To :

TENTATIVE

Specification of INVERTER module

FLCV-18

Approval
Date :
By :

This Product is designed, developed and manufactured as contemplated for general use, including without limitation, general office use, personal use, household use, and ordinary industrial use, but is not designed, developed and manufactured as contemplated for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could lead directly to death, personal injury, severe physical damage or other loss (hereinafter "High Safety Required Use"), including without limitation, nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system. If customer's product possibly falls under the category of High Safety Required Use, please consult with our sales representatives in charge before such use. In addition, FDTC shall not be liable against the customer and/or any third party for any claims or damages arising in connection with the High Safety Required Use of the Product without permission.

Specification No. : Tech Bes LCD-00214

Issue Date : Sept. 08. 2003

Issued by : K. Tanaka

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Director
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FUJITSU DISPLAY TECHNOLOGIES CORPORATION

REVISION HISTORY

Revision	Date	Prepared	Checked		Approved	Summary
01	Sept/08/'03	Nagatani		T.Kobayashi	K.Tanaka	1st issue

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1. APPLICATIONS

This specification is applied to the backlight lighting for the inverter of the LCD module manufactured by FDTC.

2. PRODUCT NAME AND MODEL NAME

2-1. Product Name : Inverter Module

2-2. Model Name : FLCV-18

2-3 Suitable LCD module : FLC51UXC8V-**

3. ABSOLUTE MAXIMUM RATINGS

Table 3-1 shows the absolute maximum rating of this Inverter module.

Table 3-1. Absolute Maximum Ratings

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Input voltage	Vin	-0.3	—	14.0	V	
ON/OFF Control voltage	Vcnt	-0.3	—	Vin	V	
Brightness control voltage	Vvr	-0.3	—	4.0	V	

4. RECOMMENDED OPERATING CONDITIONS

Table 4-1 shows the recommended operating conditions of this Inverter module.

Table 4-1. Recommended Operating Conditions

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Input voltage	Vin	10.8	12.0	13.2	V	
ON/OFF Control voltage	Vcnt	0	—	0.8	V	Turn on fix voltage
		2.1	—	Vin	V	Turn off fix voltage
Brightness control voltage	Vvr	0	—	3.5	V	Vvr=0V (Max.Brightness) Vvr=3.5V (Min. Brightness)

5. ELECTRICAL SPECIFICATIONS

Table 5-1 shows the electrical specifications of this Inverter module.

Table 4-1. Recommended Operating Conditions

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Input current	Iin	Vin=12V,Vvr=0V	—	(2.7)	(TBD)	mA	
Lighting frequency	F	Vin=12V,Vvr=0V	(40)	(50)	(60)	KHz	
Output current (Current for each CCFL)	Iout1	Vin=12V,Vvr=0V	5.5	6.0	6.5	mA	
	Iout2	Vin=12V,Vvr=3.5V	(2.0)	(2.5)	(3.0)	mA	
Open output voltage	Vo	Vin=12V,Vvr=0V (Ta=25±3°C)	1500	—	—	Vrms	At the no-load
Brightness control frequency	Fc1	Vin=12V,Vvr=0V	TBD	(275)	TBD	Hz	
Required current capacity	Imax		5	—	—	A	Capacity of power supply of current for the purpose of validating the fuse.

Note) Ta=25±3°C

6. INTERFACE SPECIFICATIONS

Table 6-1,2,3 shows the description and configuration of interface signals (CN1).

Table 6-1 Interface signals [CN1 : 53261-1290 (Molex)]

Pin No.	Symbol	Function	Remark
1	Vin	Power supply voltage (+12V)	
2	Vin	Power supply voltage (+12V)	
3	Vin	Power supply voltage (+12V)	
4	Vin	Power supply voltage (+12V)	
5	GND	Power supply ground	
6	GND	Power supply ground	
7	GND	Power supply ground	
8	GND	Power supply ground	
9	Vcnt	Lighting control	
10	GND	ground	Signal ground
11	Vvr	Brightness control	
12	N.C.	N.C.	

Suitable connector : Housing : 51021-1200 (Molex)

Note1) N.C terminal should keep open.
Note2) Keep the circuit GND (10pin) apart from high-voltage GND (5-8pin).
Otherwise, the screen may cause flickering.

Table 6-2 Interface signals [CN2,4 : SM02B-BHSS-1 (JST)]

Pin No.	Signal Name	Function	Remarks
1	V_H	Output (High voltage)	
2	V_L	Output (Low voltage)	

Suitable connector: Housing : BHSR-02VS-1 (JST)
Contact : SBHS-002T-P0.5

Table 6-3 Interface signals [CN3,5 : SM04(9-E2)B-BHS-1 (JST)]

Pin No.	Signal Name	Function	Remarks
1	V_H	Output (High voltage)	
2	V_H	Output (High voltage)	
3	-	N.C.	
4	V_L	Output (Low voltage)	
5	V_L	Output (Low voltage)	

Suitable connector: Housing : BHR-05VS-1 (JST)
Connector : SBH-001T-P0.5

7. MECHANICAL SPECIFICATIONS

Figure 7-1 shows the outline drawing.

8. ENVIRONMENTAL SPECIFICATIONS

Table 8-1 shows the environmental specifications.

Table 8-1. Environmental Specifications

Item	Condition		Remark
Temperature	Operation	0~50ºC	
	Storage	-25~80ºC	
Humidity	Operation	20~95%RH	Maximum wet-bulb temperature should not exceed 38ºC. No condensation.
	Storage	5~95%RH	

9. INDICATIONS

The following is displayed on this inverter;

(1) Model number : FLCV-18 (Marking of component side)
(2) Product drawing number : NA19002-4246 (Marking of component side)

(3) Manufacturing number : 3 9 0 0 0 0 1

- 3: Last digit of manufacturing year.
- 9: Manufacturing month (Oct. = X, Nov. =Y, Dec. =Z)
- 0 0 0 0 1: Serial number (To be reset every month on 1st.)

