



IEC SYSTEM FOR CONFORMITY  
TESTING TO STANDARDS FOR  
SAFETY OF ELECTRICAL  
EQUIPMENT (IECEE) CB SCHEME

Ref. Certificate No.

SG-1699

## CB TEST CERTIFICATE

Issued by: PSB Corporation Pte Ltd

Registration date: 2004-12-28

Product: Industrial Computer

Applicant: Advantech Co., Ltd. No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei, Taiwan 114 Taiwan

Manufacturer: Advantech Co., Ltd. No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei, Taiwan 114 Taiwan

Factory: Advantech Co., Ltd. 5th FL No. 1, Lane 169, Kang-Ning Street, Xi-Zhi City, Taipei Hsien, Taiwan Taiwan  
nb: Additional factory information on page 2

Rating and principal characteristics: 100-240Vac, 50/60Hz, 6A max, Class I

Trade mark (if any): ADVANTECH

Model/Type reference: ATM-4023XXXXXXXXX

Additional information:

Sample of product tested to be in conformity with IEC: 60950-1(ed.1)

+ EN 60950-1:2001  
+ National Differences and Group Differences as listed in the CB Bulletin No. 107A (May 2004)

Test Report Ref. No: 55S042965/CZ/MNG

This CB Test Certificate is issued by the National Certification Body

PSB Corporation Pte Ltd  
1 Science Park Drive, Singapore 118221

Signed by: Christopher Hee

Date of issue: 2004-12-28





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Advantech Co., Ltd.  
3rd FL 10 Lane 130, Ming-Chuan Rd, Hsien -Tien City,  
Taipei Hsien,  
Taiwan

Superior Co., Ltd.  
Tiensong Area, Qingxing Town, Dongguan, Guangdong,  
China

Advantech Co., Ltd.  
No. 600 Han-Pu Rd, Yu-Shan, Kun-Shan, Jiang Su,  
China

Beijing Yan Hua Xing Ye Electronic Science &  
Technology Co., Ltd.  
No. 7, 6th Street, Shang Di Zone, Haidian District,  
Beijing, P.R. China  
China

Additional information (if necessary)



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<b>TEST REPORT</b> <b>IEC 60950-1 and/or EN 60950-1</b> <b>Information technology equipment – Safety –</b> <b>Part 1: General requirements</b>	
<b>Report reference No</b> .....: 55S042965/CZ/MNG Tested by (printed name and signature) .....: Chen Zhuo Approved by (printed name and signature) .....: Michelle Ng Date of issue .....: 24 December, 2004	 
<b>Testing Laboratory Name</b> .....: PSB Corporation Pte Ltd Address .....: 1 Science Park Drive , Singapore 118221 Testing location .....: CBTL <input checked="" type="checkbox"/> CCATL <input type="checkbox"/> SMT <input type="checkbox"/> TMP <input type="checkbox"/> Address .....: Same as above	
<b>Applicant's Name</b> .....: Advantech Co., Ltd. Address .....: No.1, Alley 20, Lane 26, Rueiguang Road, Neihsu District, Taipei, Taiwan 114	
<b>Test specification</b> Standard .....: IEC 60950-1:2001 (1 <sup>st</sup> Edition) and EN 60950-1:2001 Test procedure .....: CB/CCA –scheme Non-standard test method .....: N.A.	
<b>Test Report Form No.</b> .....: IECEN60950_1B TRF originator . ....: SGS Fimko Ltd Master TRF .....: dated 2003-03 Copyright © 2003 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved. This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.	
<b>Test item description</b> .....: Industrial Computer Trademark .....: ADVANTECH Manufacturer .....: Advantech Co., Ltd. Model and/or type reference .....: ATM-4023XXXXXXX Serial number .....: N.A. Rating(s).....: 100-240Vac, 50/60Hz, 6 Amax	

Copy of marking plate

- See Appendix 13

Summary of testing:

- All test results were found satisfactory in accordance with IEC 60950-1:2001 / EN 60950-1:2001.

**Particulars: test item vs. test requirements**

Equipment mobility ..... : Movable  
 Operating condition ..... : continuous  
 Mains supply tolerance (%)..... :  $\pm 10\%$   
 Tested for IT power systems ..... : Yes  
 IT testing, phase-phase voltage (V) ..... : IT, 230V (for Norway)  
 Class of equipment ..... : Class I  
 Mass of equipment (kg)..... : 11.5 Kg.  
 Protection against ingress of water ..... : IP20

**Test case verdicts**

Test case does not apply to the test object : N/A  
 Test item does meet the requirement ..... : P(ass)  
 Test item does not meet the requirement .. : F(ail)

**Testing**

Date of receipt of test item ..... : 23 August, 2004  
 Date(s) of performance of test ..... : 23 August to 22 November 2004

**General remarks**

**"This report is not valid as a CB Test Report unless appended by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02".**

The test result presented in this report relate only to the object(s) tested.  
 This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(see Enclosure #)" refers to additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma (point) is used as the decimal separator.

Comments:

Remark 1: The following contents are included in this test report :

- Test Report page 1 to 66
- Appendix 1 to 14

Remark 2: The "X" in the model designatoin may be 0-9, A-Z or blank to indicate the country code and part number for company internal use. (Refer to Appendix 14 for the identity declaration letter)

Remark 3: National & Group Differences as listed in the CB Bulletin No. 107A (May 2004) have been checked.

Remark 4: Tests were conducted on Model: ATM-402300111011 and representative of other model.

Remark 5: The EUT used the alternate CPU boards, Models: PCA-6751, PCA-6774F, PCI-6870F, PCI-6872F, PCI-6871F, and two main boards for different slots of the CPU board.

**General product information:**

The industrial computer equipped with a certified power supply, and the main board inside the metal chassis. All the USB outputs of the ETU have been evaluated as the Limited Power Source.

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

1	GENERAL		P
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1.5	Components		P
1.5.1	General		P
	Comply with IEC 60950 or relevant component standard	(see appended table 1.5.1)	P
1.5.2	Evaluation and testing of components		P
1.5.3	Thermal controls		N/A
1.5.4	Transformers	Transformers are in the approved power supply	P
1.5.5	Interconnecting cables		N/A
1.5.6	Capacitors in primary circuits .....	Capacitor in the approved power supply	P
1.5.7	Double insulation or reinforced insulation bridged by components		N/A
1.5.7.1	General		N/A
1.5.7.2	Bridging capacitors		N/A
1.5.7.3	Bridging resistors		N/A
1.5.7.4	Accessible parts		N/A
1.5.8	Components in equipment for IT power systems	Evaluated in the certification of power supply	P

1.6	Power interface		P
1.6.1	AC power distribution systems	TN, and IT for Norway	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment	Not hand-held	N/A
1.6.4	Neutral conductor		P

1.7	Marking and instructions		P
1.7.1	Power rating		P
	Rated voltage(s) or voltage range(s) (V) .....	100-240Vac	P
	Symbol for nature of supply, for d.c. only .....		N/A
	Rated frequency or rated frequency range (Hz) :	50/60Hz	P
	Rated current (mA or A) .....	6 Amax	P
	Manufacturer's name or trademark or identification mark .....	ADVANTECH	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Type/model or type reference .....	ATM-4023XXXXXXXXX	P
	Symbol for Class II equipment only .....	Class I equipment	N/A
	Other symbols .....		N/A
	Certification marks .....		N/A
1.7.2	Safety instructions	English Version.	P
1.7.3	Short duty cycles	Continuous operation	N/A
1.7.4	Supply voltage adjustment .....		N/A
	Methods and means of adjustment; reference to installation instructions .....		N/A
1.7.5	Power outlets on the equipment .....	No power outlets	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....	Fuse in approved power supply	P
1.7.7	Wiring terminals		P
1.7.7.1	Protective earthing and bonding terminals .....		P
1.7.7.2	Terminal for a.c. mains supply conductors		N/A
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators	Only secondary switch.	N/A
1.7.8.1	Identification, location and marking .....		N/A
1.7.8.2	Colours .....		N/A
1.7.8.3	Symbols according to IEC 60417 .....		N/A
1.7.8.4	Markings using figures .....	No indicators for different position	N/A
1.7.9	Isolation of multiple power sources .....		N/A
1.7.10	IT power distribution systems	Shall be provided when submitted for national approval (for Norway)	N/A
1.7.11	Thermostats and other regulating devices		N/A
1.7.12	Language(s) .....	Markings/instructions are to be in the language suitable for the country of use. Reviewed only English.	—
1.7.13	Durability		P
1.7.14	Removable parts	No required markings placed on removable parts	P
1.7.15	Replaceable batteries		P
	Language(s) .....	English Version.	—
1.7.16	Operator access with a tool .....	No operator access area, require a tool to gain access	N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.17	Equipment for restricted access locations.....:	No restricted access location	N/A
2	PROTECTION FROM HAZARDS		P
2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	Supplied by SELV.	P
2.1.1.1	Access to energized parts		P
	Test by inspection .....		P
	Test with test finger .....		P
	Test with test pin .....		P
	Test with test probe .....	No access to TNV circuit	N/A
2.1.1.2	Battery compartments .....	No battery compartments	N/A
2.1.1.3	Access to ELV wiring	No ELV wiring	N/A
	Working voltage (V <sub>peak</sub> or V <sub>rms</sub> ); minimum distance (mm) through insulation		—
2.1.1.4	Access to hazardous voltage circuit wiring	No hazardous voltage wiring in operator accessible area	N/A
2.1.1.5	Energy hazards .....	No energy hazard	P
2.1.1.6	Manual controls		N/A
2.1.1.7	Discharge of capacitors in equipment	Evaluation with acceptable result in the approved power supply	P
	Time-constant (s); measured voltage (V).....:	Time-constant is < 1 sec	—
2.1.2	Protection in service access areas		N/A
2.1.3	Protection in restricted access locations	No restricted access location	N/A

2.2	SELV circuits		P
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V) .....	Below SELV limits	P
2.2.3	Voltages under fault conditions (V) .....	Below SELV limits	P
2.2.3.1	Separation by double insulation or reinforced insulation (method 1)		P
2.2.3.2	Separation by earthed screen (method 2)		N/A
2.2.3.3	Protection by earthing of the SELV circuit (method 3)		N/A
2.2.4	Connection of SELV circuits to other circuits .....		P

2.3	TNV circuits		N/A
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IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.3.1	Limits		N/A
	Type of TNV circuits .....		—
2.3.2	Separation from other circuits and from accessible parts		N/A
	Insulation employed .....		—
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed .....		—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed .....		—
2.3.5	Test for operating voltages generated externally		N/A

2.4	Limited current circuits		P
2.4.1	General requirements		P
2.4.2	Limit values		P
	Frequency (Hz).....	Max. 86.6 KHz.	—
	Measured current (mA) .....	Max. 19.8 mA	—
	Measured voltage (V) .....	Max. 39.6 V	—
	Measured capacitance (μF) .....	C20: 10pF( 3KV)	—
2.4.3	Connection of limited current circuits to other circuits	Connected only to SELV circuit.	P

2.5	Limited power sources		P
	Inherently limited output		P
	Impedance limited output		N/A
	Overcurrent protective device limited output		N/A
	Regulating network limited output under normal operating and single fault condition		N/A
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition	The following output had been evaluated and found to comply with the Limited Power Source. USB1, USB 2, PS2 connector for keyboard and mouse.	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Output voltage (V), output current (A), apparent power (VA)..... :	Uoc: 5.02 Vdc for USB1 and USB2. 5.01 Vdc for PS2 mouse. 5.01 Vdc for PS2 Keyboard. Isc: 1.71 A for USB1 and USB2 1.95 A for PS2 mouse. 1.92 A for PS2 keyboard.  Max. VA: 5.85 VA for USB1 and USB2. 6.60 VA for PS2 mouse. 7.05 VA for PS2 keyboard.	—
	Current rating of overcurrent protective device (A)		—

2.6	Provisions for earthing and bonding		P
2.6.1	Protective earthing		P
2.6.2	Functional earthing		P
2.6.3	Protective earthing and protective bonding conductors		P
2.6.3.1	General	The power supply cord shall be provided during separated national approval.	N/A
2.6.3.2	Size of protective earthing conductors		P
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....	Cross sectional area of 0.75 mm <sup>2</sup> minimum	
2.6.3.3	Size of protective bonding conductors		P
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....	18 AWG internal wiring as bonding conductor.	—
2.6.3.4	Resistance (Ω) of earthing conductors and their terminations, test current (A) .....	0.02Ω, tested at 40A	P
2.6.3.5	Colour of insulation..... :	Evaluated in the approved power supply.	P
2.6.4	Terminals		P
2.6.4.1	General	Detachable power cord used	P
2.6.4.2	Protective earthing and bonding terminals	Appliance inlet used	P
	Rated current (A), type and nominal thread diameter (mm) .....	Appliance inlet used	—

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		P
2.6.5	Integrity of protective earthing		P
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors	No switches or fuses in earthing conductor	P
2.6.5.3	Disconnection of protective earth	Appliance coupler used.	P
2.6.5.4	Parts that can be removed by an operator		P
2.6.5.5	Parts removed during servicing		P
2.6.5.6	Corrosion resistance	No risk of corrosion	P
2.6.5.7	Screws for protective bonding		P
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A

2.7	Overcurrent and earth fault protection in primary circuits		P
2.7.1	Basic requirements		P
	Instructions when protection relies on building installation		P
2.7.2	Faults not covered in 5.3		P
2.7.3	Short-circuit backup protection	Building Installation	P
2.7.4	Number and location of protective devices .....	One fuse provided	P
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel.....:		N/A

2.8	Safety interlocks		N/A
2.8.1	General principles	No safety interlocks provided	N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches and relays		N/A
2.8.7.1	Contact gaps (mm) .....		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test		N/A
2.8.8	Mechanical actuators		N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

2.9	Electrical insulation		P
2.9.1	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used	P
2.9.2	Humidity conditioning	40°C, 93% RH, 120Hrs	P
	Humidity (%) .....		—
	Temperature (°C) .....		—
2.9.3	Grade of insulation	Evaluated during the power supply certification	P

2.10	Clearances, creepage distances and distances through insulation		P
2.10.1	General	Evaluated during the power supply certification	P
2.10.2	Determination of working voltage	Evaluated during the power supply certification	P
2.10.3	Clearances	Evaluated during the power supply certification	P
2.10.3.1	General		P
2.10.3.2	Clearances in primary circuits	Evaluated during the power supply certification. (see appended table 2.10.3 and 2.10.4)	P
2.10.3.3	Clearances in secondary circuits	Functional insulation	P
2.10.3.4	Measurement of transient voltage levels		N/A
2.10.4	Creepage distances	Evaluated during the power supply certification (see appended table 2.10.3 and 2.10.4)	P
	CTI tests .....		—
2.10.5	Solid insulation	Evaluated during the power supply certification	P
2.10.5.1	Minimum distance through insulation		N/A
2.10.5.2	Thin sheet material	Evaluated during the power supply certification	P
	Number of layers (pcs) .....		—
	Electric strength test		—
2.10.5.3	Printed boards		N/A
	Distance through insulation		N/A
	Electric strength test for thin sheet insulating material		—

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Number of layers (pcs) .....		N/A
2.10.5.4	Wound components		N/A
	Number of layers (pcs) .....		N/A
	Two wires in contact inside wound component; angle between 45° and 90° .....		N/A
2.10.6	Coated printed boards		N/A
2.10.6.1	General		N/A
2.10.6.2	Sample preparation and preliminary inspection		N/A
2.10.6.3	Thermal cycling		N/A
2.10.6.4	Thermal ageing (°C) .....		N/A
2.10.6.5	Electric strength test		—
2.10.6.6	Abrasion resistance test		N/A
	Electric strength test		—
2.10.7	Enclosed and sealed parts .....		N/A
	Temperature $T_1 = T_2 + T_{ma} - T_{amb} + 10K$ (°C) .....		N/A
2.10.8	Spacings filled by insulating compound .....		N/A
	Electric strength test		—
2.10.9	Component external terminations		N/A
2.10.10	Insulation with varying dimensions		N/A

3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P
3.1.1	Current rating and overcurrent protection	Adequate cross sectional areas on internal wiring	P
3.1.2	Protection against mechanical damage	Smooth and free of sharp edges	P
3.1.3	Securing of internal wiring	Wiring are reliably routed and secured where appropriate	P
3.1.4	Insulation of conductors	Wire insulations are suitable for the application	P
3.1.5	Beads and ceramic insulators	Not used	N/A
3.1.6	Screws for electrical contact pressure		P
3.1.7	Insulating materials in electrical connections	No contact pressure through insulating materials	P
3.1.8	Self-tapping and spaced thread screws	No space thread screws / thread-cutting screws used	N/A
3.1.9	Termination of conductors		N/A
	10 N pull test		N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.1.10	Sleeving on wiring		N/A

