



Ref. Certif. No.

JPTUV-004839-M1

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST
CERTIFICATES FOR ELECTRICAL EQUIPMENT
(IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE
CERTIFICATS D'ESSAIS DES EQUIPEMENTS
ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC

Product
Produit

Flat Panel Monitor

Name and address of the applicant
Nom et adresse du demandeur

Advantech Co., Ltd.
4F, No. 108-3, Ming Chuan Rd.
Hsin Tien City, Taipei Hsien 231 Taiwan

Name and address of the manufacturer
Nom et adresse du fabricant

Advantech Co., Ltd.
4F, No. 108-3, Ming Chuan Rd.
Hsin Tien City, Taipei Hsien 231 Taiwan

Name and address of the factory
Nom et adresse de l'usine

Advantech Co., Ltd.
4F, No. 108-3, Ming Chuan Rd.
Hsin Tien City, Taipei Hsien 231 Taiwan

Rating and principal characteristics
Valeurs nominales et caractéristiques principales

DC 12V; 4A or 3.33A; Class III

Trade mark (if any)
Marque de fabrique (si elle existe)

ADVANTECH

Model/type Ref.
Ref. de type

FPM-3X120YY, FPM-3X120YY-T, FPM-X250YY
FPM-X250YY-T, VOP-1150YYY, VOP-1150YYY-T
FPM-3150YYY, FPM-3150YYY-T
X1 = 1 or 2, X2 = 11 or 32, Y = A-Z or blank

Additional information (if necessary)
Information complémentaire (si nécessaire)

For differences between the models, refer to the test report
Re-issue of JPTUV-004839 dated 10.09.2002,
due to first modification.

A sample of the product was tested and found
to be in conformity with
Un échantillon de ce produit a été essayé et a été
considéré conforme à la

IEC 60950:1999
inclusive CENELEC Common Modifications
National differences see test report

As shown in the Test Report Ref. No. which forms part
of this Certificate
Comme indiqué dans le Rapport d'essais numéro de
référence qui constitue une partie de ce Certificat

12002667 002

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification



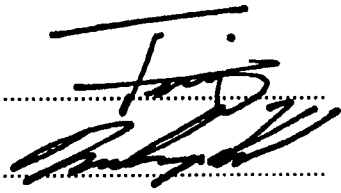
TÜV Rheinland
Berlin Brandenburg

TÜV Rheinland Japan Ltd.
Shin Yokohama Daini Center Bldg.
3-19-5, Shin Yokohama, Kohoku-ku
Yokohama 222-0033 Japan
Phone + 81 45 470-1850
Fax + 81 45 473-5221
Mail: info@jpn.tuv.com
Web: www.tuv.com

Date: 05.03.2004

Signature:

Dipl.-Ing. R. Keller

TEST REPORT FOR AN ADDITIONAL APPROVAL IEC 60950 and/or EN 60950 Safety of information technology equipment	
Report reference No	<12002667 002>
Tested by (printed name and signature)	M. Teng 
Approved by (printed name and signature)	M. Kera
Date of issue	March 04, 2004
Testing Laboratory Name	TÜV Rheinland Japan Ltd., Yokohama Laboratory
Address	Festo Bldg. 5F, 1-26-10 Hayabuchi, Tsuzuki-ku, Yokohama 224-0025, Japan
Testing location	CBTL <input checked="" type="checkbox"/> CCATL <input type="checkbox"/> SMT <input type="checkbox"/> TMP <input type="checkbox"/>
Address	Same as above.
Applicant's Name	Advantech Co., Ltd.
Address	4F, No. 108-3, Ming Chuan Rd., Hsin Tien City, Taipei Hsien 231, Taiwan.
Test specification	
Standard	IEC 60950:1999, EN 60950:2000, SABS IEC 60950, UL 60950, CAN/CSA C22.2 No. 60950/UL60950, K60950
Test procedure	CB-scheme
Procedure deviation	Argentina, Austria, Belgium, Brazil, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Japan, Korea, The Netherlands, Norway, Poland, Portugal, Russian Federation, Sweden, Slovenia, Slovakia, Singapore, South Africa, Spain, Switzerland, Turkey, United Kingdom, U.S.A.
Non-standard test method	N.A.
Test Report Form No.....	IECEN60950A (CBADD60950_3 Rev B)
TRF originator	SGS FIMKO Ltd (modified for additional approvals by TÜV Rheinland)
Master TRF	Dated 2003-03
Test item description	Flat Panel Monitor
Manufacturer	Same as applicant.
Trademark	ADVANTECH
Model and/or type reference	1. FPM-3X ₁ 20YY, FPM-3X ₁ 20YY-T, FPM-X ₂ 50YY, FPM-X ₂ 50YY-T, VOP-1150YYY, VOP-1150YYY-T (X ₁ =1 or 2, X ₂ =11 or 32, Y=A-Z or blank) 2. FPM-3150YYY, FPM-3150YYY-T (Y=A-Z or blank)
Serial number	Pre-production samples without serial number
Rating(s)	DC 12V, 4A or 3.33A