(4) Version number : 01A (Example)
-1st 2 digits "01" means operational version.
-3rd alphabet means functional version.

(3) Company name : FUJITSU DISPLAY TECHNOLOGIES CORP. (Marking of component side)

(4) Others
・Caution of high voltage・・・CAUTION HIGH VOLTAGE (Marking of component side)

10. PACKAGING

Separately specified in packaging specifications.

10-1. Packaging specifications

(1) (T.B.D) Inverter modules / 1 package.

(2) Weight: approximately (T.B.D) kg / 1 package.

(3) Outline dimensions : (T.B.D) mm(W)×(T.B.D) (D)×(T.B.D) mm(H)

10-2. Packaging method

T.B.D.

11.WARRANTY

The warranty period is one year after shipping. Products which fail during this period are repaired or replaced without charge, unless the failure is caused by user.

12. MISCELLANEOUS

Specifications of the Inverter are subject to change.

Both parties shall discuss together before change.

If any doubt is raised in the content of the specifications, both parties shall discuss and make best effort for the agreement.

TENTATIVE

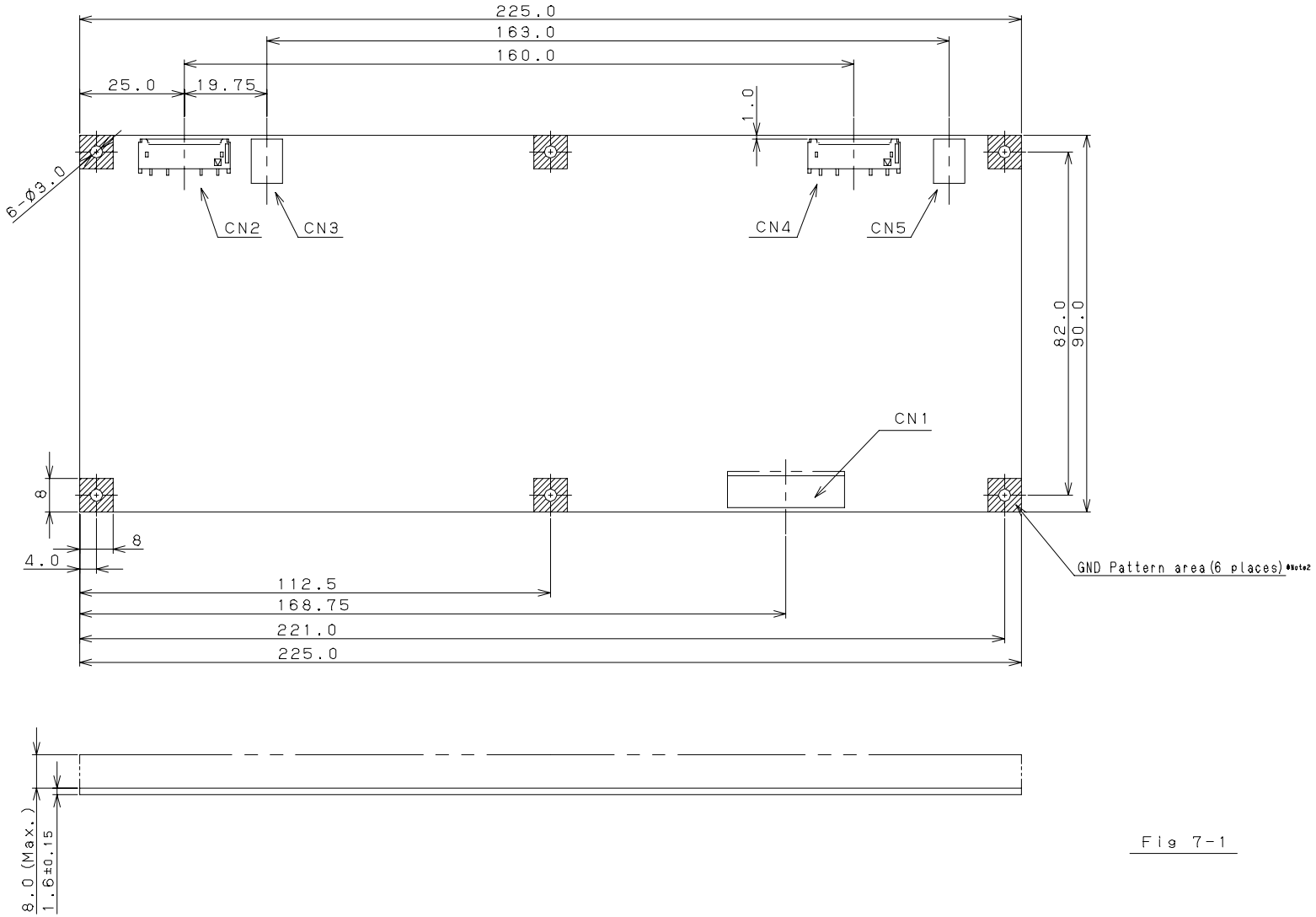

Fig 7-1

Note2) The hatching area is GND area.
Note1) Unspecified tolerrance to be ±0.5

EDIT.	DATE	DESIG.	CHECK	DESCRIPTION
DESIG.		CHECK		APPR.

TITLE FLCV-18

DRAW. NO. Tech Bas LCD-00214

CUST.

SHEET 8 /

DATE | DOCUMENT CONTROL SECTION

93.04 FDNC-3901-3