




<b>Test Report No.:</b> LD910118L02	
<b>Client</b>	
Name :	ADVANTECH CO., LTD
Address :	No. 1 Alley 20, Lane 26, Rueiguang Road, Neihu District Taipei 114, Taiwan, R.O.C.
<b>Test Item :</b>	Industrial Computer
<b>Identification :</b>	MBPC-641XXX-XXX (X can be any alphanumeric character or blank)
<b>Testing laboratory</b>	
Name :	Advance Data Technology Corporation
Address :	No. 46, Lane 504, Chung Hsiao Road, Lin Kou Hsiang, Taipei, R.O.C.
<b>Test specification</b>	
<b>Standard :</b>	EN 60 950:1992 + A1:1993 + A2:1993 + A3:1995 + A4:1996 + A11: 1997
<b>Test Result :</b>	The test item passed.
<b>Tested By :</b>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">   Signature  <u>Angus Hsu</u>  Deputy Manager </div> <div style="text-align: center;"> <u>April 12, 2002</u>  Date </div> </div>
<b>Approved By:</b>	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">   Signature  <u>Edward Chiueh</u>  Manager </div> <div style="text-align: center;"> <u>April 12, 2002</u>  Date </div> </div>
<b>Other Aspects:</b> The completed test report includes the following documents: ■ EN 60950 report ( 36 pages)	 0528 ILAC MRA
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<b>TEST REPORT</b> <b>EN 60950</b> <b>Safety of information technology equipment including electrical business equipment</b>	
<b>Report</b>	
Reference No.....	LD910118L02
Compiled by (+ signature) .....	See cover sheet .....
Approved by (+ signature) .....	See cover sheet .....
Date of issue .....	April 12, 2002
This report is based on a blank test report that was prepared by KEMA using information obtained from the TRF originator (see below).	
<b>Testing laboratory</b>	
Name.....	Advance Data Technology Corporation
Address .....	No. 46, Lane 504, Chung Hsiao Road, Lin Kou Hsiang, Taipei, Taiwan.
Testing location.....	Advance Data Technology Corporation
Address .....	No. 46, Lane 504, Chung Hsiao Road, Lin Kou Hsiang, Taipei, Taiwan.
<b>Client</b>	
Name.....	<b>ADVANTECH CO., LTD</b>
Address .....	No. 1 Alley 20, Lane 26, Rueiguang Road, Neihu District Taipei 114, Taiwan, R.O.C.
<b>Test specification</b>	
Standard.....	EN 60 950:1992 + A1:1993 + A2:1993 + A3:1995 + A4:1996 +A11:1997
Test procedure .....	This Test Report is not valid as a CCA Test Report unless signed by a CCA Testing Laboratory and appended to a CCA Test Certificate.
Procedure deviation .....	N/A.
Non-standard test method.....	N/A.
<b>Test Report Form/blank test report</b>	
Test Report Form No.....	60950__D/97-08
TRF originator .....	FIMKO
Master TRF .....	Reference No. 60950 D, dated 97-02
Copyright reserved to the bodies participating in the Committee of Certification Bodies (CCB) and/or the bodies participating in the CENELEC Certification Agreement (CCA).	
<b>Test item</b>	
Description .....	INDUSTRIAL COMPUTER
Trademark .....	ADVANTECH
Model and/or type reference.....	MBPC-641XXX-XXX (X can be any alphanumeric character or blank)
Manufacturer .....	ADVANTECH CO., LTD.
Rating(s).....	AC 100 – 240 V, 47-63Hz, 1.5 A.