The construction of flat panel monitor model FPM-3X₁ 20YY, FPM-3X₁ 20YY-T, FPM-X₂ 50YY, FPM-X₂ 50YY-T, VOP-1150YYY, VOP-1150YYY-T (X₁=1 or 2, X₂=11 or 32, Y=A-Z or blank) was modified as follows:

1. Add two models FPM-3150YYY and FPM-3150YYY-T, which are identical to model VOP-1150YYY and VOP-1150YYY-T except for model designation.
2. Change ambient temperature from 50°C to 40°C.
3. Add alternative current rating 3.33A.
4. Add alternative source of power supply adapter for use with equipment input current rating 3.33A.
5. Add alternative sources of DC/AC inverter for different panel size.
6. Remove R.O.C from applicant and factory address.

For the above described modification(s) the following testing was considered to be necessary:

Modification	Testing	Comments	Result
1	N/A	See label on next page and sub. Clause 1.7.1.	P
2	N/A	No safety impact	P
3,4	- input test	Results and source see appended tables.	P
5	- Limited current circuit measurement - Heating test	Results and sources see appended tables.	P
6.	N/A	No safety impact.	P

Remark:

This test report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE02.

Factory:

Same as applicant.

History of amendments and modifications:

Ref. No. 12002667 001, dated September 05, 2002 (original test report)

Ref. No. 12002667 002, dated March 04, 2004 (modification)

Copy of marking plate(s):

ADVANTECH.

ADVANTECH Co., Ltd
研华股份有限公司
<http://www.advantech.com.tw>
MADE IN TAIWAN

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

MODEL
NO. : FPM-3120TV
型号

CAUTION !
To prevent shock,
Do not remove cover. No
user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V \pm / 3.33A

S/N

ADVANTECH.

ADVANTECH Co., Ltd
研华股份有限公司
<http://www.advantech.com.tw>
MADE IN TAIWAN

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

MODEL
NO. : FPM-3220TV-T
型号

CAUTION !
To prevent shock,
Do not remove cover. No
user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V \pm / 3.33A

S/N

ADVANTECH.

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<http://www.advantech.com.tw>
MADE IN TAIWAN

FC Tested To Comply
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FOR HOME OR OFFICE USE

MODEL
NO. : FPM-1150S
型号

CAUTION !
To prevent shock,
Do not remove cover. No
user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V \pm / 3.33A

S/N

ADVANTECH.

ADVANTECH Co., Ltd
研华股份有限公司
<http://www.advantech.com.tw>
MADE IN TAIWAN

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

MODEL
NO. : FPM-3250T-T
型号

CAUTION !
To prevent shock,
Do not remove cover. No
user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V \pm / 3.33A

S/N

ADVANTECH.

ADVANTECH Co., Ltd
研华股份有限公司
<http://www.advantech.com.tw>
MADE IN TAIWAN

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

MODEL
NO : VOP-1150TVS-T
型号

CAUTION !
To prevent shock,
Do not remove cover. No
user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V \pm / 3.33A

ADVANTECH.

ADVANTECH Co., Ltd
研华股份有限公司
<http://www.advantech.com.tw>
MADE IN TAIWAN

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

MODEL
NO : VOP-1150TVB
型号

CAUTION !
To prevent shock,
Do not remove cover. No
user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V \pm / 3.33A

ADVANTECH.

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MADE IN TAIWAN

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

MODEL
NO : FPM-3150TVE
型号

CAUTION !
To prevent shock,
Do not remove cover. No
user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V \pm / 4A

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<http://www.advantech.com.tw>
MADE IN TAIWAN

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

MODEL
NO : FPM-3150TVE
型号

CAUTION !
To prevent shock,
Do not remove cover. No
user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V \pm / 3.33A

ADVANTECH.