3.2	Connection to an a.c. mains supply or a d.c. mains supply		P
3.2.1	Means of connection .....	Appliance inlet	P
3.2.1.1	Connection to an a.c. mains supply		P
3.2.1.2	Connection to a d.c. mains supply		N/A
3.2.2	Multiple supply connections	Only one supply connection.	N/A
3.2.3	Permanently connected equipment	Not permanently connected.	N/A
	Number of conductors, diameter (mm) of cable and conduits .....		—
3.2.4	Appliance inlets	Appliance inlet complies with IEC 60320	P
3.2.5	Power supply cords	Power supply cord not provided	N/A
3.2.5.1	AC power supply cords		N/A
	Type.....		—
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N) .....		—
	Longitudinal displacement (mm) .....		—
3.2.7	Protection against mechanical damage		N/A
3.2.8	Cord guards		N/A
	D (mm); test mass (g) .....		—
	Radius of curvature of cord (mm).....		—
3.2.9	Supply wiring space		N/A

3.3	Wiring terminals for connection of external conductors		N/A
3.3.1	Wiring terminals	Appliance inlet used	N/A
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals		N/A
3.3.4	Conductor sizes to be connected		N/A
	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ) .....		—
3.3.5	Wiring terminal sizes		N/A
	Rated current (A), type and nominal thread diameter (mm) .....		—

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.3.6	Wiring terminals design		N/A
3.3.7	Grouping of wiring terminals		N/A
3.3.8	Stranded wire		N/A

3.4	Disconnection from the mains supply		P
3.4.1	General requirement	Appliance coupler used.	P
3.4.2	Disconnect devices	Appliance coupler used.	P
3.4.3	Permanently connected equipment		N/A
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords		N/A
3.4.6	Single-phase equipment and d.c. equipment	The appliance coupler disconnects both poles simultaneously.	P
3.4.7	Three-phase equipment		N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices	The appliance coupler is regarded as the disconnect device, no marking is required.	N/A
3.4.10	Interconnected equipment	No interconnection of hazardous voltages	N/A
3.4.11	Multiple power sources		N/A

3.5	Interconnection of equipment		P
3.5.1	General requirements	Considered	P
3.5.2	Types of interconnection circuits.....:	SELV circuits	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection	N/A

4	PHYSICAL REQUIREMENTS		P
4.1	Stability		P
	Angle of 10°	Stable	P
	Test: force (N).....:	Not floor standing unit.	N/A

4.2	Mechanical strength		P
4.2.1	General		P
4.2.2	Steady force test, 10 N		P
4.2.3	Steady force test, 30 N		P
4.2.4	Steady force test, 250 N		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.2.5	Impact test		P
	Fall test		P
	Swing test		N/A
4.2.6	Drop test		N/A
4.2.7	Stress relief test		N/A
4.2.8	Cathode ray tubes		N/A
	Picture tube separately certified .....		N/A
4.2.9	High pressure lamps	No high pressure lamps	N/A
4.2.10	Wall or ceiling mounted equipment; force (N) ... :		N/A

4.3	Design and construction		P
4.3.1	Edges and corners	Edges are rounded	P
4.3.2	Handles and manual controls; force (N)..... :	50N	P
4.3.3	Adjustable controls		N/A
4.3.4	Securing of parts		P
4.3.5	Connection of plugs and sockets		N/A
4.3.6	Direct plug-in equipment	Not direct plug-in	N/A
	Dimensions (mm) of mains plug for direct plug-in .....		N/A
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N)..... :		N/A
4.3.7	Heating elements in earthed equipment	No heating elements	N/A
4.3.8	Batteries		P
4.3.9	Oil and grease	Insulation not exposed to oil or grease	N/A
4.3.10	Dust, powders, liquids and gases		N/A
4.3.11	Containers for liquids or gases		N/A
4.3.12	Flammable liquids .....	No flammable liquids	N/A
	Quantity of liquid (l) .....		N/A
	Flash point (°C) .....		N/A
4.3.13	Radiation; type of radiation .....		P
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg) .....		—
	Measured high-voltage (kV) .....		—
	Measured focus voltage (kV) .....		—
	CRT markings .....		—



IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification .....		N/A
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....		N/A
4.3.13.5	Laser (including LEDs)		P
	Laser class .....	Only indicating Class I LED, and certified CD-ROM used.	—
4.3.13.6	Other types .....		N/A

4.4	Protection against hazardous moving parts		N/A
4.4.1	General	No hazardous moving parts	N/A
4.4.2	Protection in operator access areas		N/A
4.4.3	Protection in restricted access locations		N/A
4.4.4	Protection in service access areas		N/A

4.5	Thermal requirements		P
4.5.1	Maximum temperatures	(see appended table 4.5)	P
	Normal load condition per Annex L .....		N/A
4.5.2	Resistance to abnormal heat		N/A

4.6	Openings in enclosures		P
4.6.1	Top and side openings	Vertical entry is prevented.	P
	Dimensions (mm) .....	No openings exceeded 5 mm in any dimensions.	—
4.6.2	Bottoms of fire enclosures	No bottom openings.	P
	Construction of the bottom .....		—
4.6.3	Doors or covers in fire enclosures		N/A
4.6.4	Openings in transportable equipment		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C)/time (weeks) .....		—

4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Appropriate use of components and suitable construction. Components are mounted on PWB rated V-1 or better	P
	Method 1, selection and application of components wiring and materials		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Method 2, application of all of simulated fault condition tests		N/A
4.7.2	Conditions for a fire enclosure		P
4.7.2.1	Parts requiring a fire enclosure	The fire enclosure is required to cover all parts	P
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		P
4.7.3.1	General	See critical component list.	P
4.7.3.2	Materials for fire enclosures		P
4.7.3.3	Materials for components and other parts outside fire enclosures	94 HB or better	P
4.7.3.4	Materials for components and other parts inside fire enclosures		P
4.7.3.5	Materials for air filter assemblies	Rated V-2.	P
4.7.3.6	Materials used in high-voltage components	No high-voltage components	N/A

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		P
5.1	Touch current and protective conductor current		P
5.1.1	General		P
5.1.2	Equipment under test (EUT)		N/A
5.1.3	Test circuit		P
5.1.4	Application of measuring instrument	Measuring circuit in Annex D.1 used	P
5.1.5	Test procedure		P
5.1.6	Test measurements		P
	Test voltage (V) .....	264V	—
	Measured touch current (mA) .....	Max. 0.79 mA	—
	Max. allowed touch current (mA) .....	3.5mA r.m.s	—
	Measured protective conductor current (mA) ....	Max. 0.79 mA	—
	Max. allowed protective conductor current (mA) :	3.5mA r.m.s	—
5.1.7	Equipment with touch current exceeding 3.5 mA .....		N/A
5.1.8	Touch currents to and from telecommunication networks and cable distribution systems and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network and a cable distribution system		N/A
	Test voltage (V) .....		—

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Measured touch current (mA) .....		—
	Max. allowed touch current (mA) .....		—
5.1.8.2	Summation of touch currents from telecommunication networks .....		N/A

5.2	Electric strength		P
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure	(see appended table 5.2)	P
5.3	Abnormal operating and fault conditions		P
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors		N/A
5.3.3	Transformers	Evaluated during the power supply certification (see appended Annex C)	P
5.3.4	Functional insulation.....		P
5.3.5	Electromechanical components	No electromechanical components	N/A
5.3.6	Simulation of faults		P
5.3.7	Unattended equipment	Thermostats, temperature limiters and thermal cut-offs are not used	N/A
5.3.8	Compliance criteria for abnormal operating and fault conditions		P

6	CONNECTION TO TELECOMMUNICATION NETWORKS		N/A
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		N/A
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements		N/A
	Test voltage (V) .....		—
	Current in the test circuit (mA) .....		—
6.1.2.2	Exclusions .....		N/A

6.2	Protection of equipment users from overvoltages on telecommunication networks		N/A
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test		N/A
6.2.2.3	Compliance criteria		N/A

6.3	Protection of the telecommunication wiring system from overheating		N/A
	Max. output current (A).....:		—
	Current limiting method .....		—

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N/A
7.1	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.2	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.3	Insulation between primary circuits and cable distribution systems		N/A
7.3.1	General		N/A
7.3.2	Voltage surge test		N/A
7.3.3	Impulse test		N/A

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N/A
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
A.1.1	Samples.....:		—
	Wall thickness (mm) .....		—
A.1.2	Conditioning of samples; temperature (°C).....:		N/A
A.1.3	Mounting of samples .....		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D .....		N/A
A.1.5	Test procedure		N/A
A.1.6	Compliance criteria		—
	Sample 1 burning time (s) .....		—
	Sample 2 burning time (s) .....		—
	Sample 3 burning time (s) .....		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
A.2.1	Samples, material.....:		—
	Wall thickness (mm) ..... :		—
A.2.2	Conditioning of samples		N/A
A.2.3	Mounting of samples ..... :		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C ..... :		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s) ..... :		—
	Sample 2 burning time (s) ..... :		—
	Sample 3 burning time (s) ..... :		—
A.2.7	Alternative test acc. to IEC 60695-2-2, cl. 4 and 8		N/A
	Sample 1 burning time (s) ..... :		—
	Sample 2 burning time (s) ..... :		—
	Sample 3 burning time (s) ..... :		—
A.3	Hot flaming oil test (see 4.6.2)		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N/A
B.1	General requirements		N/A
	Position .....:		—
	Manufacturer .....:		—
	Type .....:		—
	Rated values .....:		—
B.2	Test conditions		N/A
B.3	Maximum temperatures		N/A
B.4	Running overload test		N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days) .....:		—
	Electric strength test: test voltage (V) .....:		—
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
B.7.1	Test procedure		N/A
B.7.2	Alternative test procedure; test time (h) .....		N/A
B.7.3	Electric strength test		N/A
B.8	Test for motors with capacitors		N/A
B.9	Test for three-phase motors		N/A
B.10	Test for series motors		N/A
	Operating voltage (V) .....		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		P
	Position .....	Evaluated during the power supply certification	—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
	Method of protection.....		—
C.1	Overload test		N/A
C.2	Insulation	Evaluated during the power supply certification	P
	Protection from displacement of windings.....	Evaluated during the power supply certification	P

D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		N/A
D.1	Measuring instrument		N/A
D.2	Alternative measuring instrument		N/A

E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N/A
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F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10)		N/A
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G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N/A
G.1	Summary of the procedure for determining minimum clearances		N/A
G.2	Determination of mains transient voltage (V).....		N/A
G.2.1	AC mains supply		N/A
G.2.2	DC mains supply		N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
G.3	Determination of telecommunication network transient voltage (V) .....		N/A
G.4	Determination of required withstand voltage (V) ..		N/A
G.5	Measurement of transient levels (V) .....		N/A
G.6	Determination of minimum clearances .....		N/A

H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
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J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N/A
	Metal used .....		—

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.7)		N/A
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V) .....		N/A
K.3	Thermostat endurance test; operating voltage (V) .....		N/A
K.4	Temperature limiter endurance; operating voltage (V) .....		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation		N/A

L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)		N/A
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment		N/A

M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N/A
M.1	Introduction		N/A
M.2	Method A		N/A
M.3	Method B		N/A
M.3.1	Ringling signal		N/A
M.3.1.1	Frequency (Hz) .....		—

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
M.3.1.2	Voltage (V) .....		—
M.3.1.3	Cadence; time (s), voltage (V) .....		—
M.3.1.4	Single fault current (mA).....		—
M.3.2	Tripping device and monitoring voltage .....		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V) .....		N/A
N	ANNEX N, IMPULSE TEST GENERATORS (see 2.10.3.4, 6.2.2.1, 7.3.2 and clause G.5)		N/A
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A
P	ANNEX P, NORMATIVE REFERENCES		N/A
Q	ANNEX Q, BIBLIOGRAPHY		N/A
R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N/A
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A
S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N/A
S.1	Test equipment		N/A
S.2	Test procedure		N/A
S.3	Examples of waveforms during impulse testing		N/A
T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
			—
U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N/A
			—
V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		N/A



IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
V.1	Introduction		N/A
V.2	TN power distribution systems		N/A



W	ANNEX W, SUMMATION OF TOUCH CURRENTS		N/A
W.1	Touch current from electronic circuits		N/A
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A

X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		N/A
X.1	Determination of maximum input current		N/A
X.2	Overload test procedure		N/A

Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N/A
Y.1	Test apparatus .....		N/A
Y.2	Mounting of test samples .....		N/A
Y.3	Carbon-arc light-exposure apparatus .....		N/A
Y.4	Xenon-arc light exposure apparatus .....		N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

CENELEC COMMON MODIFICATIONS [C], SPECIAL NATIONAL CONDITIONS [S] AND A-DEVIATIONS (NATIONAL DEVIATIONS) [A] (EN 60950-1:2001, Annex ZB and Annex ZC)			
General	C: Delete all the "country" notes in the reference document according to the following list:  1.1.5 Note 2      1.5.8 Note 2      1.6.1 Note 1.7.2 Note 4      1.7.12 Note 2      2.6 Note 2.2.3 Note      2.2.4 Note      2.3.2 Note 2, 7, 8 2.3.3 Note 1, 2      2.3.4 Note 2,3      2.7.1 Note 2.10.3.1 Note 4      3.2.1.1 Note      3.2.3 Note 1, 2 3.2.5.1 Note 2      4.3.6 Note 1,2      4.7.2.2 Note 4.7.3.1 Note 2      6.1.2.1 Note      6.1.2.2 Note 6.2.2 Note      6.2.2.1 Note 2      6.2.2.2 Note 7 Note 4      7.1 Note G2.1 Note 1, 2      Annex H Note 2		P
1.2.4.1	S (DK): Certain types of Class I appliances (see 3.2.1.1) may be provided with a plug not establishing earthing conditions when inserted into Danish socket-outlets.	Appliance inlet.	N/A
1.5.1	A (SE, Ordinance 1990:944 and CH, Ordinance on environmentally hazardous substances SR 814.013, Annex 3.2, Mercury): Add NOTE – Switches containing mercury such as thermostats, relays and level controllers are not allowed.	There are no components containing mercury in the equipment	P
1.5.8	S (NO): Due to the IT power system used (see annex V, Fig. V.7), capacitors are required to be rated for the applicable line-to-line voltage (230 V).		P
1.7.2	S (FI, NO, SE): CLASS I PLUGGABLE EQUIPMENT TYPE A intended for connection to other equipment or a network shall, if safety relies on connection to protective earth or if surge suppressors are connected between the network terminals and accessible parts, have a marking stating that the equipment must be connected to an earthed mains socket-outlet.  The marking text in the applicable countries shall be as follows:		N/A
	FI: "Laite on liitettävä suojamaadoitus-koskettimilla varustettuun pistorasiaan"		N/A
	NO: "Apparatet må tilkoples jordet stikkontakt"		N/A
	SE: "Apparaten skall anslutas till jordat uttag"		N/A
	A (DK, Heavy Current Regulations): Supply cords of class I equipment, which is delivered without a plug, must be provided with a visible tag with the following text:  Vigtigt! Lederen med grøn/gul isolation må kun tilsluttes		N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	<p>en klemme mærket</p> <p> eller </p> <p>If essential for the safety of the equipment, the tag must in addition be provided with a diagram which shows the connection of the other conductors, or be provided with the following text: "For tilslutning af de øvrige ledere, se medfølgende installationsvejledning."</p>		
1.7.5	S (DK): Socket-outlets for providing power to other equipment shall be in accordance with the Heavy Current Regulations, Section 107-2-D1, Standard Sheet DK 1-3a, DK 1-5a or DK 1-7a, when used on Class I equipment. For stationary equipment the socket-outlet shall be in accordance with Standard Sheet DK 1-1b or DK 1-5a.	No socket-outlets	N/A
1.7.5	A (DK, Heavy Current Regulations): CLASS II EQUIPMENT shall not be fitted with socket-outlets for providing power to other equipment.	Class I equipment	N/A
1.7.12	<p>A (DE, Gesetz über technische Arbeitsmittel (Gerätesicherheitsgesetz) [Law on technical labour equipment {Equipment safety law}], of 23<sup>rd</sup> October 1992, Article 3, 3<sup>rd</sup> paragraph, 2<sup>nd</sup> sentence, together with the "Allgemeine Verwaltungsvorschrift zur Durchführung des Zweiten Abschnitts des Gerätesicherheitsgesetzes" [General administrative regulation on the execution of the Second Section of the Equipment safety law], of 10<sup>th</sup> January 1996, article 2, 4<sup>th</sup> paragraph item 2):</p> <p>Directions for use with rules to prevent certain hazards for (among others) maintenance of the technical labour equipment, also for imported technical labour equipment shall be written in the German language.</p> <p>NOTE: Of this requirement, rules for use even only by service personnel are not exempted.</p>	German manual and instructions are to be provided to the user	N/A
1.7.15	A (CH, Ordinance on environmentally hazardous substances SR 814.013): Annex 4.10 of SR 814.013 applies for batteries.		N/A
	<p>A (DE, Regulation on protection against hazards by X-ray, of 8<sup>th</sup> January 1987, Article 5 [Operation of X-ray emission source], clauses 1 to 4):</p> <p>a) A licence is required by those who operate an X-ray emission source.</p> <p>b) A licence in accordance with Cl. 1 is not required by those who operate an X-ray emission source on which the electron acceleration voltage does not exceed 20 kV if</p> <p>1) the local dose rate at a distance of 0,1 m</p>	No X-ray	N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	<p>from the surface does not exceed 1 <math>\mu\text{Sv/h}</math> and</p> <p>2) it is adequately indicated on the X-ray emission source that</p> <p>i) X-rays are generated and</p> <p>ii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.</p> <p>c) A licence in accordance with Cl. 1 is also not required by persons who operate an X-ray emission source on which the electron acceleration voltage exceeds 20 kV if</p> <p>1) the X-ray emission source has been granted a type approval and</p> <p>2) it is adequately indicated on the X-ray emission source that</p> <p>i) X-rays are generated</p> <p>ii) the device stipulated by the manufacturer or importer guarantees that the maximum permissible local dose rate in accordance with the type approval is not exceeded and</p> <p>iii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.</p> <p>d) Furthermore, a licence in accordance with Cl. 1 is also not required by persons who operate X-ray emission sources on which the electron acceleration voltage does not exceed 30 kV if</p> <p>1) the X-rays are generated only by intrinsically safe CRTs complying with Enclosure III, No. 6,</p> <p>2) the values stipulated in accordance with Enclosure III, No. 6.2 are limited by technical measures and specified in the device and</p> <p>3) it is adequately indicated on the X-ray emission source that the X-rays generated are adequately screened by the intrinsically safe CRT.</p>		
2.2.4	S (NO): Requirements according to this annex, 1.7.2 and 6.1.2.1 apply.		N/A
2.3.2	S (NO): Requirements according to this annex, 6.1.2.1 apply.		N/A
2.3.3 and 2.3.4	S (NO): Requirements according to this annex, 1.7.2 and 6.1.2.1 apply.		N/A
2.6.3.3	S (GB): The current rating of the circuit shall be taken as 13 A, not 16 A.		N/A
2.7.1	<p>C: Replace the subclause as follows:</p> <p><i>Basic requirements</i></p> <p>To protect against excessive current, short-circuits and earth faults in PRIMARY CIRCUITS,</p>		N/A