Copy of marking plate

**Industrial Computer**  
**ADVANTECH CO., LTD.**

**Model: MBPC-641XXX-XXX**

**Manufactured: April, 2002**

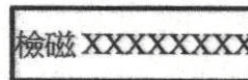
**POWER: 100-240V~, 47-63 Hz, 1.5 A**

THIS DEVICE COMPLIES WITH PART 15 OF FCC RULES. 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 UNDESIRE OPERATION



**Manufactured: No. 1, Alley 20, Lane 26, Rueiguang  
Road, Neihu District Taipei 114, Taiwan R.O.C.**



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

Equipment mobility.....: Moveable  
 Operating condition.....: Continuous  
 Tested for IT power systems.....: N/A  
 IT testing, phase-phase voltage (V) .....: N/A  
 Class of equipment.....: Class I  
 Mass of equipment (kg).....: 4.8kg  
 Protection against ingress of water .....: IPX0

**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 .....: March 20, 2002  
 Date(s) of performance of test .....: April 8, 2002

**General remarks**

This test report shall not be reproduced except in full without the written approval of the testing laboratory.  
 The test results presented in this report relate only to the item tested.  
 "(see remark #)" refers to a remark appended to the report.  
 "(see appended table)" refers to a table appended to the report.  
 Throughout this report a comma is used as the decimal separator.

**Brief description of the test equipment:**

1) The equipment is a Class 1 INDUSTRIAL COMPUTER with building-in certified power supply  
 Dimension: 303 by 135 by 210 mm.

3) Maximum operating Temperature: 40°C .

Model Difference: All Models are identical except for Model designation.

**Test condition:**

Temperature : 25°C .  
 Relative humidity: 60%  
 Air pressure: 900 mbar.

The test sample was a pre-production sample without serial number.

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
1	GENERAL		P
1.5	Components		P
1.5.1	Comply with IEC 950 or relevant component standard	Components, which were found to affect safety aspects, are complied with the requirements of this standard or within the safety aspects of the relevant IEC component standards. (see appended table)	P
1.5.2	Evaluation and testing of components	Components which are certified to IEC and/or nation standards are used correctly within their ratings. Components not covered by IEC standards are tested under the conditions present in the equipment.	P
	Dimensions (mm) of mains plug for direct plug-in . :	The equipment is not plug-in type.	N
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N)	---	N
1.5.3	Transformers	Transformer used are suitable for their intended application and comply with the relevant requirements of the standard and particularly Annex C	P
1.5.4	High voltage components (component; manufacturer; flammability) ..... :	No high voltage components used	N
1.5.5	Interconnecting cables	Interconnecting cable for Interconnection is carrying only SELV voltages on an energy level below 240 VA. Except for the insulation material, there is no further requirements to the o/p interconnection cable.	P
1.5.6	Mains capacitors	X1 or X2 capacitor according to IEC 60384-14 with pulse test. The pulse test is further shown with the additional SEV approval.	P

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict

1.6	Power interface		P
1.6.1	Steady state input current	Highest load according to 1.2.2.1 for this equipment is the operation with connecting networks and data transferred . Result see appended table.	P
	Current deviation during normal operating cycle	< +10%	P
1.6.2	Voltage limit of hand-held equipment	The appliance equipment is not a hand-held equipment.	N
1.6.3	Neutral conductor insulated from earth and body	The neutral is not identified in the equipment. Basic insulation for rated voltage between earthed parts and primary phases.	P
1.6.4	Components in equipment intended for IT power system	Equipment was not applied for the IT power system.	N
1.6.5	Mains supply tolerance (V) .....	+10 %, - 10 %  Documentation specifies four ratings between 100 V AC and 240 V AC at 50-60 Hz. Relevant tests were done with the range of 90 – 264 V AC at 50-60 Hz.	P

1.7	Marking and instructions		P
1.7.1	Rated voltage (V) .....	AC 100 – 240 V	P
	Symbol of nature of supply for d.c. ....	Mains from AC source	N
	Rated frequency (Hz) .....	47-63 Hz	P
	Rated current (A) .....	1.5 A	P
	Manufacturer .....	ADVANTECH CO., LTD.	P
	Trademark .....	ADVAVTECH	P
	Type/model .....	MBPC-641XXX-XXX (X can be any alphanumeric character or blank)	P
	Symbol of Class II .....	Class I equipment	N
	Certification marks .....	CE	P
1.7.2	Safety instructions	The users manual contains information for operation, insulation servicing, transport, storage and technical data. the operation guide is provided to the user.	P