ADVANTECH Co., Ltd
研华股份有限公司
<http://www.advantech.com.tw>
MADE IN TAIWAN

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

MODEL
NO : FPM-3150TVE-T
型号

CAUTION !
To prevent shock,
Do not remove cover. No
user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V --- / 4A

S/N

ADVANTECH.

ADVANTECH Co., Ltd
研华股份有限公司
<http://www.advantech.com.tw>
MADE IN TAIWAN

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

MODEL
NO : FPM-3150TVE-T
型号

CAUTION !
To prevent shock,
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user serviceable parts
inside. Refer servicing to
qualified personnel.

CE

INPUT(输入): DC 12V --- / 3.33A

S/N

IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
1.7	Marking and instructions		P
1.7.1	Power rating	See below.	P
	Rated voltage(s) or voltage range(s) (V)	See copy of marking plate. (no direct connection to the AC mains supply)	N
	Symbol for nature of supply for d.c.	No direct connection to the AC mains supply.	N
	Rated frequency or frequency range (Hz)	No direct connection to the AC mains supply.	N
	Rated current (A)	See copy of marking plate. (no direct connection to the AC mains supply)	N
	Manufacturer's name/Trademark	See copy of marking plate.	P
	Type/model	FPM-3150YYY, FPM-3150YYY-T (Y can be A-Z or blank).	P
	Symbol of Class II	Class III equipment.	N
	Other symbols	Additional symbols or markings do not give rise to misunderstanding.	P
	Certification marks	See copy of the marking plate.	N

1.5.1	TABLE: list of critical components					P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity1)	
Switching Power Supply	Asian Power Devices Inc.	DA-60F12	i/p: 100-240Vac, 50-60Hz, 1.1A max., Class I, 40°C o/p: 12Vdc, 3.33A	IEC 60950: 1999 (complied with limited power source)	TÜV, UL, CB (issued by Nemko)	
DC/AC Inverter (for 12" LCD panel)	Lecerf Technology	1501A-1	i/p: 13.2Vdc max., 1.45A max.; o/p: 1400Vrms max., 7.5mA max.			
- Transformer in Inverter (T1, T2)	TOP NATION	X06A	105°C	--	--	
DC/AC Inverter (for 15" LCD panel)	Lecerf Technology	LV-1501-FA	i/p: 13Vdc max., 1.4A max.; o/p: 1600Vrms max., 8.5mA max.	--	--	
- Transformer in Inverter (T1, T2)	Lecerf Technology	3-X03	105°C	--	--	
1) an asterisk indicates a mark which assures the agreed level of surveillance						

1.6.2		TABLE: electrical data (in normal conditions)					P
Fuse #	Irated (A)	U (V)	P (W)	I (A)	Ifuse (A)	Condition/status	
For model FPM-3220TV-T							
--	3.33	12Vdc	12.826	1.06	--	(measured at LCD monitor)	
For model FPM-3250T-T							
--	3.33	12Vdc	26.995	2.231	--	(measured at LCD monitor)	

2.4.2	TABLE: limited current circuit measurement						P
Location		Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments	
For FPM-3220TV-T DC/AC Inverter: Lecer, type 1501A-1							
Normal condition							

CN2, Pin 1 to GND	18.1	9.05	38	26.6	
CN2, Pin 3 to GND	4.1	2.05	11	7.7	
CN2, Pin 1 to Pin 3	27.5	13.75	38	26.6	
T1, Pin 7 to GND	19.6	9.8	41	28.7	
T1, Pin 9 to GND	4.2	2.1	13	9.1	
T1, Pin 7 to Pin 9	28.2	14.1	41	28.7	
single fault condition (C6 short)					
CN2, Pin 1 to GND	30.8	15.4	110	70	
CN2, Pin 3 to GND	0	0	--	--	Unit shutdown
CN2, Pin 1 to Pin 3	28.3	14.15	70	49	
T1, Pin 7 to GND	30.4	15.2	98	68.6	
T1, Pin 9 to GND	0	0	--	--	Unit shutdown
T1, Pin 7 to Pin 9	30.45	15.23	84	58.8	
single fault condition (L1 short)					
CN2, Pin 1 to GND	23.2	11.6	37	25.9	
CN2, Pin 3 to GND	0	0	--	--	Unit shutdown
CN2, Pin 1 to Pin 3	20	10	35	24.5	
T1, Pin 7 to GND	26.5	13.25	40	28	
T1, Pin 9 to GND	0	0	--	--	Unit shutdown
T1, Pin 7 to Pin 9	24	12	40	28	
single fault condition (Q5 D-S short)					
CN2, Pin 1 to GND	0	0	--	--	Unit shutdown
CN2, Pin 3 to GND	2.3	1.15	10	7	
CN2, Pin 1 to Pin 3	0	0	--	--	Unit shutdown
T1, Pin 7 to GND	0	0	--	--	Unit shutdown
T1, Pin 9 to GND	1.6	0.8	11	7.7	
T1, Pin 7 to Pin 9	0	0	--	--	Unit shutdown
single fault condition (R3 short)					
CN2, Pin 1 to GND	74	37	82	57.4	
CN2, Pin 3 to GND	0	0	--	--	Unit shutdown
CN2, Pin 1 to Pin 3	74.5	37.25	82	57.4	
T1, Pin 7 to GND	100	50	125	70	
T1, Pin 9 to GND	0	0	--	--	Unit shutdown
T1, Pin 7 to Pin 9	100	50	125	70	
single fault condition (D3 open)					