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	<p>protective devices shall be included either as integral parts of the equipment or as parts of the building installation, subject to the following, a), b) and c):</p> <p>a) except as detailed in b) and c), protective devices necessary to comply with the requirements of 5.3 shall be included as parts of the equipment;</p> <p>b) for components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short-circuit and earth fault protection may be provided by protective devices in the building installation;</p> <p>c) it is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent and short-circuit protection in the building installation, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instructions.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>		
	S (GB): To protect against excessive currents and short-circuits in the PRIMARY CIRCUIT OF DIRECT PLUG-IN EQUIPMENT, protective device shall be included as integral parts of the DIRECT PLUG-IN EQUIPMENT.		N/A
2.7.2	C: Void.		N/A
2.10.2	C: Replace in the first line "(see also 1.4.7)" by "(see also 1.4.8)".		N/A
2.10.3.1	S (NO): Due to the IT power distribution system used (see annex V, Fig. V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage and will remain at 230 V in case of a single earth fault		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.2.1.1	<p>S (CH): Supply cords of equipment having a RATED CURRENT not exceeding 10 A shall be provided with a plug complying with SEV 1011 or IEC 60884-1 and one of the following dimension sheets:</p> <p>SEV 6532-2.1991, Plug type 15, 3P+N+PE 250/400 V, 10 A            SEV 6533-2.1991, Plug type 11, L+N 250 V, 10 A            SEV 6534-2.1991, Plug type 12, L+N+PE 250 V, 10 A</p> <p>In general, EN 60309 applies for plugs for currents exceeding 10A. However, a 16 A plug and socket-outlet system is being introduced in Switzerland, the plugs of which are according to the following dimension sheets, published in February 1998:</p> <p>SEV 5932-2.1998, Plug type 25, 3L+N+PE 230/400 V, 16 A            SEV 5933-2.1998, Plug type 21, L+N 250 V, 16 A            SEV 5934-2.1998, Plug type 23, L+N+PE 250 V, 16 A</p>		N/A
	<p>S (DK): Supply cords of single-phase equipment having a rated current not exceeding 13 A shall be provided with a plug according to the Heavy Current Regulations, Section 107-2-D1.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.</p> <p>If poly-phase equipment and single-phase equipment having a RATED CURRENT exceeding 13 A is provided with a supply cord with a plug, this plug shall be in accordance with the Heavy Current Regulations, Section 107-2-D1 or EN 60309-2.</p>		N/A
	<p>S (ES): Supply cords of single-phase equipment having a rated current not exceeding 10 A shall be provided with a plug according to UNE 20315:1994.</p> <p>Supply cords of single-phase equipment having a rated current not exceeding 2,5 A shall be provided with a plug according to UNE-EN 50075:1993.</p> <p>CLASS I EQUIPMENT provided with socket-outlets with earth contacts or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with standard UNE 20315:1994.</p> <p>If poly-phase equipment is provided with a supply cord with a plug, this plug shall be in accordance with UNE-EN 60309-2.</p>		N/A

IEC 60950-1 / EN 60950-1									
Clause	Requirement – Test	Result – Remark	Verdict						
	<p>S (GB): Apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a 'standard plug' in accordance with Statutory Instrument 1768:1994 – The Plugs and Socket etc. (Safety) Regulations 1994, unless exempted by those regulations.</p> <p>NOTE – 'Standard plug' is defined in SI 1768:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.</p>		N/A						
	<p>S (IE): Apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13 A plug in accordance with Statutory Instrument 525:1997 – National Standards Authority of Ireland (section 28) (13 A Plugs and Conversion Adaptors for Domestic Use) Regulations 1997.</p>		N/A						
3.2.3	<p>C: Delete Note 1 and in Table 3A, delete the conduit sizes in parentheses.</p>	Deleted (not permanently connected equipment)	N/A						
3.2.5.1	<p>C: Replace</p> <p>"60245 IEC 53" by "H05 RR-F";</p> <p>"60227 IEC 52" by "H03 VV-F or H03 VVH2-F";</p> <p>"60227 IEC 53" by "H05 VV-F or H05 VVH2-F2".</p> <p>In Table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6</td><td>0,75<sup>1)</sup></td></tr><tr><td>Over 6 up to and including 10</td><td>(0,75)<sup>2)</sup> 1,0</td></tr><tr><td>Over 10 up to and including 16</td><td>(1,0)<sup>3)</sup> 1,5</td></tr></table> <p>In the Conditions applicable to Table 3B delete the words "in some countries" in condition <sup>1)</sup>.</p> <p>In Note 1, applicable to Table 3B, delete the second sentence.</p>	Up to and including 6	0,75 <sup>1)</sup>	Over 6 up to and including 10	(0,75) <sup>2)</sup> 1,0	Over 10 up to and including 16	(1,0) <sup>3)</sup> 1,5	Replaced	N/A
Up to and including 6	0,75 <sup>1)</sup>								
Over 6 up to and including 10	(0,75) <sup>2)</sup> 1,0								
Over 10 up to and including 16	(1,0) <sup>3)</sup> 1,5								
3.2.5.1	<p>S (GB): A power supply cord with conductor of 1,25 mm<sup>2</sup> is allowed for equipment with a rated current over 10 A and up to and including 13 A.</p>		N/A						
3.3.4	<p>C: In table 3D, delete the fourth line: conductor sizes for 10 to 13 A, and replace with the following:</p> <p>"Over 10 up to and including 16        1,5 to 2,5   1,5 to 4"</p> <p>Delete the fifth line: conductor sizes for 13 to 16 A.</p>	Deleted	N/A						

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.3.4	S (GB): The range of conductor sizes of flexible cords to be accepted by terminals for equipment with A RATED CURRENT of over 10 A up to and including 13 A is: - 1,25 mm <sup>2</sup> to 1,5 mm <sup>2</sup> nominal cross-sectional area.		N/A
4.3.6	S (GB): The torque test is performed using a socket outlet complying with BS 1363 and the plug part OF DIRECT PLUG-IN EQUIPMENT shall be assessed to BS 1363: Part 1, 12.1, 12.2, 12.3, 12.9, 12.11, 12.12, 12.16 and 12.17, except that the test of 12.17 is performed at not less than 125 °C.	Not direct plug-in equipment	N/A
	S (IE): DIRECT PLUG-IN EQUIPMENT is known as plug similar devices. Such devices shall comply with Statutory Instrument 526:1997 – National Standards Authority of Ireland (Section 28) (Electrical plugs, plug similar devices and sockets for domestic use) Regulations, 1997.	Not direct plug-in equipment	N/A
4.3.13.6	C: Add the following note: NOTE Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this recommendation are currently under development.	Added	N/A
6.1.2.1	S (FI, NO, SE): Add the following text between the first and second paragraph:  If this insulation is solid, including insulation forming part of a component, it shall at least consist of either  - two layers of thin sheet material, each of which shall pass the electric strength test below, or  - one layer having a distance through insulation of at least 0,4 mm, which shall pass the electric strength test below.  If this insulation forms part of a semiconductor component (e.g. an optocoupler), there is no distance through insulation requirement for the insulation consisting of an insulating compound completely filling the casing, so that CLEARANCES AND CREEPAGE DISTANCES do not exist, if the component passes the electric strength test in accordance with the compliance clause below and in addition  - passes the tests and inspection criteria of 2.10.8 with an electric strength test of 1,5 kV multiplied by 1,6 (the electric strength test of 2.10.7 shall be performed using 1,5 kV), and  - is subject to ROUTING TESTING for electric strength during manufacturing, using a test	No TNV circuits	N/A



IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	<p>voltage of 1,5 kV.</p> <p>It is permitted to bridge this insulation with a capacitor complying with EN 132400:1994, subclass Y2.</p> <p>A capacitor classified Y3 according to EN 132400:1994, may bridge this insulation under the following conditions:</p> <ul style="list-style-type: none"> <li>- the insulation requirements are satisfied by having a capacitor classified Y3 as defined by EN 132400, which in addition to the Y3 testing, is tested with an impulse test of 2,5 kV defined in EN 60950:2000, 6.2.2.1;</li> <li>- the additional testing shall be performed on all the test specimens as described in EN 132400;</li> <li>- the impulse test of 2,5 kV is to be performed before the endurance test in EN 132400, in the sequence of tests as described in EN 132400.</li> </ul>		
6.1.2.2	S (FI, NO, SE): The exclusions are applicable for PERMANENTLY CONNECTED EQUIPMENT and PLUGGABLE EQUIPMENT TYPE B and equipment intended to be used in a RESTRICTED ACCESS LOCATION where equipotential bonding has been applied, e.g. in a telecommunication centre, and which has provision for a permanently connected PROTECTIVE EARTHING CONDUCTOR and is provided with instructions for the installation of that conductor by a service person.	No TNV circuits	N/A
7.1	S (FI, NO, SE): Requirements according to this annex, 6.1.2.1 and 6.1.2.2 apply with the term TELECOMMUNICATION NETWORK in 6.1.2 being replaced by the term CABLE DISTRIBUTION SYSTEM.	No TNV circuits	N/A
G.2.1	S (NO): Due to the IT power distribution system used (see annex V, Fig. V.7), the A.C. MAINS SUPPLY voltage is considered to be equal to the line-to-line voltage, and will remain at 230 V in case of a single earth fault.		P
Annex H	<p>C: Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the operator access area, the dose rate shall not exceed 1 <math>\mu</math>Sv/h (0,1 mR/h) (see note). Account is taken of the background level.</p> <p>Replace the notes as follows:</p> <p>NOTE These values appear in Directive 96/29/Euratom.</p> <p>Delete Note 2.</p>	The unit does not emit X-ray radiation	N/A
Annex P	<p>C: Replace the text of this annex by:</p> <p>See annex ZA.</p>	Replaced	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
Annex Q	<p>C: Replace the title of IEC 61032 by "Protection of persons and equipment by enclosures – Probes for verification".</p> <p>Add the following notes for the standards indicated:</p> <p>IEC 60127 NOTE Harmonized as EN 60127 (Series) (not modified)</p> <p>IEC 60269-2-1 NOTE Harmonized as HD 630.2.1 S4:2000 (modified)</p> <p>IEC 60529 NOTE Harmonized as EN 60529:1991 (not modified)</p> <p>IEC 61032 NOTE Harmonized as EN 61032:1998 (not modified)</p> <p>IEC 61140 NOTE Harmonized as EN 61140:2001 (not modified)</p> <p>ITU-T Recommendation K.31</p> <p>NOTE in Europe, the suggested document is EN 50083-1.</p>		P

IEC 60950-1 / EN 60950-1				
Clause	Requirement – Test	Result – Remark	Verdict	
Annex ZA	C: NORMATIVE REFERENCES TO INTERNATIONAL PUBLICATIONS WITH THEIR RELEVANT EUROPEAN PUBLICATIONS		P	
	This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).			
	NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.			
	—	IEC 60050-151		
	—	IEC 60050-195		
	EN 60065:1998 + corr. June 1999	IEC 60065 (mod):1998		
	EN 60073:1996	IEC 60073:1996		
	HD 566 S1:1990	IEC 60085:1984		
	HD 214 S2:1980	IEC 60112:1979		
	HD 611.4.1.S1:1992	IEC 60216-4-1:1990		
	HD 21 <sup>1)</sup> Series	IEC 60227 (mod) Series		
	HD 22 <sup>2)</sup> Series	IEC 60245 (mod) Series		
	EN 60309 Series	IEC 60309 Series		
	EN 60317-43:1997	IEC 60317-43:1997		
	EN 60320 Series	IEC 60320 (mod) Series		
	HD 384.3 S2:1995	IEC 60364-3 (mod):1993		
	HD 384.4.41 S2:1996	IEC 60364-4-41 (mod):1992 <sup>3)</sup>		
	EN 132400:1994 <sup>4)</sup>	IEC 60384-14:1993		
	+ A2:1998 + A3:1998 + A4:2001			
	EN 60417-1	IEC 60417-1		
	HD 625.1 S1:1996 + corr. Nov. 1996	IEC 60664-1 (mod):1992		
	EN 60695-2-2:1994	IEC 60695-2-2:1991		
	EN 60695-2-11:2001	IEC 60695-2-11:2000		
	—	IEC 60695-2-20:1995		
	—	IEC 60695-10-2:1995		
	—	IEC 60695-11-3:2000		
	—	IEC 60695-11-4:2000		
	EN 60695-11-10:1999	IEC 60695-11-10:1999		
	EN 60695-11-20:1999	IEC 60695-11-20:1999		
	EN 60730-1:2000	IEC 60730-1:1999 (mod)		
	EN 60825-1:1994 + corr. Febr. 1995 + A11:1996 + corr. July 1997	IEC 60825-1:1993		
	EN 60825-2:2000	IEC 60825-2:2000		
	—	IEC 60825-9:1999		
	EN 60851-3:1996	IEC 60851-3:1996		
	EN 60851-5:1996	IEC 60825-5:1996		
	EN 60851-6:1996	IEC 60851-6:1996		
	—	IEC 60885-1:1987		
	EN 60990:1999	IEC 60990:1999		
	—	IEC 61058-1:2000		
	EN 61965:2001	IEC 61965:2000		
	EN ISO 178:1996	ISO 178:1993		
	EN ISO 179 Series	ISO 179 Series		
	EN ISO 180:2000	ISO 180:1993		
	—	ISO 261:1998		

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	— EN ISO 527 Series — EN ISO 4892 Series — EN ISO 8256:1996 — EN ISO 9773:1998 — — 1) The HD 21 series is related to, but not directly equivalent with the IEC 60227 series 2) The HD 22 series is related to, but not directly equivalent with the IEC 60245 series 3) IEC 60364-4-41:1992 is superseded by IEC 60364-4-41:2001 4) EN 132400, Sectional Specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains (Assessment level D), and its amendments are related to, but not directly equivalent to IEC 60384-14	ISO 262:1998 ISO 527 Series ISO 386:1984 ISO 4892 Series ISO 7000:1989 ISO 8256:1990 ISO 9772:1994 ISO 9773:1998 ITU-T:1988 Recommendation K.17 ITU-T:2000 Recommendation K.21	

