## Specification of FUJITSU TFT-LCD module

## FLCV-07

Approval								
Date :								
Ву :								

Specification No.: Tech Bes 99/28900
Issue Date : Feb. 25, 2002
Issued by:
T. Naka
Director

Director LCD Design Dep. LCD Technology Div. LCD Group

## FUJITSU LIMITED

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	REVIS	ION H	ISTORY				<u> </u>	<u>CV-07</u>	<u> </u>
	Revision	Date	Prepared		Checked	Approved	Summar	у	
	01A	Aug. 26, 1999	M.Miyahara	M.Fukuha	ara	T.Naka	1st issue		
	02B	Jan. 6, 1999	M.Miyahara	M.Fukuha	ıra	T.Naka	Change fuses(F1~F	3)	
	03C	June 30, 2000	M.Miyahara	M.Fukuha	ura	T.Naka	Change wire in the from second-class to (T1,T2)	transformer first-class	
	04D	Feb. 25, 2002	M.Miyahara	M.Fukuha	ıra	T.Naka	Change frequency o control signal from 2 271Hz. C3 and R21 in accordance with t	f brightness 290Hz to are changed his change.	
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08	5 20000811 M	iyahara	Fukuhara	Revised p1			$\mathbf{F} \mathbf{I} \mathbf{C} \mathbf{V} - 0$		_
04	4 20000630 M 3 20000106 M	iyahara iyahara	Fukuhara Fukuhara	Revised p1 Revised p1	,3,6~8 (Add 03C) (Add 02B)		Tech Bes 99/2890	0 CUST	Т.
06 EDI	6 20020225 M T DATE I	iyahara DESIG. CHE	<b>Fukuhara</b> CK APPR.	Revised p1	,2,6 (Add 04D) DESCRIPTION				-
D	ESIG. 19990	826 Hayashir 1	notoCHECK N	Iiyahara	APPR.	Fukuhara			