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N
1.7.4	Marking for voltage setting/frequency setting .....	No voltage setting.	N
1.7.5	Marking at power outlets .....	No power outlet.	N
1.7.6	Marking at fuseholders .....	Fuse holder in approved SPS	N
1.7.7.1	Protective earthing terminals	Main earth terminal is marked with the standard earth symbol (IEC 60417, No. 5019) near the terminal.	P
1.7.7.2	Terminal for external primary power supply conductors	The equipment with appliance inlet is intended to be use the detachable type power supply cord.	N
1.7.8.1	Identification and location of switches and controls :	The marking and indications of the power switch is located that indication of function is clearly.	P
1.7.8.2	Colours of controls and indicators .....	No safety involve indicator used..	N
1.7.8.3	Symbols according to IEC 60417 .....	Marking for power switch with "I", "O" (IEC 60417, Nos.5007 and 5008)	P
1.7.8.4	Figures used for marking .....	No indicators for different position.	N
1.7.8.5	Location of markings and indications for switches and controls .....	"I", "O" marking on switch.	P
1.7.9	Isolation of multiple power sources .....	Only one supply from mains.	N
1.7.10	Instructions for installation to IT power system	Equipment was not applied for IT power system.	N
1.7.11	Instructions when protection relies on building installation	Pluggable equipment type A	N
1.7.12	Marking when leakage current exceeds 3,5 mA	Leakage current does not exceed 3.5mA,	N
1.7.13	Indication at thermostats and regulating devices	No adjustable thermostates.	N
1.7.14	Language of safety markings/instructions	Safety warning test in English. Rating marking in English.  Instructions and equipment marking related to safety shall be in a language which is acceptable in the country in which the equipment is to be installed.	P
	Language .....	English.	—

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
1.7.15	Durability and legibility	The label was subjected to the test for permanence of marking. The label was rubbed with cloth for 15 sec. And then rubbed by the cloth soaked with Naphtha for 15 sec. After this test there was no damage to the label. The marking on the label did not fade. There was no curling nor lifting on the label edge.	P
1.7.16	Removable parts	No removable parts	N
1.7.17	Warning text for replaceable lithium batteries	Warning close to the battery or in the service instructions. "CAUTION" – Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type . Dispose of used batteries according to the manufacturer's instructions.	P
	Language .....	English	—
1.7.18	Operator access with a tool .....	No operator access area with tool.	N
1.7.19	Equipment for restricted access locations .....	No restricted access location.	N

2	PROTECTION FROM HAZARDS	P
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2.1	Protection against electric shock and energy hazards		P
2.1.1	Access to energized parts	No operator access to energized parts	P
2.1.2	Protection in operator access areas	See below	P
	Test by inspection ..... :	Can not access to hazardous parts	P
	Test with test finger ..... :	Can not access to hazardous parts	P
	Test with test pin ..... :	Can not access to hazardous parts	P
2.1.3.1	Insulation of internal wiring in an ELV circuit accessible to operator	No ELV wiring in operator accessible area.	N



EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
	Working voltage (V); distance (mm) through insulation .....	---	N
2.1.3.2	Operator accessible insulation of internal wiring at hazardous voltage	No hazardous voltage wiring in operator accessible area.	N
2.1.4.1	Protection in service access areas	No maintenance work in operation mode is necessary.	N
2.1.4.2	Protection in restricted access locations	Not intended to be used in restricted access location.	N
2.1.5	Energy hazard in operator access area	No energy hazard in operator area	P
2.1.6	Clearances behind conductive enclosures	See 2.1.2	P
2.1.7	Shafts of manual controls	See 2.1.2	N
2.1.8	Isolation of manual controls	See 2.1.2	N
2.1.9	Conductive casings of capacitors	Casings of capacitors are considered as if directly connected to the respective circuitry. None at hazardous voltage accessible.	P
2.1.10	Risk of electric shock from stored charge on capacitors connected to mains circuit	Time constant below 1s	P