1.5.1	TABLE: list of critical components					P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity <sup>1)</sup>	
Redundant Switching Power Supply	Zippy Technology Corp.	P1A-6250P	I/P: 100-240 Vac, 60-50 Hz, 6-3A., Class I  O/P: +5V/25A, +12V/12A, - 12V/1.0A, +3.3V/14A, - 5V/0.5A, +5VSB/1.5A	IEC 60950 : 1991+A1+A2+A 3+A4	UL, TUV, CB (certified by TUV/R)	
LCD Panel	Prime View	V16C6448AC	6.4” TFT	--	--	
CD-ROM Drive (Optional)	Quanta Storage Inc.	SCR-242	5Vdc, 1.5A max.	UL 60950, EN 60950	UL, TUV	
RTC Battery	Rayovac Corp.	BR2032	3Vdc, 195mAh	UL 1416	UL	
Polyswitch for USB and PS2 Port	Polytronics Technology Corp.	SMD1812P110T S	6Vdc, 1.1A	UL 1434	UL	
-Alternate Use-	Tyco Electronics Corp.	MiniSMDC110	8Vdc, 1.1A	UL 1434	UL	
System Fan (two provided)	Delta Electronics Inc.	AFB0912HH	12Vdc, 0.4A max., 54.03 CFM min.	UL507	UL, VDE	
CPU Fan (Optional)	Bi-Sonic Technology Corp.	BP601012H	12Vdc, 0.21A max., 23.3 CFM max.	UL507, IEC 60950	UL, TUV	
PCB	YETI Electronics Co., Ltd.	H1	V-0 min, 105 °C	UL 769	UL	
-Alternate Use-	Various	Various	V-0 min, 105 °C	UL 769	UL	
DC/AC Inverter	King Core Electronics Inc.	HY1036	I/P: 12 Vdc, 0.52 A max. O/P: 410 Vrms, 6.3 mA max.	--	--	
-Transformer (T1)	Zhong Shan	UI098010S	Class 105 °C	--	--	
Enclosure material	Various	Various	Metal, 1.0 mm thick min., overall 425 by 265 by 175 mm	--	--	
Air Filter	Various	Various	Rated V-2	UL94	UL	
<sup>1)</sup> 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 (mA)	Ifuse (mA)	condition/status
CPU board: PCA-6751						
-	-	90V/50Hz	66.6	738	738	* Max. Normal Load.
-	-	90V/60Hz	66.5	742	742	* Max. Normal Load.
F1	6	100V/50Hz	66.1	664	664	* Max. Normal Load.
F1	6	100V/60Hz	66.2	662	662	* Max. Normal Load.
F1	6	240V/50Hz	62.5	274	274	* Max. Normal Load.
F1	6	240V/60Hz	62.7	278	278	* Max. Normal Load.
-	-	254V/50Hz	62.1	261	261	* Max. Normal Load.
-	-	254V/60Hz	62.6	266	266	* Max. Normal Load.
-	-	264V/50Hz	60.2	445	445	* Max. Normal Load.
-	-	264V/60Hz	60.4	443	443	* Max. Normal Load.
CPU board: PCA-6774F						
-	-	90V/50Hz	86.7	965	965	* Max. Normal Load.
-	-	90V/60Hz	86.7	965	965	* Max. Normal Load.
F1	6	100V/50Hz	85.9	859	859	* Max. Normal Load.
F1	6	100V/60Hz	85.9	859	859	* Max. Normal Load.
F1	6	240V/50Hz	81.5	353	353	* Max. Normal Load.
F1	6	240V/60Hz	81.5	357	357	* Max. Normal Load.
-	-	254V/50Hz	80.8	334	334	* Max. Normal Load.
-	-	254V/60Hz	80.8	338	338	* Max. Normal Load.
-	-	264V/50Hz	78.9	567	567	* Max. Normal Load.
-	-	264V/60Hz	78.9	562	562	* Max. Normal Load.

CPU board: PCI-6870F						
-	-	90V/50Hz	82.7	919	919	* Max. Normal Load.
-	-	90V/60Hz	82.7	919	919	* Max. Normal Load.
F1	6	100V/50Hz	82.1	823	823	* Max. Normal Load.
F1	6	100V/60Hz	82.1	824	824	* Max. Normal Load.
F1	6	240V/50Hz	77.8	338	338	* Max. Normal Load.
F1	6	240V/60Hz	77.8	342	342	* Max. Normal Load.
-	-	254V/50Hz	77	319	319	* Max. Normal Load.
-	-	254V/60Hz	77	323	323	* Max. Normal Load.
-	-	264V/50Hz	75.2	545	545	* Max. Normal Load.
-	-	264V/60Hz	75.1	538	538	* Max. Normal Load.
CPU board: PCI-6872F						
-	-	90V/50Hz	79.8	837	837	* Max. Normal Load.
-	-	90V/60Hz	79.8	841	841	* Max. Normal Load.
F1	6	100V/50Hz	79.2	734	734	* Max. Normal Load.
F1	6	100V/60Hz	79.2	732	732	* Max. Normal Load.
F1	6	240V/50Hz	75.6	324	324	* Max. Normal Load.
F1	6	240V/60Hz	75.5	327	327	* Max. Normal Load.
-	-	254V/50Hz	75.4	315	315	* Max. Normal Load.
-	-	254V/60Hz	75.4	321	321	* Max. Normal Load.
-	-	264V/50Hz	72.1	512	512	* Max. Normal Load.
-	-	264V/60Hz	72.0	510	510	* Max. Normal Load.

CPU board: PCI-6871F						
-	-	90V/50Hz	70.2	756	756	* Max. Normal Load.
-	-	90V/60Hz	70.2	758	758	* Max. Normal Load.
F1	6	100V/50Hz	69.8	689	689	* Max. Normal Load.
F1	6	100V/60Hz	69.9	684	684	* Max. Normal Load.
F1	6	240V/50Hz	70.1	283	283	* Max. Normal Load.
F1	6	240V/60Hz	70.0	288	288	* Max. Normal Load.
-	-	254V/50Hz	68.4	274	274	* Max. Normal Load.
-	-	254V/60Hz	68.4	275	275	* Max. Normal Load.
-	-	264V/50Hz	66.7	456	456	* Max. Normal Load.
-	-	264V/60Hz	66.7	452	452	* Max. Normal Load.
Note: * Maximum normal load is defined as: The EUT crossed reading and writing data between HDD, and all USB connector load with the current at 0.5 A.						

2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements					P
clearance cl and creepage distance dcr at/of:	Up (V)	U r.m.s. (V)	required cl (mm)	cl (mm)	required dcr (mm)	dcr (mm)
Pri – Enclosure(Basic)	340	240	2.0	4.1	2.5	4.1
Note:						

2.10.5	TABLE: distance through insulation measurements				N/A
distance through insulation di at/of:	Up (V)	test voltage (V)	required di (mm)	di (mm)	
-	-	-	-	-	
Note: No further evaluation has been conducted, as the power supply is CB approved.					



4.5	TABLE: maximum temperatures		P
	test voltage (V) .....	90V/264V	—
	t <sub>amb1</sub> (°C) .....	21.7°C	—
	t <sub>amb2</sub> (°C) .....	21.6°C	—
maximum temperature T of part/at::		T (°C)	allowed T <sub>max</sub> (°C)
Test Voltage		90V60Hz/264V60Hz	--
Power Supply		-	-
T2 Coil		28/27	65 max
T2 Core		28/27	65 max
C5 body		29/27	-
T1 Coil		31/29	65 max
T1 Core		30/29	65 max
F3 Coil		32/31	-
PWB under Q12 heat sink		32/30	-
HDD body		27/27	-
CD-ROM body		23/23	-
Main Board		-	-
PWB under U18		28/29	-
PWB under U10		27/28	-
PWB under U12		30/28	-
PWB under U4		26/27	-
PWB under U9		28/29	-
PWB under U8		27/29	-
RTC battery body		25/26	-
Main board for LCD panel		-	-
PWB under UA3		27/28	-
L10 coil		26/27	65 max
CA16 body		23/23	-
PWB under U4		25/26	-
Inverter Assembly		-	-
T1 coil		46/46	65 max
T1 core		38/39	65 max
T2 coil		26/26	65 max

T2 core	25//25	65 max			
Panel body	26/26	-			
Enclosure outside near power supply	23/24	45 max			
Note: 1. With maximum ambient temperature specified 50°C. 2. The Test was conducted on CPU board, PCA-6774F.					
temperature T of winding:	R <sub>1</sub> (Ω)	R <sub>2</sub> (Ω)	T (°C)	allowed T <sub>max</sub> (°C)	insulation class
-	-	-	-	-	-

4.5.2	TABLE: ball pressure test of thermoplastic parts			N/A
	allowed impression diameter (mm) .....	-	-	-
part	test temperature (°C)		impression diameter (mm)	
-	-		-	

4.7	TABLE: resistance to fire			N/A
part	manufacturer of material	type of material	thickness (mm)	flammability class
-	-	-	-	-

5.2	TABLE: electric strength tests, impulse tests and voltage surge tests			P
test voltage applied between:		test voltage (V) a.c. / d.c.	breakdown Yes / No	
Primary to SELV connector		DC 4242	No	
Primary to enclosure		DC 4242	No	
supplementary information				

5.3	TABLE: fault condition tests					P
	ambient temperature (°C) .....	-				—
	model/type of power supply .....	P1A-6250P				—
	manufacturer of power supply .....	Zippy Technology Corp.				—
	rated markings of power supply .....	I/P: 100-240 Vac, 60-50 Hz, 6-3A., Class I O/P: +5V/25A, +12V/12A, -12V/1.0A, +3.3V/14A, -5V/0.5A, +5VSB/1.5A				—
component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
BD3	Short	240 Vac	10 min	F1	0.36	No hazard. Abnormal Reverse Current: 2.8 mA.
Ventilation opening	Short	240 Vac	5 hrs	F1	0.37	No hazard. Temperature data on: T1 Coil: 50°C T1 Core: 50°C Ambient: 25°C
System Fan	Stalled	240 Vac	3 hrs	F1	0.36	No hazard. Temperature data on: T1 Coil: 37°C T1 Core: 37°C Ambient: 22°C
Power Fan	Stalled	240 Vac	1.8 hrs	F1	0.37	No hazard. Temperature data on: T1 Coil: 37°C T1 Core: 46°C Ambient: 25°C
CPU Fan	Stalled	240 Vac	4.1 hrs	F1	0.43	No hazard. Temperature data on: T1 Coil: 32°C T1 Core: 32°C Ambient: 23°C

Limited Current Test for Inverter, HY1036 CN3 Pin 1 to Earth						
C17	Short	240 Vac	-	F1	0.36	Unit shut down immediately. No hazard.
T2 Pin 1-2	Short	240 Vac	-	F1	0.36	Unit shut down immediately. No hazard.
C22	Short	240 Vac	-	F1	0.36	Unit shut down immediately. No hazard.
R17	Open	240 Vac	-	F1	0.36	No hazard. Max. Vp: 12 V, mAp: 6 mA, Frequency: 72.6 kHz.
Limited Current Test for Inverter, HY1036 CN3 Pin 2 to Earth						
C17	Short	240 Vac	-	F1	0.36	No hazard. Max. Vp: 12.8 V, mAp: 6.4 mA, Frequency: 44.4 kHz.
T2 Pin 1-2	Short	240 Vac	-	F1	0.36	No hazard. Max. Vp: 12.6 V, mAp: 6.3 mA, Frequency: 44.9 kHz.
C22	Short	240 Vac	-	F1	0.36	No hazard. Max. Vp: 8 V, mAp: 4 mA, Frequency: 52.5 kHz.
R17	Open	240 Vac	-	F1	0.36	No hazard. Max. Vp: 9.2 V, mAp: 4.6 mA, Frequency: 86.6 kHz.
Limited Current Test for Inverter, HY1036 CN3 Pin 1 to CN3 Pin 2.						
C17	Short	240 Vac	-	F1	0.36	Unit shut down immediately. No hazard.
T2 Pin 1-2	Short	240 Vac	-	F1	0.36	No hazard. Max. Vp: 39.6 V, mAp: 19.8 mA, Frequency: 51.2 kHz.
C22	Short	240 Vac	-	F1	0.36	No hazard. Max. Vp: 29.2 V, mAp: 13.6 mA, Frequency: 48.6 kHz.
R17	Open	240 Vac	-	F1	0.36	No hazard. Max. Vp: 11.6 V, mAp: 5.8 mA, Frequency: 73.1 kHz.
supplementary information						

National Differences			
Clause	Requirement – Test	Result	Verdict

APPENDIX	National difference : <b>AUSTRALIA (AU)</b> AS/NZS 60950-1: 2003 IEC 60950-1: 2001 (CB Bulletin No. 107A , May 2004)	
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## EXPLANATION FOR ABBREVIATIONS

**P**= Pass, **F**= Fail, **N**= Not Applicable. Placed in the column to the right.

**ZZ.1** Introduction

This annex sets out variations between this standard and IEC 60950-1: 2001. These variations indicate national variations for purposes of the IECEE CB Scheme and will be published in the IECEE CB Bulletin. These variations are indicated within the body of the Standard by marginal bars.

**ZZ.2** Variations

The variations are as follows:

1.2	Between the definitions for 'Person, service' and 'Range', rated frequency' insert the following variation:  Potential ignition source 1.2.12.201		P
1.2.12.15	After definition 1.2.12.15, add the following: 1.2.12.201 potential ignition source: Possible fault which can start a fire if the open-circuit voltage measured across an interruption or faulty contact exceeds a value of 50 V (peak) a.c or d.c and the product of the peak value of this voltage and the measured r.m.s. current under normal operating conditions exceeds 15 VA.  Such a faulty contact or interruption in an electrical connection includes those which may occur in conductive patterns on printed boards.  NOTE 201 An electronic protection circuit may be used to prevent such a fault from becoming a POTENTIAL IGNITION SOURCE.  NOTE 202 This definition is identical to that used in AS/NZS 60065: 2003.		P
1.5.1	Add the following variation to the first paragraph: 'or the relevant Australian /New Zealand Standard.	Noted	P
1.5.2	Add the following to the end of first and third dash items:  'or the relevant Australian/New Zealand Standard.'	Noted	P
2.1	Delete the Note.	Deleted	P
3.2.3	Delete Note 2.	Not permanently connected	N/A

National Differences			
Clause	Requirement – Test	Result	Verdict

3.2.5.1	Modify Table 3B as follows:			N/A
	Delete the first four rows and replace with			
	RATED CURRENT OF EQUIPMENT A	Minimum conductor sizes		
		Nominal Cross-sectional area mm <sup>2</sup>	AWG or kcmil (cross-sectional area in mm <sup>2</sup> ) see note 2	
	Over 0.2 up to and including 3	0.5 <sup>1)</sup>	18 [0.8]	
	Over 3 up to and including 7.5	0.75	16 [1.3]	
	Over 6 up to and including 10	(0.75) 1.00	16 [1.3]	
Over 10 up to and including 16	(1.0) 1.5	14 [2]		
Relpace footnote 1) with the following:				
1) This nominal cross-sectional area is only allowed for Class II appliances if the length of the power supply cord, measured between the point where the cord, or cord guard, enters the appliance, and the entry to the plug does not exceed 2 m (0.5 mm <sup>2</sup> three-core supply flexible cords are not permitted; see AS/NZS 3191 ).				
Delete Note 1.				
4.3.6	Replace the third paragraph:			N/A
	Equipment with a plug portion, suitable for insertion into a 10 A 3-pin flat-pin socket-outlet complying with AS/NZS 3112, shall comply with the requirements in AS/NZS 3112 for equipment with integral pins for insertion into socket-outlets.			
4.3.13.5	Add the following to the end of the first paragraph:			N/A
	' , or AS/NZS 2211.1'			
4.7	Add the following paragraph:			N/A
	For alternative tests refer to Clause 4.7.201.			
4.7.201	Add the following after Clause 4.7.3.6.			
	4.7.201 Resistance to fire – Alternative tests			
	4.7.201.1 General			
	Parts of non-metallic material shall be resistant to ignition and spread of fire.			
	This requirement does not apply to decorative trims, knobs and other parts unlikely to be ignited or to propagate flames originating from outside the apparatus, or the followings:			

National Differences			
Clause	Requirement – Test	Result	Verdict
4.7.201 – cont'd –	<p>Components that are contained in an enclosure having a flammability category of FV-0 according to AS/NZS 4695.707 and having openings only for the connecting wires filling the openings completely, and for ventilation not exceeding 1 mm in width regardless of the length</p> <p>The following parts which would contribute negligible fuel to a fire: small mechanical parts, the mass of which does not exceed 4 g, such as mounting parts, gears, cams, belts and bearings; small electrical components, such as capacitors with a volume not exceeding 1 750 mm<sup>3</sup>, integrated circuits, transistors and optocoupler packages, if these components are mounted on material of flammability category FV-1 or better according to AS/NZS 4695.707</p> <p>NOTE – In considering how to minimize propagation of fire and what “small parts” are, account should be taken of the cumulative effect of small parts adjacent to each other for the possible effect of propagating fire from one part to another.</p> <p>Compliance is checked by tests of 4.7.201.2, 4.7.201.3, 4.7.201.4 and 4.7.201.5.</p> <p>For the base material of printed boards, compliance is checked by the test of 4.7.201.5.</p> <p>The tests shall be carried out on parts of non-metallic material which have been removed from the apparatus. When the glow-wire test is carried out, they are placed in the same orientation as they would be in normal use. These test are not carried out on internal wiring.</p>		N/A
	<p>4.7.201.2 Testing on non-metallic materials</p> <p>Parts of non-metallic material are subjected to glow wire test of AS/NZS 4695.2.11, which is carried out at 550°C.</p> <p>Parts for which the glow-wire test cannot be carried out, such as those made of soft or foamy material, shall meet the requirements specified in ISO 9772 for category FH-3 material. The glow-wire test is not carried out on parts of material classified at least FH-3 according to IOS 9772 provided that the sample tested was not thicker than the relevant part.</p>		