CN2, Pin 1 to GND	70	35	84	58.8	
CN2, Pin 3 to GND	0	0	--	--	Unit shutdown
CN2, Pin 1 to Pin 3	71	35.5	85	59.5	
T1, Pin 7 to GND	110	55	126	70	
T1, Pin 9 to GND	20.4	10.2	51	35.7	
T1, Pin 7 to Pin 9	110	55	126	70	
For FPM-3225TV-T DC/AC Inverter: Lecer, type LV-1501-FA					
Normal condition					
CN2, Pin 1 to GND	39.6	19.8	46	32.2	
CN2, Pin 2 to GND	7.6	3.8	48	33.6	
CN2, Pin 1 to Pin 2	22.4	11.2	46	32.2	
T2, Pin 7 to GND	0	0	--	--	Unit shutdown
T2, Pin 9 to GND	0	0	--	--	Unit shutdown
T2, Pin 7 to Pin 9	0	0	--	--	Unit shutdown
single fault condition (C4 short)					
CN2, Pin 1 to GND	74	37	117	70	
CN2, Pin 2 to GND	0	0	--	--	Unit shutdown
CN2, Pin 1 to Pin 2	18.4	9.2	100	70	
T2, Pin 7 to GND	94.2	47.1	125	70	
T2, Pin 9 to GND	0	0	--	--	Unit shutdown
T2, Pin 7 to Pin 9	27.1	13.55	115	70	
single fault condition (Q4 D-S short)					
CN2, Pin 1 to GND	0	0	--	--	Unit shutdown
CN2, Pin 2 to GND	1	0.5	1	0.7	
CN2, Pin 1 to Pin 2	0	0	--	--	Unit shutdown
T2, Pin 7 to GND	0	0	--	--	Unit shutdown
T2, Pin 9 to GND	1.2	0.6	1	0.7	
T2, Pin 7 to Pin 9	0	0	--	--	Unit shutdown
single fault condition (D2 open)					
CN2, Pin 1 to GND	0	0	--	--	Unit shutdown
CN2, Pin 2 to GND	0	0	--	--	Unit shutdown
CN2, Pin 1 to Pin 2	0	0	--	--	Unit shutdown
T2, Pin 7 to GND	0	0	--	--	Unit shutdown
T2, Pin 9 to GND	0	0	--	--	Unit shutdown

T2, Pin 7 to Pin 9	0	0	--	--	Unit shutdown
single fault condition (D6 short)					
CN2, Pin 1 to GND	0	0	--	--	Unit shutdown
CN2, Pin 2 to GND	0	0	--	--	Unit shutdown
CN2, Pin 1 to Pin 2	0	0	--	--	Unit shutdown
T2, Pin 7 to GND	0	0	--	--	Unit shutdown
T2, Pin 9 to GND	0	0	--	--	Unit shutdown
T2, Pin 7 to Pin 9	0	0	--	--	Unit shutdown
single fault condition (L2 short)					
CN2, Pin 1 to GND	0	0	--	--	Unit shutdown
CN2, Pin 2 to GND	7.2	3.6	43	30.1	
CN2, Pin 1 to Pin 2	43.2	26.6	46	32.2	
T2, Pin 7 to GND	75.2	37.6	97	67.9	
T2, Pin 9 to GND	0	0	--	--	Unit shutdown
T2, Pin 7 to Pin 9	74.4	37.2	98	68.6	
Output measured with a 2kΩ non-inductive resistor as load.					