2.2	Insulation		P
2.2.1	Methods of insulation	The insulation material are used solid or laminated, having adequate thickness and adequate creepage distance over their surface and clearance distance through air.	P
2.2.2	Properties of insulating materials	Natural rubber, asbestos or hygroscopic materials are not used.	P
2.2.3	Humidity treatment	Total time elapsed : 48 hours	P
	Humidity (%) .....	95% R.H.	—
	Temperature (°C) .....	25°C	—
2.2.4	Requirements for insulation	The insulation meet the requirement. (see appended table 5.1 and 5.3)	P
2.2.5	Insulation parameters	Both parameters were considered, see 2.2.6 and 2.2.7.	P

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.2.6	Categories of insulation	The adequate levels of safety insulation is provided and maintained to comply with the requirements of this standard.	P
2.2.7.1	General rules for working voltages	Certified power supply used. Done in the approval of the SPS.	P
2.2.7.2	Clearances in primary circuits	was considered.	P
2.2.7.3	Clearances in secondary circuits	was considered.	P
2.2.7.4	Creepage distances	was considered.	P
2.2.7.5	Electric strength tests	was considered.	P
2.2.8.1	Bridging capacitors .....	No components bridged reinforced or double insulation.	N
2.2.8.2	Bridging resistors	--	N
2.2.8.3	Accessible parts	--	N

2.3	Safety extra-low voltage (SELV) circuits		P
2.3.1	Voltage (V) of SELV circuits under normal operating conditions and after a single fault .....	42.4V peak or 60 VDC are not exceeded in SELV circuit under normal operation or single fault condition.	—
2.3.2	Voltage (V) between any two conductors of SELV circuit(s) and for Class equipment between any conductor of SELV circuit and equipment protective earthing terminal under normal operating conditions .....	Only SELV circuit is accessible to the user. Between SELV circuits 42.4V peak or 60V DC are not exceeded.	P
2.3.3	Voltage (V) of SELV in the event of a single failure of basic or supplementary insulation or of a component .....	Single fault did not cause excessive voltage accessible SELV circuits. Limits of 71V peak and 120V DC were not exceed and SELV limits not for longer than 0.2 seconds, see abnormal result 5.4.6 and 6.2.1.3	—
	Method used for separation .....	Method 1.	P

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.3.4	Additional constructional requirements	In multiway connectors and other cable ties prevent contact to hazardous parts in case of loosening of connection or conductor breakage  IEC 60083 and IEC 60320 connectors are not used in SELV circuits.	P
2.3.5	Connection of SELV circuits to other circuits	See 2.3.2 and 2.3.3. No direct connection between SELV and any primary circuit.	P
2.3.8	Construction of SELV circuits	---	—
2.3.9	SELV circuits connected to other circuits	---	—

2.4	Limited current circuits		N
2.4.2	Frequency (Hz) .....	---	—
	Measured current (mA) .....	---	N
2.4.3	Measured voltage (V) .....	---	—
	Measured capacitance (uF) .....	---	N
2.4.4	Measured voltage (V) .....	---	—
	Measured charge (uC) .....	---	N
2.4.5	Measured voltage (V) .....	---	—
	Measured energy (mJ) .....	---	N
2.4.6	Limited current circuit supplied from or connected to other circuits .....	---	N

2.5	Provisions for earthing:		P
2.5.1	Class I equipment	Basic insulated conductive parts touchable in operator accessible area are earthed reliable	P
	Warning label for service personnel	---	N
2.5.2	Protective earthing in Class II equipment	Class I equipment	N
2.5.3	Switches/fuses in earthing conductors	No switches or fuses in earthing conductor.	N