National Differences			
Clause	Requirement – Test	Result	Verdict
4.7.201 – con't –	<p>4.7.201.3 Testing of insulating materials</p> <p>Parts for insulating material supporting POTENTIAL IGNITION SOURCES shall be subjected to the glow-wire test of AS/NZS 4695.2.11, which shall be carried out at 750°C.</p> <p>The test shall be also carried out on other parts of insulating material which are within a distance of 3 mm of the connection.</p> <p>NOTE – Contacts in components such as switch contacts are considered to be connections.</p> <p>For parts which withstand the glow-wire test but produce a flame, other parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm shall be subjected to the needle-flame test. However, parts shielded by a barrier, which meets the needle-flame test shall not be tested.</p> <p>The needleflame test shall be made in accordance with AS/NZS 4695.2.2 with the following modifications:</p>		
	Clause of AS/NZS 4695.2.2	Change	
	5 Severities	<p>Replace with:</p> <p>The duration of application of the test flame shall be 30 s ± 1 s.</p>	
	8 Test procedure		
	8.2	<p>Replace the first sentence with:</p> <p>The specimen shall be arranged so that the flame can be applied to a vertical or horizontal edge as shown in the examples of figure 1.</p>	
	8.4	<p>The first paragraph does not apply.</p> <p><i>Addition:</i></p> <p>If possible, the flame shall be applied at least 10 mm from a corner.</p>	
	8.5	<p>Replace with:</p> <p>The test shall be made on one specimen. If the specimen does not withstand the test, the test may be repeated on two further specimens, both of which shall then withstand the test.</p>	
	10 Evaluation of test results	<p>Replace with:</p> <p>The duration of burning (<math>t_b</math>) shall not exceed 30s. However, for printed circuit boards, it shall not exceed 15 s.</p>	



National Differences			
Clause	Requirement – Test	Result	Verdict
4.7.201 – con't –	<p>The needle-flame test shall not be carried out on parts of material classified as V-0 or V-1 according to IEC 60695-11-10, provided that the sample tested was not thicker than the relevant part.</p> <p>4.7.201.4 Testing in the event of non-extinguishing material.</p> <p>If parts, other than enclosure, do not withstand the glow-wire tests of 4.7.201.3, by failure to extinguish within 30 s after the removal of the glow-wire tip, the needle-flame test detailed in 4.7.201.3 shall be made on all parts of non-metallic material which are within a distance of 50 mm or which are likely to be impinged upon by flame during the tests of 4.7.201.3. Parts shielded by a separate barrier, which meets the needle-flame test, are not tested.</p> <p>NOTE 1 – If the enclosure does not withstand the glow-wire test, the equipment is considered to have failed to meet the requirement of Clause 4.7.201 without the need for consequential testing.</p> <p>NOTE 2 – If the enclosure does not withstand the glow-wire test due to ignition of the tissue paper and if this indicates that burning or glowing particles can fall onto an external surface underneath the equipment, the equipment is considered to have failed to meet the requirement of Clause 4.7.201 without the need for consequential testing.</p> <p>NOTE 3 - Parts likely to be impinged upon by the flame are considered to be those within the envelope of a vertical cylinder having the radius of 10 mm and a height equal to the height of the flame, positioned above the point of the material supporting in contact with or in close proximity to connections.</p>		

National Differences			
Clause	Requirement – Test	Result	Verdict
4.7.201 – con't –	<p>4.7.201.5 Testing of printed boards</p> <p>The base material of printed boards shall be subjected to needle-flame test of Clause 4.7.201.3. The flame is applied to the edge of the board where the heat sink effect is lowest when the board is positioned as in normal use. The flame shall not be applied to an edge, consisting of broken perforations, unless the edge is less than 3 mm from a POTENTIAL IGNITION SOURCE.</p> <p>The test is not carried out if the - Printed board does not carry any POTENTIAL IGNITION SOURCE; Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 50 V and equal or less than 400 V (peak) a.c. or d.c. under normal operating conditions, is of flammability category FV-1 or better according to AS/NZS 4695.707, or the printed boards are protected by an enclosure meeting the flammability category FV-0 according to AS/NZS 4695.707, or made of metal, having openings only for connecting wires which fill the openings completely, or Base material of printed boards, on which the available apparent power at a connection exceeds 15 VA operating at a voltage exceeding 400 V (peak) a.c. or d.c. under normal operating conditions, and base material of printed boards supporting sparks gaps which provides protection against overvoltages, is of flammability category FV-0 according to AS/NZS 4695.707 or the printed boards are contained in a metal enclosure, having openings only for connecting wires which fill the openings completely. Compliance is determined using the smallest thickness of the material.</p> <p>NOTE – Available apparent power is the maximum apparent power which can be drawn from the supplying circuit through a resistive load whose value is chosen to maximise the apparent power for more than 2 min when the circuit supplied is disconnected.</p>		
6.2.2	<p>Add the symbol NZ in the right hand margin beside the first paragraph.</p> <p>Add the following after the first paragraph: In Australia (this variation does not apply in New Zealand), compliance with 6.2.2 is checked by the tests of both 6.2.2.1 and 6.2.2.2.</p> <p>Delete the note.</p>		N/A

National Differences			
Clause	Requirement – Test	Result	Verdict
6.2.2.1	<p>Add the symbol NZ in the right hand margin beside the first paragraph including Note 1.</p> <p>Delete Note 2</p> <p>Add the following after the first paragraph:</p> <p>In Australia ( this variation does not apply in New Zealand), the electrical separation is subjected to 10 impulses of alternating polarity, using the impulse test generator of annex N for 10/700us impulses. The interval between successive impulses is 60 s and initial voltage, <math>U_c</math>, is:</p> <p>- for 6.2.1a): 7.0kV for hand-held telephones and for headsets and 2.5 kV for other equipment; and - for 6.2.1b) and 6.2.1c): 1.5kV.</p> <p>NOTE 201 – The 7 kV impulse simulates lightning surges on typical rural and semi-rural network lines.</p> <p>NOTE 202 – The 2.5 kV impulse for 6.2.1a) was chosen to ensure adequacy of the insulation concerned and does not necessarily simulate likely overvoltages.</p>		N/A
6.2.2.2	<p>Add the symbol NZ in the right hand margin beside the second paragraph</p> <p>Delete the Note</p> <p>Add the following after the second paragraph:</p> <p>In Australia (this variation does not apply in New Zealand), the a.c. test voltage is:</p> <p>- for 6.2.1a) : 3 kV; and - for 6.2.1b) and 6.2.1c) : 1.5kV.</p> <p>NOTE 201- Where there are capacitors across the insulation under test, it is recommended that d.c. test voltages are used.</p> <p>NOTE 202- The 3 kV and 1.5 kV values have been determined considering the low frequency induced voltages from the power supply distribution system.</p>		N/A

National Differences			
Clause	Requirement – Test	Result	Verdict
Annex P	<p>Add the following Normative References to Annex P:</p> <p>IEC 60065, Audio, Video and similar electronic apparatus – Safety requirements</p> <p>AS/NZS 3191, Approved and test specification – Electric flexible cords</p> <p>AS/NZS 3112, Approved and test specification – Plugs and socket-outlets</p> <p>AS/NZS 4695.707, Fire hazard testing of electrotechnical products – Methods of test for the determination of the flammability of solid electrical insulating materials when exposed to an igniting source</p>		N/A
Index	<p>Between the entries for 'polyimide insulating material' and 'powder' insert the following:</p> <p>Potential ignition source 1.12.201, 4.7.201.3, 4.7.201.5</p>		

National Differences			
Clause	Requirement – Test	Result	Verdict
APPENDIX	National difference : <b>CANADA (CA)</b> IEC 60950-1: 2001 (CB Bulletin No. 107A , May 2004)		
EXPLANATION FOR ABBREVIATIONS P= Pass, F = Fail, NA = Not Applicable. Place in the column to the right			
Canada and United States of America have adopted to a single , bi-national standard, CAN/CSA C22.2 No. 60950-1/UL60950-1, First Edition, based on IEC 60950-1, First Edition. Effective April 1, 2003, this standard may be used for product certification immediately, however, the previous version of the standard may also be used until April 1, 2005.			
Note: The previous version is CAN/CSA C22.2 No. 60950-00/UL 60950 Third Edition, based on IEC 60950, 3 <sup>rd</sup> Edition. Refer to the “IEC 60950, 3 <sup>rd</sup> Edition, CA” section of this CB Bulletin for the national differences in this version of the standard.			
The bi-national standard should be consulted for further details on the Special National Conditions and Other Differences summarized below.			
Special National Condition			
1.1.1	All equipment is to be designed to allow installation in accordance with the National Electrical Code (NEC) , ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part 1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/ Data Processing Equipment, ANSI/NFPA 75.		P
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A		N/A
1.5.5	For lengths exceeding 3.05m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g DP,CL2) specified in the NEC.  For lengths 3.05m or less, external interconnecting flexible cord and cable assemblies which are not types specified in the NEC are required to have special construction features and identification markings.		N/A
1.7.1	Equipment for use on supply systems with a neutral and more than one phase conductor (e.g. 120/240V, 3-wire) require a special marking format for electrical rating:  A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235 and, if it is part of a	Single phase	N/A

National Differences			
Clause	Requirement – Test	Result	Verdict
	range that extends into the Table 2 “Normal Operating Conditions”. Likewise, a voltage rating shall not be lower than the specified “Normal Operating Conditions” unless it is part of a range that extends not the “Normal Operating Conditions”.		
2.5	Where a fuse is used to provide Class 2,Limited Power Source ,or TNV current Limiting, it shall not be operator accessible unless it is not interchangeable		N/A
2.7.1	Suitable NEC/CEC branch circuit protection is required for all standard supply outlets and medium-base or smaller lampholders if the supply branch-circuit protection is not suitable.  Power distribution transformers distributing power at 100 volts or more, and rated 10kVA or more, require transformer overcurrent protection.		N/A
3.2	Wiring methods (terminals, leads, etc) used for the connection of the equipment to the mains shall be in accordance with the NEC /CEC.	Appliance inlet used	N/A
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Power cord certified accordingly to the Canadian requirements is to be used when supplied to Canada	N/A
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs.	Not permanently connected	N/A
3.2.5	Power supply cords are required to be no longer than 4.5m in length.  Flexible power supply cords are required to be compatible with Tables 11 & 12 of the NEC, and Tables 11 and 12 of the CEC..	Power cord certified accordingly to the Canadian requirements is to be used when supplied to Canada	N/A
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wiring bending space.	Not permanently connected	N/A
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.		N/A
3.3.3	Wire binding screws are not permitted to attach conductors larger than 10 AWG (5.3mm <sup>2</sup> )	No wire binding screws	N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals are required to be suitable for Canada/U.S. wire gauge sizes, rated 125 percent of the equipment rating, and specially marked when specified (1.7.7).	No terminals for permanent wiring	N/A

National Differences			
Clause	Requirement – Test	Result	Verdict
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the equipment is rated more than 12A, or if the motor has a nominal voltage rating greater than 120V or is rated more than 1/3 hp (locked rotor current current over 43 A)		N/A
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the “on” position indicated by the handle in the up position.		N/A
3.4.11	For computer room applications, equipment with a battery system capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.		N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to meet NFPA 30.	No flammable liquid	N/A
4.3.13	Equipment with lasers is required to meet Code of Federal Regulations 21CFR 1040 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		P
4.7	For computer room applications, automated information storage systems with combustible media greater than 27 cubic feet are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
4.7.3.1	For computer room applications, enclosure with combustible material greater than 0.9 m <sup>2</sup> or a single dimension greater than 1.8 m, are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N/A
Annex H	Equipment that produce ionizing radiation is required to comply with Code of Federal Regulations, 21 CFR 1020 (and the Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
<b>Other Differences</b>			
The following national differences are based on requirements other than national regulatory requirements. The bi-national standard (CAN/CSA C22.2 No. 60950-1 / UL 60950-1, First Edition) referenced above should be consulted for further details on the national differences summarized below)			
1.5.1	Components of equipment must be suitable for the application, and must comply with the requirements of the equipment standard and the applicable national (Canadian and/or U.S.) components or material standards, as far as they	See component list clause 1.5.2.	P

National Differences			
Clause	Requirement – Test	Result	Verdict
	<p>may apply.</p> <p>The acceptance will be based on the following:</p> <p>I).....A component certified by a Canadian or U.S. ....National Certification Body (NCB) to a ..... Canadian or U.S. component standard will be ..... checked for correct application and use in ..... accordance with its specified rating. Where .....necessary, it will also be subjected to the ..... applicable tests of the equipment standard.</p> <p>J) A component which has a CB Test Certificate for compliance with a relevant IEC component standard will be checked for correct application and use in accordance with its specified ratings. Where necessary, it will also be subjected to the application tests of the equipment standard, and to the applicable tests of the Canadian and U.S. component standard, under the conditions occurring in the equipment.</p> <p>K) A component which has no approval as in A) or B) above or which is used not in accordance its specified ratings, will be subjected to the applicable tests of the equipment standard, and to the applicable tests of the Canadian or U.S. component standard, under the conditions occurring in the equipment.</p> <p>L) Some components may require annual re-testing which may be carried out by the manufacturer, CSA International or another laboratory.</p>		
2.3.1	For TNV-2 and TNV-3 circuit with other than ringing signals and with voltages exceeding 42.4 Vp or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnect is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
2.3.2	In the event of a single fault, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.		N/A
2.6.3.3	When subject to impedance testing, protective earthing and bonding are required to be tested to the additional test conditions specified.		P
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to		N/A



National Differences			
Clause	Requirement – Test	Result	Verdict
	comply with special earthing, wiring, marking and installation instruction requirements.		
4.2.8.1	Enclosures around CRT's having a diagonal dimension of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT	N/A
4.3.2	Equipment with handles is required to comply with special loading tests.	No handles	N/A
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
6.2.1	Enamel coating on winding wire not considered electrical separation unless subject to special investigation.		N/A
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.		N/A
6.5	Equipment connected to a telecommunication network and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure tests.		N/A
M.2	Continuous ringing signals up to 16 mA only are permitted if the equipment is subject to special installation and performance restrictions		N/A

National Differences			
Clause	Requirement – Test	Result	Verdict

APPENDIX	National difference : <b>CHINA (CN)</b> IEC 60950 3 <sup>rd</sup> Edition : 1999 (CB Bulletin No. 107A , May 2004)	
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## EXPLANATION FOR ABBREVIATIONS

P= Pass, F = Fail, NA = Not Applicable. Place in the column to the right

-	1) Supply tolerance  Item 1.4.5 of IEC 60950 stipulates the tolerance of rated voltage is +6% and –10%, while GB4943-2001 makes a specification of tolerance of +10% and –10%.	Considered	P
-	2) Power rating marking  Item 1.7.1 of IEC 60950 does not specify concrete figures of markings for supply voltage and frequency, instead, descriptions are given by examples. But the examples do not include China's mains voltage. GB4943-2001 stipulates that:  - A single rated voltage shall be expressed as 220V  - When a rated voltage range is given, the range shall cover 220V  - When a variety of rated voltages or rated voltage ranges are given, one of them shall be 220V, and shall be set as 220V when dispatched from the factory  - Rated frequency or rated frequency shall be 50Hz or include 50 Hz  - If a unit is not provided with a means for direct connection to the AC mains supply, it need not be marked with any electrical rating		P
-	3) Plate and warning marking in Chinese  Item 1.7.12 of GB4943-2001 stipulates: instructions and equipment markings related to safety shall be in standardized Chinese.	Instructions and equipment markings in standardized Chinese is to be provided when supplied to China.	N/A
-	4) Power supply plug  According to China's particular standards for power supply plug, it is added in article 3.2.1 of GB4943-2001 that plug connecting equipment with AC mains supply shall be in accordance with the requirements of GB1002	A plug, separately certified according to the China requirements is to be used when supplied to China.	N/A

National Differences			
Clause	Requirement – Test	Result	Verdict

APPENDIX	National difference : <b>Korea (KR)</b> IEC 60950-1: 2001 (CB Bulletin No. 107A , May 2004)		
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## EXPLANATION FOR ABBREVIATIONS

P= Pass, F = Fail, NA = Not Applicable. Place in the column to the right

1.5.101	Addition Plugs for the connection of the apparatus to the supply mains shall comply with the Korean requirement (KSC 8305 and 8305).	A plug, separately certified according to the Korean requirements is to be used when supplied to Korea	N/A
7	Addition EMC The apparatus shall comply with the relevant CISPR standards.	Separate EMC report is to be provided by submitter.	N/A