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A	© 1. APH This show Table	PLICATIONS specification i vn in Table 1-1 e 1-1 Applied	5 s applie Model 1	ed to the I Number	NVERTER n	odule suit	ted for 15	.0-inch TFT <sup>.</sup>	-LCD moo	lules	А
	No.	Model Nur	nber	Product Drawing	Number	Inverter Applied	Revision	Re	mark		
	1	FLC38XGC6	V-05	NA1902	)-C25*						
R	2	FLC38XGC6	V-06	NA1902	D-C281/C291	-		Panel Cons	struction:		в
D	3	FLC38XGC6	V-06S	NA1902	D-C282	- 01A~04I	D all	Independe	ent Cs Tyj	ре	_
	4	FLC38XGC6	V-06A	NA19020	)-C292						
	5	FLC38XGC6	V-06B	NA19020	)-C293	04D only	y	Panel Cons Cs on Gat	struction: e Type		
D	2. PRODUCT NAME AND MODEL NUMBER         2-1       Product Name       : INVERTER         2-2       Model Name       : FLCV-07         2-3       Product Drawing Number       : NA19002-4225         3. OVERVIEW       This INVERTER module can turn on four Cold Cathode Fluorescent Lamps (CCFLs) of the backlight.         D       This inverter has a function to control ON and OFF state, and regulates brightness levels by applying external signals.         The power supply of this INVERTER module is +12v DC.										
DL SECTI	4. ABS	OLUTE MA e 4-1 shows the	absolut	<b>M RATIN</b> te maximu	NGS Im ratings.					ŀ	
NTRC	Table	e 4-1 Absolute	e Maxim	um Ratin	gs						
VT CC		Iter	n		Symbol	MIN.	TYP.	MAX.	Unit		F
IUME	Sup	ply Voltage			Vin	-0.3		14	V		-
DOC	ON	and OFF Cont	rolling	Voltage	Vent	-0.3	_	Vin	V		
	Brig	htness Regula	ting Vol	tage	Vvr	-0.3		4.0	V		
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A Table 5-1 Becommended Operating Conditions.										
	Item		Symbol	MIN.	TYP.	MAX.	Unit	Re	emark	
┥	Supply Voltage		Vin	10.8	12.0	13.2	V			
	ON and OFF	ON	Vent	0		0.8	V			
	Controlling	OFF	Vent	2.1		Vin	V			
	Brightness Regul Voltage	ating	Vvr	0		3.5	V	(*)		В
	(*) Brightness is Brightness is	s maximur s minimur	m when Vy m when Vy	vr=0v vr=3.5v						
;	6. ELECTRICAL Table 6-1 shows t <u>Table 6-1 Electric</u>	SPECII The electri	FICATIO cal specific cations	<b>NS</b> cations.		1 1		I		c
1	Item	Symbo	ol (	Condition	MIN.	TYP.	MAX.	Unit	Remark	
$\frac{1}{2}$	Supply Current	Vin	Vin=12.	0v, Vvr=0v		1570	1750	mA		╎┝─
	Lighting Frequency	t Iout	Vin=12.	0v, Vvr=0v	40	50	16.0	kHz		
	(2 tubes total)	Iout	Vin=12.	Vin=12.0v, Vvr=3.5v		7.8	9.0	mA		
	Output Voltage	Vt	Vt Vin=12.0v		1500	1580	_	Vrms	3	D
	Minimum Brightness	. —	Vin=12.	0v,Vvr=3.5v	_	—	20	%	*1	
	*1.Percentage to	the maxir	num brigh	tness (Vvr=0	v).					
<ul> <li>7. OUTWARD APPEARANCE Fig.7-1 shows outward appearance. (see page 8) </li> <li>④ Frame ground(FG) patterns around fitting hole are connected to signal ground(GND).</li> </ul>										
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A	<b>8. INTERFA</b> Table 8-1 a	ACE CO und 8-2 sł	NNECT( nows the n	<b>)R</b> ame an	d the pin assignme	nt of interf	F	<u>LCV</u>	07]	А
		<u>Cable 8-1</u> PinNo.	<u>Input Sig</u> Symbol	<u>rnals</u>	[CN] Function	1:53261-08	90 (Molex)] Remark			
		1	Vin	Power	r Supply (+12v)					
		2	Vin	Power	r Supply (+12v)					
		3	GND	Grour	nd					
		4	GND	Grour	nd					
В		5	Vcnt	ON ai	nd OFF Controlling	, Voltage	(*1)			В
		6	Vvr	Brigh	tness Regulating Vo	oltage	(*2)			
		7	N.C.							
		8	N.C.							
С	Us	er's Conr HOUSI TERMI	klight is of ghtness is ghtness is lector NG : 510 NAL : 500	ff when maxim minim 021-080 058-8*0	0 (Me 0 or 50079-8*00 (Me	olex) olex)				С
	<u>1</u>	able 8-2	Output S	ignals	[CN2,3:S]	M04(4.0)B·	BHS-1-TB]			
		PinNo.	Symbol		Function		Remark			
		1	Vout-Hi	Light	ting Voltage (High)					
D		2	Vout-Hi	Light	ting Voltage (High)					
	-	3	N.C.							D
ECTION		4	Vout-Lo	Light	ting Voltage (Low)					
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ATE							<b>DIOU</b>	0.7		
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4 <b>12</b> .	PRECA As this i smoke, a Please a	UTION nverter n and fire. dhere to	IS nodule gen the follow	nerates a l ring precau	nigh voltage, ir ntions to secur	ncorrect operation may e high reliability and	y occur electric safety.	shock,			
3	<ol> <li>Make the e</li> <li>Tran posit any c</li> <li>Be ca powe</li> <li>Ther techn If the the techn</li> </ol>	e sure tha quipment sformer a ion of the quality an reful of e r supply l e is no in ician sho	at the inve t is broken and coil ge e equipme ad reliabili electric sho before pul adication t puld handl	erter is pro a down and nerate ma nt and cor ity of the e ock, for the ling in and o warn you le the inver-	tected from the l operates abno- gnetic flux leal offirm that it de quipment. are stays a high l pulling out th u about the high eter.	e application of abnorm ormally. xage. Please install the bes not cause any error a voltage in the interna e signal connector. gh voltage. Make sure	hal voltage even e inverter in the or operation, or al circuit. Turn that only auth	when e right harm off the orized			
- 	<ul> <li>If the equipment is designed so that the inverter is possibly touched by outsider, it is requested to indicate warnings clearly for fear of electric shock and burns.</li> <li>(5) Please keep the inverter out of water drop and dust because it may give any trouble.</li> <li>(6) Some trouble may happen if any conductive materials such as metal touch the terminal. Make sure that any conductive material around the inverter doesn't touch the terminal.</li> <li>(7) When designing equipment, high voltage part of inverter, that is the wiring between transformer and output connector, must keep the distance of 3mm or more from any</li> </ul>										
)	insul (8) Pleas It ma Pleas (9) Exce becon (10) Plea rare (11) If it	ator, ever e pick up y damage e touch t ssive mec ne the can se don't g shortage is difficu	n though t o from the e inverters he edge of chanical fo use of any give any sl e may becoult to mea	he conduct package a s to pile th f printed ci rcce to the trouble su hock to the ome the cau	vive material is nd incorporate em up. rcuit board onl electric parts a ach as pattern o e transformer o use of smoke an emperature ar	apart 3mm from the i the inverter into the e y, not electric parts. nd printed circuit boar exfoliation. Handle thi f the inverter or hurt to nd fire. ound the inverter, ple	nverter. equipment one k rd of the inverte s inverter caref the signal cable ase consider th	er may ully. . Even at the			
<ul> <li>(11) If it is difficult to measure the temperature around the inverter, please consider that the temperature of transformer and inductor should be as follows.</li> <li>Transformer(T1,T2):under 95°C</li> <li>Inductor(L1,L2):under 100°C</li> <li>(12) Interference may be seen depending on the combination of inverter and LCD module. Please refer to Table1-1.</li> </ul>											
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A	13. WARRANTY The warranty p due to the caus	period is one year from ses other than intentiona	a manufacturing date al damaging acts are	e. Products failed o replaced without c	during this period harge.	A
В	14. OTHERS Specifications of If any doubt all agreement. This inverter if reliability, such life support.	of this inverter module a bout the specification is is not intended to be a n as aerospace equipme	are subject to change raised, both parties used for the equipm ent, nuclear control s	must make the be nent which require systems, and medi	st efforts to reach es extremely high cal equipment for	в
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