 (2008-07-31) * the whole document * -----	1-16	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 19 July 2010	Examiner Aichmayr, Günther
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 2
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 25 1394

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-07-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007129419 A1	15-11-2007	CN 101416101 A	22-04-2009
		US 2009128732 A1	21-05-2009

WO 2008103437 A1	28-08-2008	US 2008205080 A1	28-08-2008
		US 2008205078 A1	28-08-2008

JP 2006227074 A	31-08-2006	JP 4301177 B2	22-07-2009

JP 2008047396 A	28-02-2008	NONE	

GB 2430071 A	14-03-2007	DE 112005001170 T5	12-04-2007
		WO 2005114045 A1	01-12-2005
		JP 2006156324 A	15-06-2006
		US 2008129927 A1	05-06-2008
		US 2007153548 A1	05-07-2007

EP 0607453 A1	27-07-1994	DE 69331896 D1	13-06-2002
		DE 69331896 T2	26-09-2002
		DE 69333439 D1	08-04-2004
		DE 69333439 T2	10-02-2005
		HK 1014583 A1	15-11-2002
		WO 9401795 A1	20-01-1994
		JP 2000082314 A	21-03-2000
		JP 2000076915 A	14-03-2000
		JP 2000075294 A	14-03-2000
		JP 3256970 B2	18-02-2002
		JP 3555619 B2	18-08-2004
		JP 2003123524 A	25-04-2003
		US 5619351 A	08-04-1997

US 2005073626 A1	07-04-2005	KR 20050034764 A	15-04-2005

WO 2008090642 A1	31-07-2008	CN 101583824 A	18-11-2009
		US 2010027296 A1	04-02-2010

专利名称(译)	液晶显示器		
公开(公告)号	EP2166405A3	公开(公告)日	2010-08-25
申请号	EP2009251394	申请日	2009-05-27
[标]申请(专利权)人(译)	株式会社日立制作所		
申请(专利权)人(译)	HITACHI , LTD.		
当前申请(专利权)人(译)	HITACHI , LTD.		
[标]发明人	YAMASHITA YOSHIHARU MORISHIMA AKITOSHI SATO KATSUNARI NISHIJIMA ABIKO OHASHI SHIGEO		
发明人	YAMASHITA, YOSHIHARU MORISHIMA, AKITOSHI SATO, KATSUNARI NISHIJIMA, ABIKO OHASHI, SHIGEO		
IPC分类号	G02F1/13357 G02B6/00		
CPC分类号	G02B6/0085 G02B6/0031 G02B6/0073		
优先权	2009099520 2009-04-16 JP 2008238803 2008-09-18 JP 2008238821 2008-09-18 JP		
其他公开文献	EP2166405A2		
外部链接	Espacenet		

摘要(译)

通过提供能够充分地散发来自光源的热量的细长结构，提供了一种具有大屏幕的纤薄液晶显示单元。根据本发明的液晶显示单元1包括：液晶面板101；光学导向板121安装在其背面上；一对光源安装基板132，其左右侧面相对设置；安装在光源安装基板132上的光源131；金属框架133连接在光源安装基板132的光导板121的相对侧；底座构件111，用于支撑光导板121和反射片组150；底座构件111与底座构件111一起固定在金属框架133上。底座构件111在光源131附近具有台阶部分111a。在台阶部分111a和反射片组150之间，隔热构件112附接有。

FIG. 1