National Differences			
Clause	Requirement – Test	Result	Verdict
APPENDIX	National difference : <b>UNITED STATES (US)</b> IEC 60950-1: 2001 (CB Bulletin No. 107A , May 2004)		
EXPLANATION FOR ABBREVIATIONS P= Pass, F = Fail, NA = Not Applicable. Place in the column to the right			
The United States of America and Canada have adopted to a single , bi-national standard, CAN/CSA C22.2 No. 60950-1/UL60950-1, First Edition, based on IEC 60950-1, First Edition.  This bi-national standard should be consulted for further details on the national differences summarized below.			
<b>Special National Conditions</b>			
The following is a summary of the key national differences based on national requirements, such as the National Electrical Code (NEC), ANSI/NFPA 70-2002, which are referenced in legislation and which form the basis for the rules and practices followed in electrical and building installations			
1.1.1	All equipment is to be designed to allow installations in accordance with the National Electrical Code (NEC) , ANSI/NFPA 70, the Canadian Electrical Code (CEC), Part1, CAN/CSA C22.1, and when applicable, the National Electrical Safety Code, IEEE C2. Also, unless marked or otherwise identified, installation is allowed per the Standard for the Protection of Electronic Computer/ Data-Processing Equipment, ANSI/NFPA 75.		P
1.4.14	For Pluggable Equipment Type A, the protection in the installation is assumed to be 20A.		N/A
1.5.5	For lengths exceeding 3.05 m, external interconnecting flexible cord and cable assemblies are required to be a suitable cable type (e.g. DP, CL2) specified in the NEC.  For lengths 3.05 m or less, external interconnecting flexible cord and cable assemblies which are not types specified in the NEC are required to have special construction features and identification markings		N/A
1.7.1	Equipment for use on supply systems with a neutral and more than one phase conductor (e.g. 120/240V, 3-wire) require a special marking format for electrical rating.  A voltage rating that exceeds an attachment plug cap rating is only permitted if it does not exceed the extreme operating conditions in Table 2 of CAN/CSA C22.2 No. 235 and, if it is part of a range that extends into the Table 2 “Normal Operating Conditions”. Likewise, a voltage rating shall not be lower than the specified “Normal Operating Conditions” unless it is part of a range that extends not the “Normal Operating	Single phase	N/A

National Differences			
Clause	Requirement – Test	Result	Verdict
	Conditions”.		
2.5	Where a fuse is used to provide Class 2, LPS or (TNV) current limiting, it shall not be operator-accessible unless it is not interchangeable.		N/A
2.7.1	Suitable NEC/CEC branch circuit protection is required for all standard supply outlets, receptacles and medium-base or smaller lampholders if the supply branch-circuit protection is not suitable.  Power distribution transformers distributing power at 100 volts or more, and rated 10kVA or more, require transformer overcurrent protection		N/A
3.2	Wiring methods (terminals, leads, etc) used for the connection of the equipment to the mains shall be in accordance with the NEC/CEC.	Appliance inlet used	N/A
3.2.1	Power supply cords are required to have attachment plugs rated not less than 125 percent of the rated current of the equipment.	Power supply cord certified accordingly to the United States requirements is to be used when supplied to United States	N/A
3.2.3	Permanent connection of equipment to the mains supply by a power supply cord is not permitted, except for certain equipment, such as ATMs	Not permanently connected unit	N/A
3.2.5	Power supply cords are required to be not longer than 4.5m in length.  Flexible power supply cords are required to be compatible with Article 400 of the NEC, and Tables 11 and 12 of the CEC.	Power supply cord certified accordingly to the United States requirements is to be used when supplied to United States	N/A
3.2.9	Permanently connected equipment is required to have a suitable wiring compartment and wiring bending space.	No wire binding screws	N/A
3.3	Wiring terminals and associated spacings for field wiring connections shall comply with CSA C22.2 No. 0.		N/A
3.3.3	Wire binding screws are not permitted to attach supply conductors larger than 10 AWG (5.3mm <sup>2</sup> )		N/A
3.3.4	Terminals for permanent wiring, including protective earthing terminals are required to be suitable for U.S./Canada wire gauge sizes, rated 125 percent of the equipment rating, and specially marked when specified (1.7.7).		N/A
3.4.2	Motor control devices are required for cord-connected equipment with a motor if the motor (a) has a nominal voltage rating greater than 120 V, (b) is rated more than 12A, or (c) is rated more than 1/3 hp (locked rotor current over 43 A)		N/A

National Differences			
Clause	Requirement – Test	Result	Verdict
3.4.8	Vertically-mounted disconnect switches and circuit breakers are required to have the “on” position indicated by the handle in the up position.		N/A
3.4.11	For computer room applications, equipment with battery system capable of supplying 750 VA for five minutes are required to have a battery disconnect means that may be connected to the computer room remote power-off circuit.		N/A
4.3.12	The maximum quantity of flammable liquid stored in equipment is required to meet NFPA 30.	No flammable liquid	N/A
4.3.13	Equipment with lasers is required to meet Code of Federal Regulations 21CFR 1040 and Canadian Radiation Emitting Devices Act, REDR C1370.		P
4.7	For computer room applications, automated information storage systems with combustible media greater than 27 cubic feet are required to have a provision for connection of either automatic sprinklers or a gaseous agent extinguishing system with an extended discharge.		N/A
4.7.3.1	For computer room applications, enclosure with combustible material greater than 0.9 m <sup>2</sup> or a single dimension greater than 1.8 m, are required to have a flame spread rating of 50 or less. For other applications, enclosures with the same dimensions require a flame spread rating of 200 or less.		N/A
Annex H	Equipment that produce ionizing radiation is required to comply with Code of Federal Regulations, 21 CFR 1020 and Canadian Radiation Emitting Devices Act, REDR C1370).		N/A
<b>Other Differences</b>			
The following key national differences are based on requirements other than national regulatory requirements.			
1.5.1	Some components and materials associated with the risk of fire, electric shock, or personal injury are required to have component or material ratings in accordance with the applicable national (U.S. and Canadian) component or material requirements. These components include:  Attachment plugs, cathode ray tubes, circuit breakers, communication circuit accessories, cord sets and power supply cords, direct plug-in equipment, enclosures (outdoor), flexible cords and cables, fuses (branch circuit), fuseholders, ground-fault current interrupters, industrial control equipment, insulating tape, interconnecting cables, lampholders, limit controls, printed wiring, protectors for communication circuits, receptacles, solid state controls,	See component list clause 1.5.2.	P

National Differences			
Clause	Requirement – Test	Result	Verdict
	supplementary protectors, surge suppressors, switches (including interlock switches), thermal cutoffs, thermostats, transformer winding wire, tubing, wire connectors, and wire and cables.		
2.3.1	For TNV-2 and TNV-3 circuit with other than ringing signals and with voltages exceeding 42.4 Vp or 60 Vd.c., the maximum acceptable current through a 2000 ohm resistor (or greater) connected across the voltage source with other loads disconnect is 7.1 mA peak or 30 mA d.c. under normal operating conditions.		N/A
2.3.2	In the event of a single fault, the limits of 2.2.3 apply to SELV Circuits and accessible conductive parts.		N/A
2.6.3.4	When subject to impedance testing, protective earthing and bonding are required to be tested to the additional test conditions specified.		P
3.2.1.2	Equipment connected to a centralized d.c. power system, and having one pole of the DC mains input terminal connected to the main protective earthing terminal in the equipment, is required to comply with special earthing, wiring, marking and installation instruction requirements.		N/A
4.2.8.1	Enclosures around CRT's having a diagonal dimension of 160 mm or more are required to reduce the risk of injury due to the implosion of the CRT.	No CRT	N/A
4.3.2	Equipment with handles is required to comply with special loading tests.	No handles	N/A
5.1.8.3	Equipment intended to receive telecommunication ringing signals is required to comply with a special touch current measurement tests.		N/A
6.2.1	Enamel coating on winding wire not considered electrical separation unless subject to special investigation.		N/A
6.4	Equipment intended for connection to telecommunication network outside plant cable is required to be protected against overvoltage from power line crosses in accordance with 6.4 and Annex NAC.		N/A
6.5	Equipment connected to a telecommunication network and supplied with an earphone intended to be held against, or in the ear is required to comply with special acoustic pressure tests.		N/A

National Differences			
Clause	Requirement – Test	Result	Verdict

APPENDIX	<u>GROUP DIFFERENCES</u> IEC 60950-1: 2001 (CB Bulletin No. 107A , May 2004)		
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## EXPLANATION FOR ABBREVIATIONS

P= Pass, F = Fail, NA = Not Applicable. Place in the column to the right

	Delete all the "country" notes in the reference document according to the following list:					Deleted	N/A
1.5.1	Note 2	1.5.8	Note 2	1,6,1	Note		
1.7.2	Note 4	1.7.12	Note 2	2.1	Note		
2.2.3	Note	2.2.4	Note	2.3.2	Note 2, Note 7 & Note 8		
2.3.3	Note 1 & Note 2	2.3.4	Note 2 & Note 3	2.7.1	Note		
2.10.3.1	Note 4	3.2.1.1	Note	3.2.3	Note 1 & Note 2		
3.2.5.1	Note 2	4.3.6	Note 1 & Note 2	4.7.2.2	Note		
4.7.3.1	Note 2	6.1.2.1	Note	6.1.2.2	Note		
6.2.2	Note	6.2.2.1	Note 2	6.2.2.2	Note		
7	Note 4	7.1	Note				
G2.1	Note 1 & Note 2	Annex H	Note 2				
2.7.1	Replace the subclause as follows:  Basic requirements  To protect against excessive current, short circuits and earth faults in PRIMARY CIRCUITS, protective devices shall be included either as integral parts of the equipment or as part of the building installation, subject to the following, a), b), and c):  a) Except as detailed in b) and c), protective devices necessary to comply with the requirements of subclause 5.3 shall be included as parts of the equipment.  b) For components in series with the mains input to the equipment such as the supply cord, appliance coupler, r.f.i. filter and switch, short circuit and earth fault protection may be provided by protective devices in the building installation.  c) It is permitted for PLUGGABLE EQUIPMENT TYPE B or PERMANENTLY CONNECTED EQUIPMENT, to rely on dedicated overcurrent						P



National Differences												
Clause	Requirement – Test	Result	Verdict									
	<p>and short circuit protection in the building, provided that the means of protection, e.g. fuses or circuit breakers, is fully specified in the installation instruction.</p> <p>If reliance is placed on protection in the building installation, the installation instructions shall so state, except that for PLUGGABLE EQUIPMENT TYPE A the building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.</p>											
2.7.2	This subclause has been declared ‘void’		P									
2.10.2	Replace in the first line “(see also 1.4.7)” by “(see also 1.4.8)”.		N/A									
3.2.3	Delete NOTE 1, and in table 3A delete the conduit sizes in parentheses.	Deleted (not permanently connected equipment)	N/A									
3.2.5.1	<p>Replace “60245 IEC 530” by “H05 RR-F” “60227 IEC 52” by H03 VV-F or H03 VVH2-F” “60227 IEC 53” by “H05VV-F of H05VVH2-F2”</p> <p>In table 3B, replace the first four lines by the following:</p> <table><tr><td>Up to and including 6</td><td></td><td>0.75<sup>1)</sup></td></tr><tr><td>Over 6 up to and including 10</td><td>(0.75)<sup>2)</sup></td><td>1.0</td></tr><tr><td>Over 10 up to and including 16</td><td>(1.0)<sup>3)</sup></td><td>1.5</td></tr></table> <p>In the conditions applicable to Table 3B, delete the words “in some countries” in Condition <sup>1</sup>.</p> <p>In NOTE 1, delete the second sentence.</p>	Up to and including 6		0.75 <sup>1)</sup>	Over 6 up to and including 10	(0.75) <sup>2)</sup>	1.0	Over 10 up to and including 16	(1.0) <sup>3)</sup>	1.5	Replaced	N/A
Up to and including 6		0.75 <sup>1)</sup>										
Over 6 up to and including 10	(0.75) <sup>2)</sup>	1.0										
Over 10 up to and including 16	(1.0) <sup>3)</sup>	1.5										
3.3.4	<p>In table 3D, delete the fourth line – conductor sizes for 10 to 13A. and replace with the following:</p> <p>! Over 10 up to and including 16   1.5 to 2.5   1.5 to 4  </p> <p>Delete the fifth line – conductor sizes for 13 to 16A..</p>	Deleted	N/A									
4.3.16	<p>Add the following note:</p> <p>NOTE Attention is drawn to 1999/519/EC: Council Recommendation on the limitation of exposure of the general public to electromagnetic fields 0 Hz to 300 GHz. Standards taking into account this recommendation are currently under development.</p>	Added	N/A									

National Differences			
Clause	Requirement – Test	Result	Verdict
Annex H	<p>Replace the last paragraph of this annex by:</p> <p>At any point 10 cm from the surface of the OPERATOR ACCESS AREA, the dose rate shall not exceed 1<math>\mu</math>Sv/h (0.1mR/h) (see note). Account is taken of the background level.</p> <p>Replace the NOTE as follows:</p> <p>NOTE – These values appear in directive 96/29/Euratom.</p> <p>Delete Note 2.</p>	Replaced	N/A
Annex P	<p>Replace the text of this annex by:</p> <p>See annex ZA.</p>	Replaced	P
Annex Q	<p>Replace the title of IEC 61032 by “Protection of persons and equipment by enclosures – Probes for verification”.</p> <p>Add the following notes for the standards indicated:</p> <p>IEC 60127            NOTE: Harmonized as EN 60127 (series) (not modified).</p> <p>IEC 60269-2-1      NOTE: Harmonized as HD 630.2.1 S4:2000 (modified).</p> <p>IEC 60529            NOTE: Harmonized as EN 60629: 1991 (not modified)</p> <p>IEC 61032            NOTE: Harmonized as EN 61032: 1998 (not modified)</p> <p>IEC 61140            NOTE: Harmonized as EN 61140:2001 (not modified).</p> <p>ITU-T Recommendation K.31    NOTE: In Europe, the suggested document is EN 50083-1.</p>	Added	P
Annex ZA	<p>Normative references to international publications with their relevant European publications</p> <p>This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For updated references, the latest edition of the publication</p>	Noted	P

National Differences			
Clause	Requirement – Test	Result	Verdict

Annex ZA – cont'd -	referred to applies (including amendments).			
	NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.			
	—	IEC 60050-151		
	—	IEC 60050-195		
	EN 60065:1998 + corr. June 1999	IEC 60065 (mod):1998		
	EN 60073:1996	IEC 60073:1996		
	HD 566 S1:1990	IEC 60085:1984		
	HD 214 S2:1980	IEC 60112:1979		
	HD 611.4.1.S1:1992	IEC 60216-4-1:1990		
	HD 21 <sup>1)</sup> Series	IEC 60227 (mod) Series		
	HD 22 <sup>2)</sup> Series	IEC 60245 (mod) Series		
	EN 60309 Series	IEC 60309 Series		
	EN 60317-43:1997	IEC 60317-43:1997		
	EN 60320 Series	IEC 60320 (mod) Series		
	HD 384.3 S2:1995	IEC 60364-3 (mod):1993		
	HD 384.4.41 S2:1996	IEC 60364-4-41 (mod):1992 <sup>3)</sup>		
	EN 132400:1994 <sup>4)</sup> + A2:1998 + A3:1998 + A4:2001	IEC 60384-14:1993		
	EN 60417-1	IEC 60417-1		
	HD 625.1 S1:1996 + corr. Nov. 1996	IEC 60664-1 (mod):1992		
	EN 60695-2-2:1994	IEC 60695-2-2:1991		
	EN 60695-2-11:2001	IEC 60695-2-11:2000		
	—	IEC 60695-2-20:1995		
	—	IEC 60695-10-2:1995		
	—	IEC 60695-11-3:2000		
	—	IEC 60695-11-4:2000		
	EN 60695-11-10:1999	IEC 60695-11-10:1999		
	EN 60695-11-20:1999	IEC 60695-11-20:1999		
	EN 60730-1:2000	IEC 60730-1:1999 (mod)		
	EN 60825-1:1994 + corr. Febr. 1995 + A11:1996 + corr. July 1997	IEC 60825-1:1993		
	EN 60825-2:2000	IEC 60825-2:2000		
	—	IEC 60825-9:1999		
	EN 60851-3:1996	IEC 60851-3:1996		
	EN 60851-5:1996	IEC 60825-5:1996		
	EN 60851-6:1996	IEC 60851-6:1996		