4.5.1	TABLE: temperature rise measurements		P
	test voltage (V):	+12Vdc	—
	t1 (°C):		—
	t2 (°C):		—
Rise ΔT of part/at:		ΔT (K)	Allowed ΔT (K)
For model FPM-3220TV-T			
Ambient		23.9°C	--
DC inlet body		20.5	--
PWB near the U800		24.7	65
L800 coil		21.5	65
L801 coil		29.0	65
L503 coil		26.6	65
C810 body		25.2	45
PWB near the U801		28.2	65
U401 body		27.6	--
U202 body		21.5	--
U9 body		16.6	--
U10 body		17.0	--

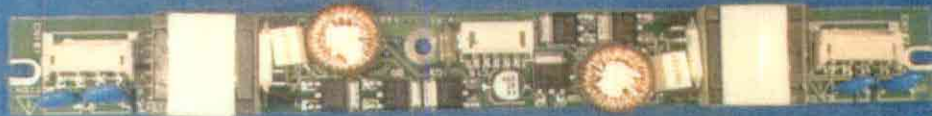
U1 body	17.1	--
D/A inverter: Leaerf, type 1501A-1		
CN101 body	30.7	--
T1 coil	42.6	65
T1 core	43.4	65
F2 coil	38.2	65
Enclosure inside near the T3	16.0	--
Enclosure outside near the T3	9.2	30
Enclosure outside near the panel	8.5	30
For model FPM-3250T-T		
Ambient	24.9°C	--
DC inlet body	14.1	--
L801 coil	20.2	65
L800 coil	20.1	65
C801 body	24.9	45
L503 coil	26.5	65
PWB near the U401	22.9	65
PWB near the U800	25.1	65
PWB near the U801	25.4	65
PWB near the U202	18.6	65
U1 body	16.5	--
D/A inverter: Leaerf, type LV-1501-FA		
CN3 body	27.3	--
U2 body	17.2	--
U3 body	15.6	--
T1 coil	46.0	65
T1 core	27.8	65
L1 coil	56.5	65
Enclosure inside near the T1	17.1	--
Enclosure outside near the T1	11.8	30
Panel body	23.2	--

Temperature rise ΔT of winding:	R_1 (Ω)	R_2 (Ω)	ΔT (K)	allowed ΔT (K)	insulation class
Comments: The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in 1.6.2 at voltages as described above. With maximum of 40°C ambient temperature specified the max. temperature rise is calculated as follows: Electrolyte capacitor or components with: - max. absolute temp. of 85°C $\rightarrow \Delta T_{max} = (85-40) K = 45K$ Surface of equipment which may be touched: - metal $\rightarrow \Delta T_{max} = 45 - (40-25) K = 30K$					

5.3		TABLE: fault condition tests					P
		ambient temperature (°C)	27°C				—
		model/type of power supply	See appended table 1.5.1				—
		manufacturer of power supply	See appended table 1.5.1				—
		rated markings of power supply	See appended table 1.5.1				—
No.	Component no.	Fault	Test voltage (V)	Test time	Fuse no.	Fuse current (A)	Result
01	All ventilation openings for model FPM-3320TV-T	blocked	12Vdc	1.5 hrs	--	--	Temperature of all parts stabled at T1 coil (D/A inverter)= 71.9°C, enclosure outside of LCD monitor = 39.8°C, no hazard.
02	All ventilation openings for model FPM-3250T-T	blocked	12Vdc	3.0 hrs	--	--	Temperature of all parts stabled at T1 coil (D/A inverter)= 78.3°C, enclosure outside of LCD monitor = 54.7°C, no hazard.
03	D/A inverter 1501A-1 T1 Pin 7 to Pin 9	s-c	12vdc	1sec	--	--	Unit shutdown immediately.
04	D/A inverter LV-1501-FA T1 Pin 7 to Pin 9	s-c	12vdc	1sec	--	--	Unit shutdown immediately.
Supplementary information							
Note: In fault column, s-c=short-circuited, o-l=over-loaded.							

Type Designation: FPM-3X₁20YY, FPM-3X₁20YY-T, FPM-X₂50YY, FPM-X₂50YY-T,
VOP-1150YYY, YOP-1150YYY-T, FPM-3150YYY, 3150YYY-T
(X₁=1 or 2, X₂=11 or 32, Y=A-Z or blank)
Report Number: 12002667 002

LV-1501-FA



LV-1501-FA