National Differences			
Clause	Requirement – Test	Result	Verdict

—	IEC 60885-1:1987		
EN 60990:1999	IEC 60990:1999		
—	IEC 61058-1:2000		
EN 61965:2001	IEC 61965:2000		
EN ISO 178:1996	ISO 178:1993		
EN ISO 179 Series	ISO 179 Series		
EN ISO 180:2000	ISO 180:1993		
—	ISO 261:1998		
—	ISO 262:1998		
EN ISO 527 Series	ISO 527 Series		
—	ISO 386:1984		
EN ISO 4892 Series	ISO 4892 Series		
—	ISO 7000:1989		
EN ISO 8256:1996	ISO 8256:1990		
—	ISO 9772:1994		
EN ISO 9773:1998	ISO 9773:1998		
—	ITU-T:1988 Recommendation K.17		
—	ITU-T:2000 Recommendation K.21		
1) The HD 21 series is related to, but not directly equivalent with the IEC 60227 series 2) The HD 22 series is related to, but not directly equivalent with the IEC 60245 series 3) IEC 60364-4-41:1992 is superseded by IEC 60364-4-41:2001 4) EN 132400, Sectional Specification: Fixed capacitors for electromagnetic interference suppression and connection to the supply mains (Assessment level D), and its amendments are related to, but not directly equivalent to IEC 60384-14			

Appendix 1  
External front view of Industrial Computer  
Model: ATM-402300111011

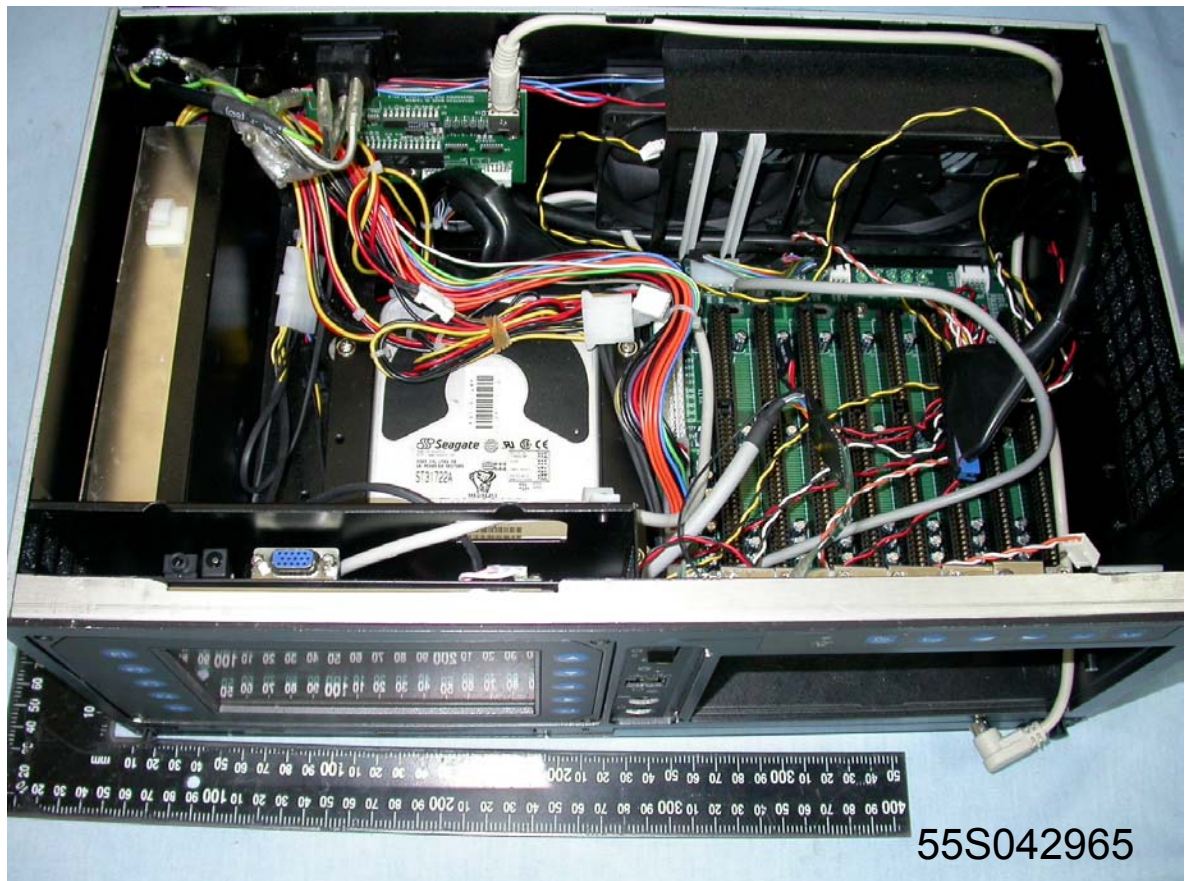


Appendix 2  
External rear view of Industrial Computer  
Model: ATM-402300111011

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Appendix 3  
Internal view of Industrial Computer  
Model: ATM-402300111011





Appendix 4  
Internal View of Industrial Computer  
Model: ATM-402300111011





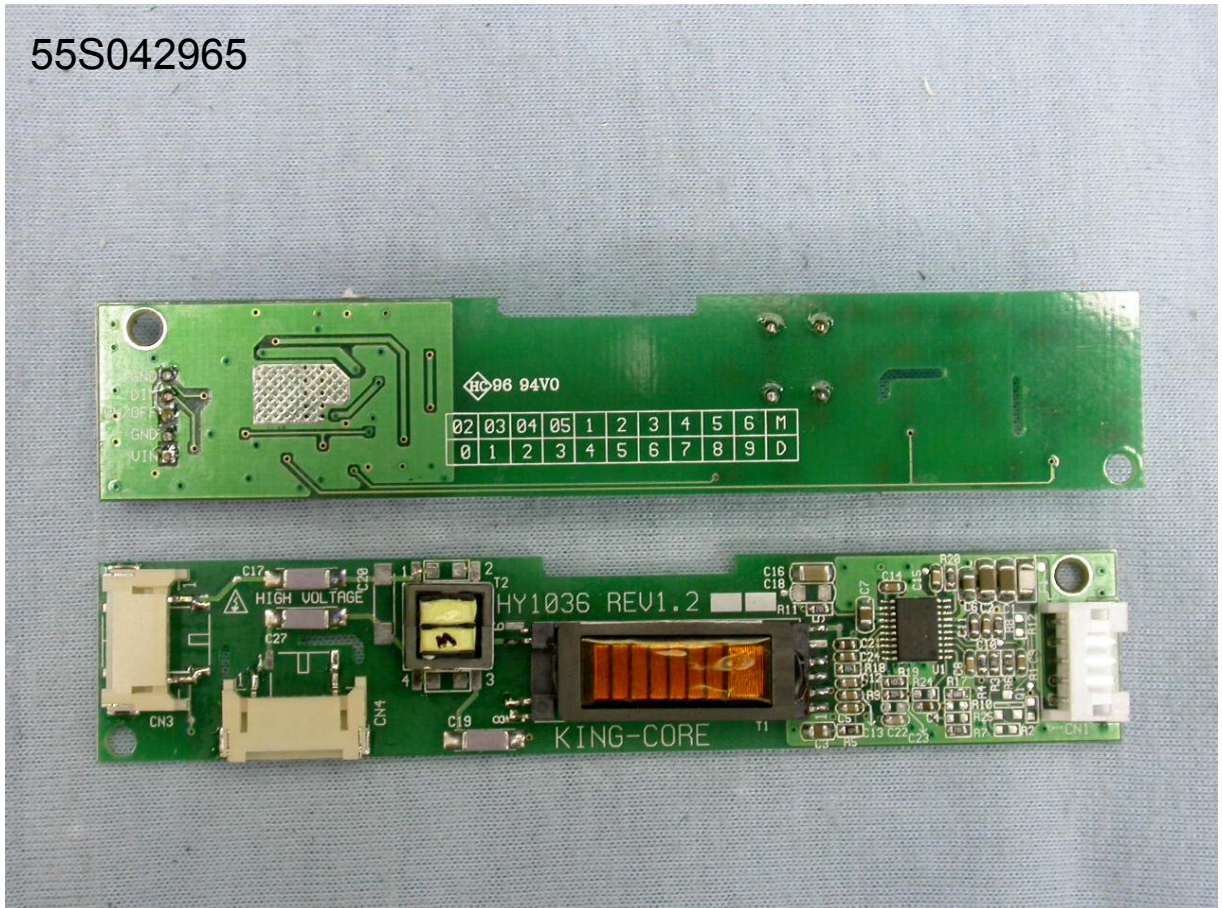
Appendix 5  
Internal View of Industrial Computer  
Model: ATM-402300111011



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Appendix 6  
Inverter Board used in Industrial Computer  
Model: ATM-402300111011

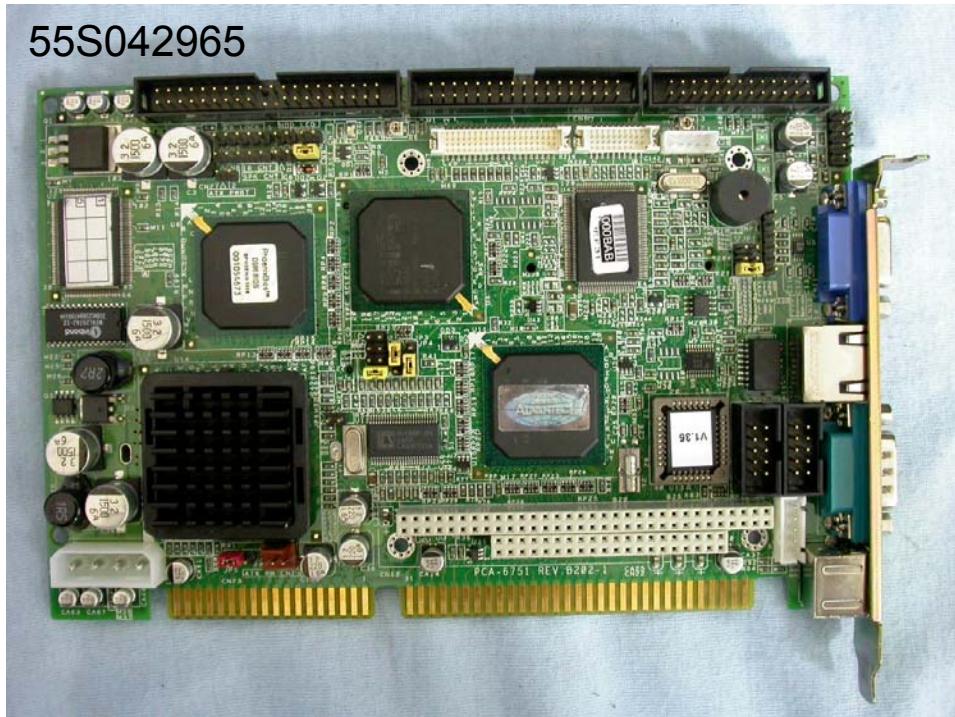
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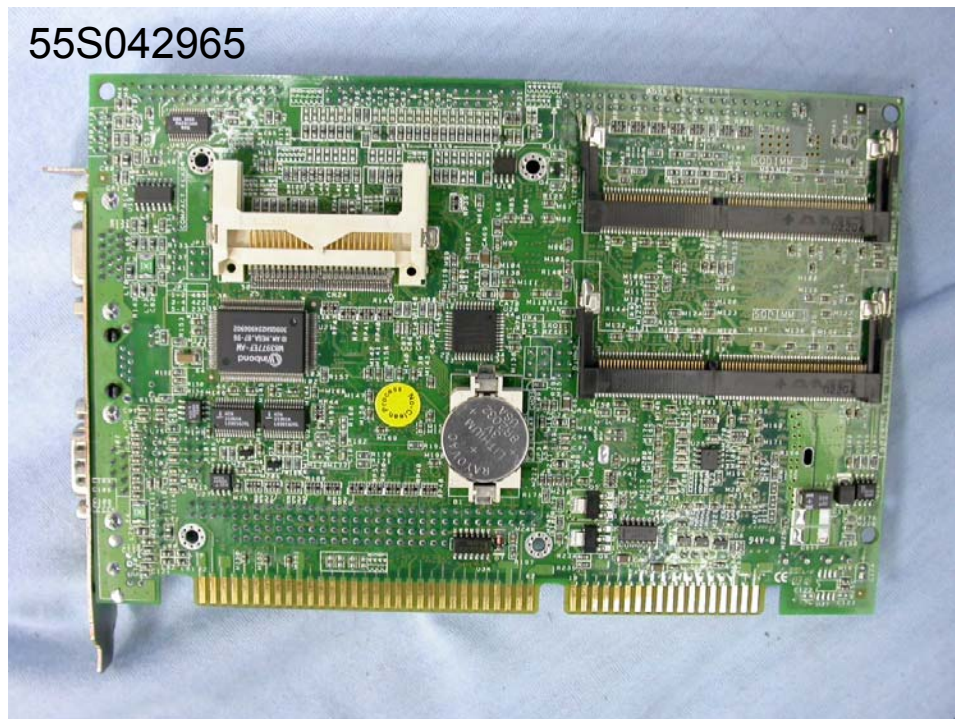


Appendix 7  
CPU Board (Model: PCA-6751) used in Industrial Computer  
Model: ATM-402300111011

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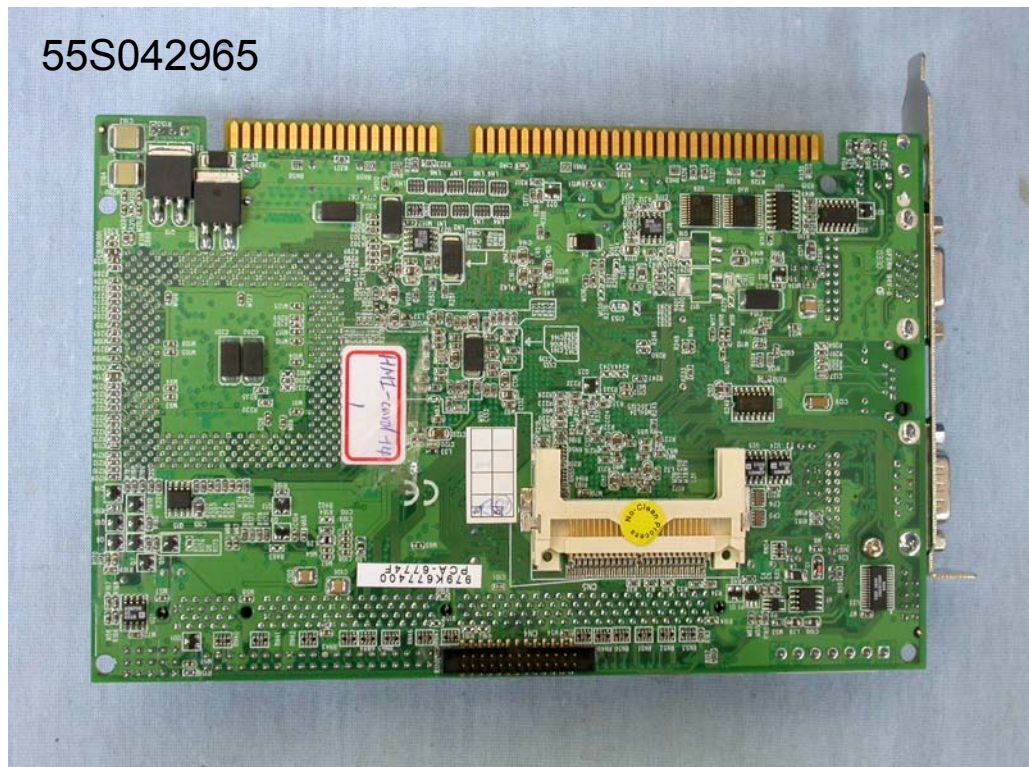
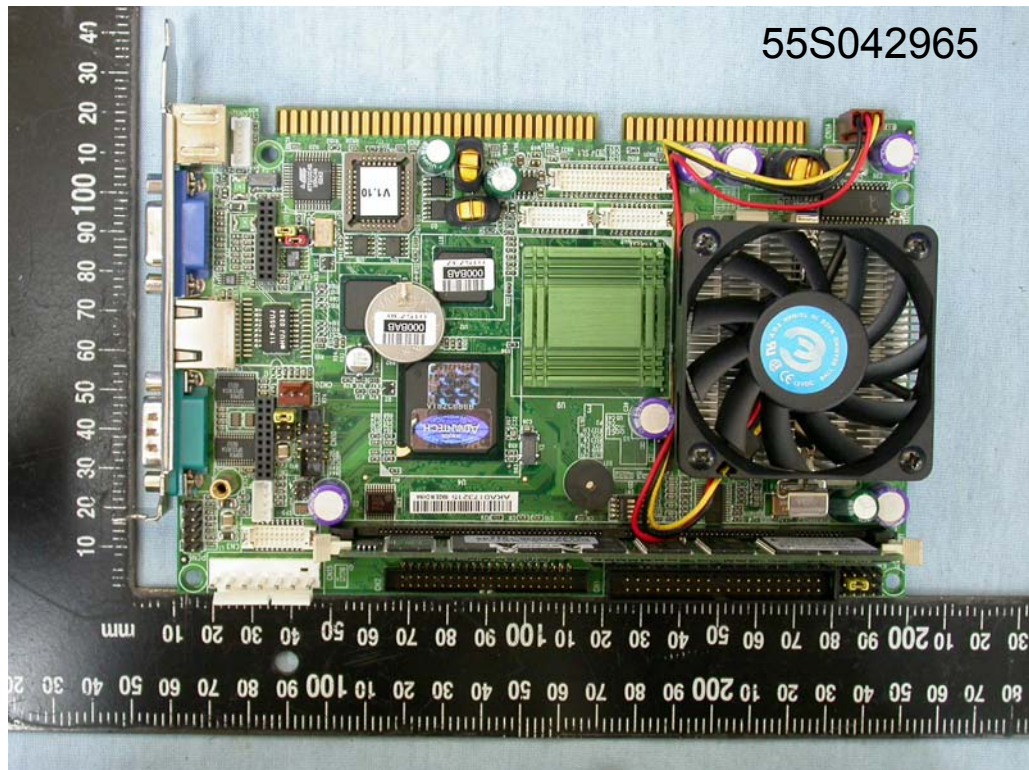




Appendix 8

Alternate CPU Board (Model: PCA-6774F) used in Industrial Computer

Model: ATM-402300111011

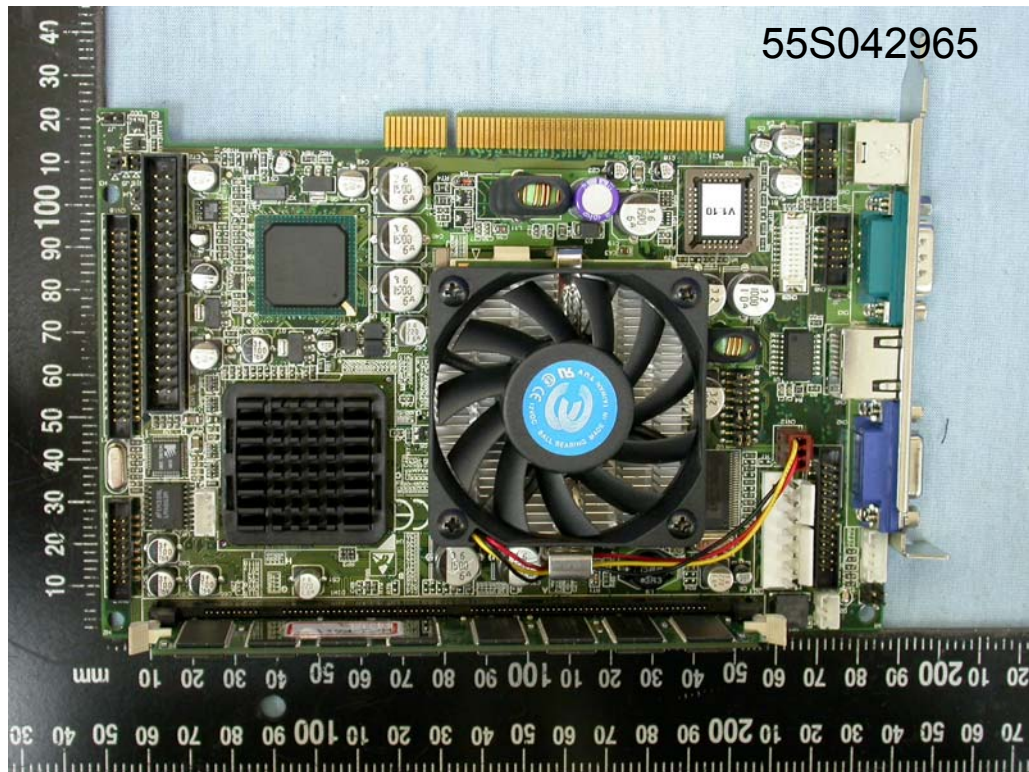




Appendix 9

Alternate CPU Board (Model: PCI-6870F) used in Industrial Computer

Model: ATM-402300111011



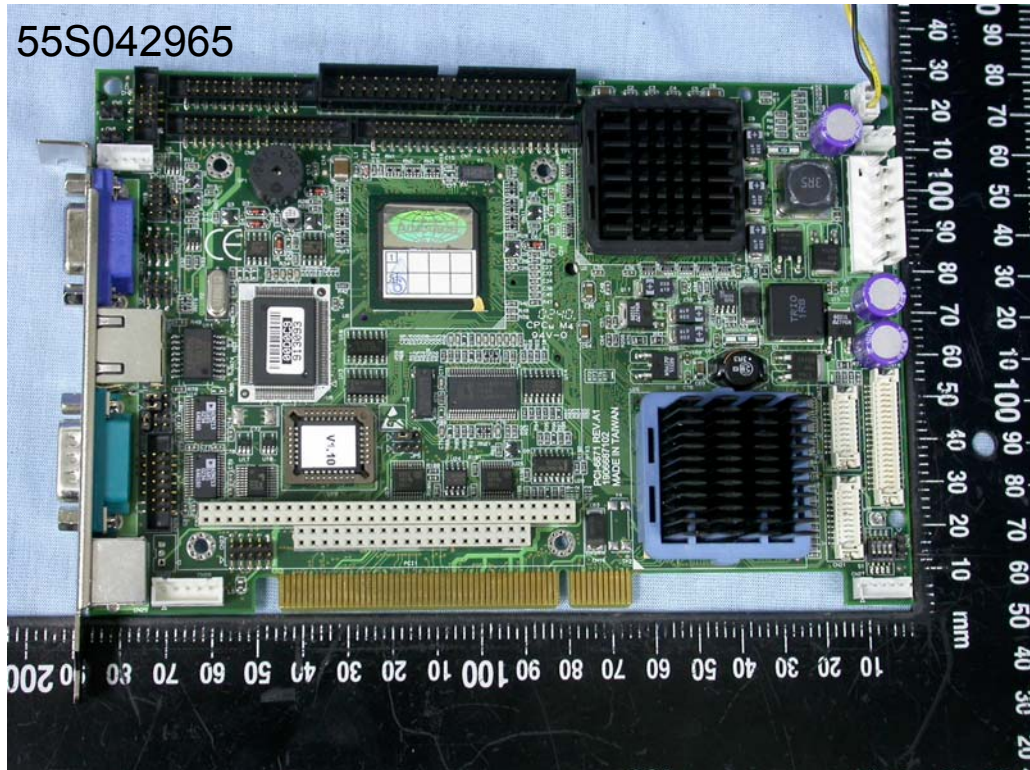


Appendix 10

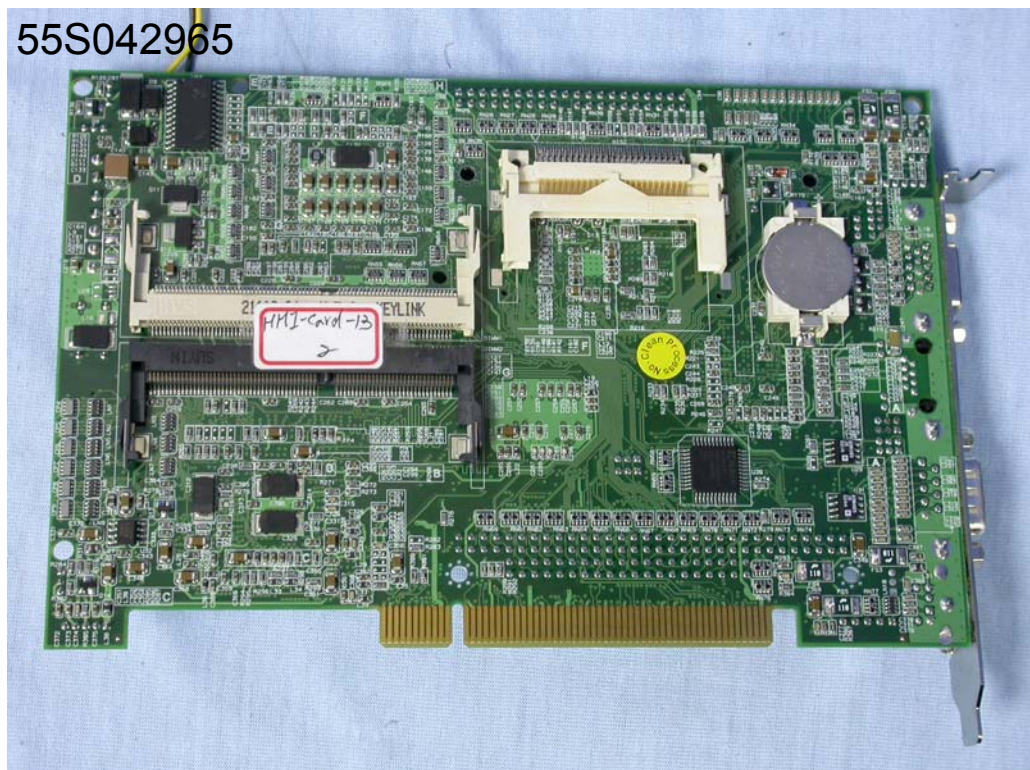
Alternate CPU Board (Model: PCI-6871F) used in Industrial Computer

Model: ATM-402300111011

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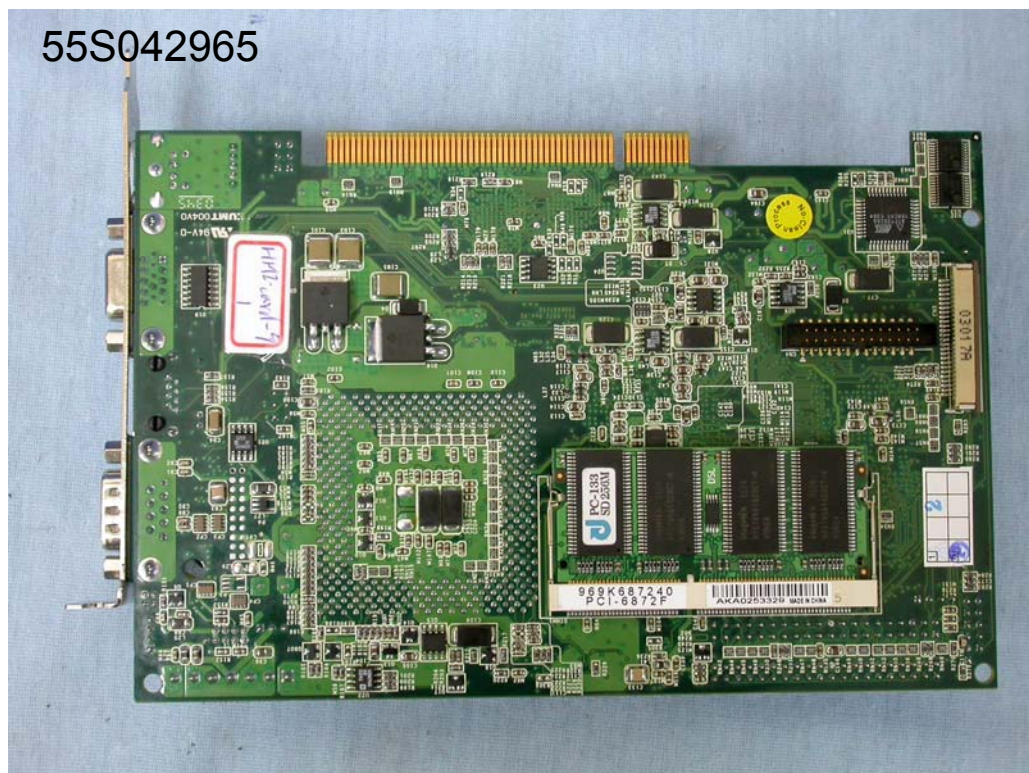
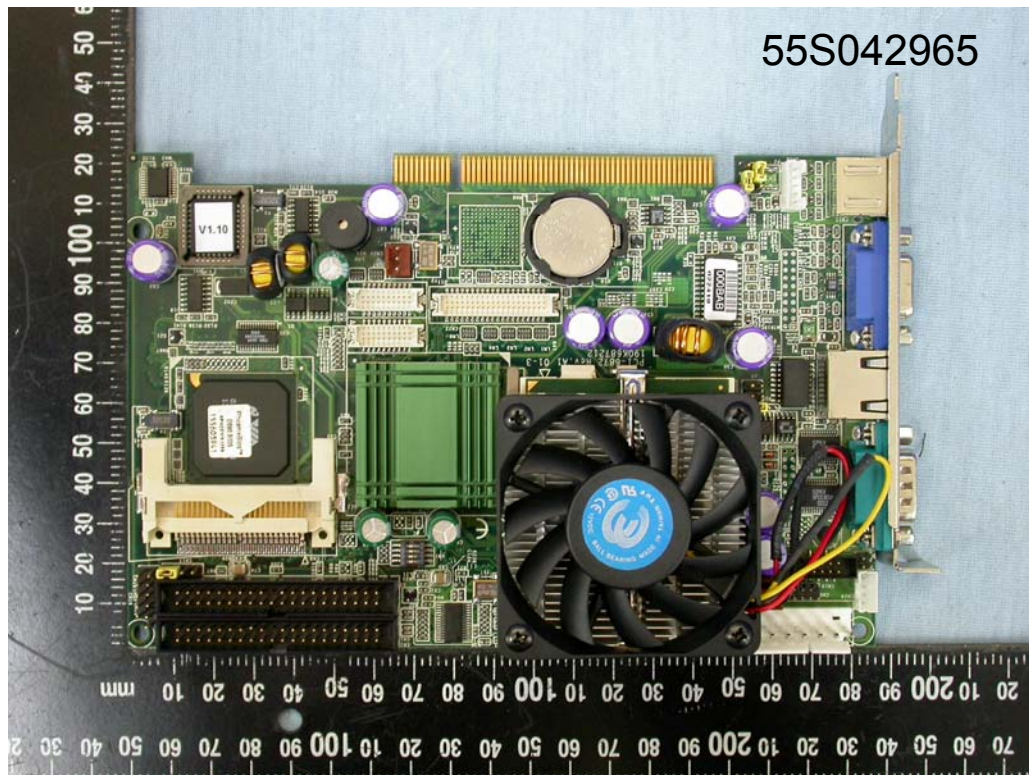




Appendix 11

Alternate CPU Board (Model: PCI-6872F) used in Industrial Computer

Model: ATM-402300111011



Appendix 12  
Power supply (Model: P1A-6250P) used in Industrial Computer  
Model: ATM-402300111011







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Appendix 13

Product marking of Industrial Computer

Model: ATM-4023XXXXXXXXX

<b>ADVANTECH®</b>		<b>ADVANTECH CO., LTD.</b> 研华股份有限公司 <a href="http://www.advantech.com">http://www.advantech.com</a> MADE IN TAIWAN 台湾制造	
<b>INPUT:</b> 100-240Vac, 50/60Hz, 6A max. 输入 <b>MODEL NO:</b> ATM-4023XXXXXXXXX 型号		<b>CAUTION !</b> To prevent electric shock. Do not remove cover. No user serviceable parts inside. Refer servicing to qualified personnel.	
 E180881  T33138 <b>FCC CE</b> 		<b>警告使用者</b> 這是甲類的資訊產品，在居住的環境中使用時， 可能會造成射頻干擾，在這種情況下， 使用者會被要求採取某些適當的對策。	
<p>This device complies with the requirements in part 15 of the FCC rule. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.</p>		<b>警告使用者</b> 这是甲类的资讯产品，在居住的环境中使用时， 可能会造成射频干扰，在这种情况下， 使用者会被要求采取某些适当的对策。	
			

55S042965

Appendix 14

Letter of Declaration by "Advantech Co., Ltd."

----- 1 page as per attached -----

# ADVANTECH

研華股份有限公司

Advantech Co., Ltd.

台北市內湖區瑞光路 26 巷 20 弄 1 號

No.1, Alley 20, Lane 26, Rueiguang Road

Neihu District, Taipei 114, Taiwan, R.O.C.

Tel: 886-2-2792-7818 Fax: 886-2-2794-7305

WWW.advantech.com.tw

To whom may be concern:

We, **Advantech Co., Ltd.**, declared that the "x" in model no.:  
ATM-4023XXXXXXXXX could be define as 0 ~ 9, A ~ Z or blank,

The reason of having each X of ATM-4023X<sub>1</sub>X<sub>2</sub>X<sub>3</sub>X<sub>4</sub>X<sub>5</sub>X<sub>6</sub>X<sub>7</sub>X<sub>8</sub> is as below:

X<sub>1</sub>, X<sub>2</sub> are because of the ***volume of the hard disk***.

X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub> are because of the ***different customer***.

X<sub>6</sub>, X<sub>7</sub>, X<sub>8</sub> are because of the ***different market area***.

And the structure is ***identical*** between the entire model no. The  
difference will not effect the part of safety.

Sincerely,



黄女莉 Lily Huang

QA Lab Safety Engineer

Tel. 886-2-2792-7818 Ext.: 7552

address: www.advantech.com.tw

e-mail: lily.huang@advantech.com.tw