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.5.4	Assured earthing connection for Class equipment in systems comprising Class I and Class II equipment	The equipment has its own earthing connection. Any other units connected via the signal cable to the monitor shall provide SELV only. The equipment does not comprise class I and class II.	N
2.5.5	Green/yellow insulation	The protection earth wire insulation Green/Yellow.	P
2.5.6	Continuity of earth connections	It is impossible to disconnect earth without disconnecting mains. An appliance inlet is used as a disconnect device.	P
2.5.7	Making and breaking of protective earthing connections	Plug or inlet, earthing connected before and disconnected after hazardous voltage. No other operator removeable parts.	P
2.5.8	Disconnection protective earthing connections	It is not necessary to disconnect earthing except for the removing of the earthed parts itself.	P
2.5.9	Protective earthing terminals for fixed supply conductors or for non-detachable power supply cords	The equipment provided with a detachable power supply cord.	N
2.5.10	Corrosion resistance	All safety earthing connections in compliance with Annex J.	P
2.5.11	Resistance ( $\Omega$ ) of protective earthing conductors $\leq 0,1 \Omega$	See below	P
	Test current (A) .....	Measured with 25A / 1 minute from appliance inlet ground pin to: - Enclosure 0.010 $\Omega$	—

2.6	Disconnection from primary power:		P
2.6.1	General requirements	The appliance inlet is considered to be the disconnect device.	P
2.6.2	Type of disconnect device .....	Appliance inlet	P
2.6.3	Disconnect device in permanently connected equipment	Pluggable equipment type A.	N

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.4	Parts of disconnect device which remain energized	When the detachable power cord is disconnected, there are no remaining parts with hazardous voltage in the equipment.	P
2.6.5	Switches in flexible cords	No isolated switch in flexible cord.	N
2.6.6	Disconnection of both poles simultaneously in single-phase equipment	The detachable power cord or appliance inlet disconnects both poles simultaneously.	P
2.6.7	Disconnection of all phase conductors of supply in three-phase equipment	The equipment is for single phase.	N
2.6.8	Marking of switch acting as disconnect device	The switch provided does not serve as a disconnecting device. However, the marking is in compliance with 1.7.8.	P
2.6.9	Installation instructions if plug on power supply cord acts as disconnect device	See 1.7.2	P
	Language .....	---	—
2.6.11	Interconnected equipment	Interconnection to other devices by secondary signal (SELV) cable only.	N
2.6.12	Multiple power sources	Only one supply connection provided.	N

2.7	Overcurrent and earth fault protection in primary circuits:		P
2.7.1	Basic requirements	Protective device are integrated in the primary circuit.	P
2.7.2	Protection against faults not covered in 5.4	---	N
2.7.3	Short-circuit backup protection	Pluggable equipment type A, the building installation is considered as providing short circuit protection.	P
2.7.4	Number and location of protective devices .....	Overcurrent protection by one built-in fuse in approved SPS.	P
2.7.5	Protection by several devices	Only one fuse	N
2.7.6	Warning to service personnel	It is considered that the plug to the mains will be disconnected during service work, no markings are required.	P

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.8	Safety interlocks: No operator accessible areas which presents hazards in the meaning of this standard.		N
2.8.2	Design	---	N
2.8.3	Protection against inadvertent reactivation	---	N
2.8.4	Reliability	---	N
2.8.5	Overriding an interlock	---	N
2.8.6.1	Contact gap (mm) ..... :	---	N
2.8.6.2	Switch performing 50 cycles	---	N
2.8.6.3	Electric strength test: test voltage (V) ..... :	---	N
2.8.7	Protection against overstress	---	N

2.9	Clearances, creepage distances and distances through insulation:		P
	Nominal voltage (V) ..... :	AC 240 V	—
	General		P
2.9.2	Clearances	Certified power supply used. The required clearance is considered.	P
2.9.2.1	Clearances in primary circuits	Certified power supply used. The required clearance is considered.	P
2.9.2.2	Clearances in secondary circuits	Certified power supply used. The required clearance is considered.	P
2.9.3	Creepage distances	Certified power supply used. The required clearance is considered.	P
	CTI tests ..... :	CTI rating for all materials of minimum 100.	—
2.9.4.1	Minimum distances through insulation	Certified power supply used. The required clearance is considered.	P



EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
2.9.4.2	Thin sheet material	Insulation tape such as polythylene terephthalate adhesive tape used between primary and secondary windings in T1.	P
	Number of layers (pcs) .....	3 layers between primary to secondary.	P
	Electrical strength test: test voltage (V) .....	3000V ac applied on any combination of two layers.	P
2.9.4.3	Printed boards	---	N
	Distance through insulation	(see appended table 2.9.4)	N
	Electric strength test at voltage for thin sheet insulating material	(see appended table 5.3)	N
	Number of layers (pcs) .....	---	N
2.9.4.4	Wound components without interleaved insulation	No wound components without interleaved insulation between primary and secondary or primary to earth.	N
	Number of layers (pcs) .....	---	N
	Two wires in contact inside component; angle between 45 and 90 degree	---	N
	Routine testing for finished component	---	N
2.9.5	Distances on coated printed boards	No coated printed wiring boards.	N
	Routine testing for electric strength	---	N
2.9.6	Enclosed and sealed parts	No hermetically sealed components.	N
	Temperature T1 (°C) .....	---	N
	Humidity % .....	---	N
2.9.7	Spacings filled by insulating compound	Photo coupler is approved component, other components did not apply for.	P
	Temperature T1 (°C) .....	---	N
	Humidity % .....	---	N
2.9.8	Component external terminations	No external terminals for components.	N
2.9.9	Insulation with varying dimensions	---	N

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict

2.10	Interconnection of equipment		P
2.10.1	General requirements	Only interconnection circuit of SELV through the connector, no ELV interconnection circuit.	N
2.10.2	Type of interconnection circuits .....	---	N
2.10.3	ELV circuits as interconnection circuits	---	N

2.11	Limited power source:		N
	Use of limited power source .....	Not applied for.	N

3	WIRING, CONNECTIONS AND SUPPLY		P
---	--------------------------------	--	---

3.1	General		P
3.1.1	Cross-sectional area of internal wiring/interconnecting cables	All internal wires are UL recognized wiring with PVC insulation, rated VW-1, min. 80 °C , 300 V. The cross sectional area of the internal wiring is suitable for its rated current.	P
	Protection of internal wiring and interconnecting cables	No internal wire for primary power distribution.	N
3.1.2	Wireways	Wires do not touch sharp edges and heatsinks which could damage the insulation and cause hazard.	P
3.1.3	Fixing of internal wiring	Internal wires with only basic isolation are routed so that they are not close to any live bare components. The wires are secured by solder pins and quick connect terminals so that a loosening of the terminal connection is unlikely.	P
3.1.4	Fixing of uninsulated conductors	Securely held on PCB, no hazard.	P
3.1.5	Insulation of internal wiring	The insulation of the individual conductors are suitable for the application and the working voltage. For the insulation material see 3.1.1.	P
3.1.6	Wires coloured green/yellow only for protective earth connection	See 2.5.5	P
3.1.7	Fixing of beads and similar ceramic insulators	Not used.	N



EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict
3.1.8	Required electrical contact pressure	Only earthing connection screwed two or more complete threads into metal. No screws of insulating material for electrical and earthing connections, or where supplementary or reinforced insulation could be impaired by a metal replacement.	N
3.1.9	Reliable electrical connections	All current carrying and safety earthing connections are metal to metal.	P
3.1.10	End of stranded conductor	No risk of stranded conductors coming loose.	P
3.1.11	Use of spaced thread screws/thread-cutting screws	No self tapping screws are used for electrical connection.	P

3.2	Connection to primary power:		P
3.2.1	Type of connection .....	Appliance inlet	P
	Design of product with more than one supply connection .....	The appliance inlet in equipment is only for one mains connection	N
3.2.2	Provision for permanent connection .....	See 3.2.1	P
	Size (mm) of cables and conduits .....		N
3.2.3	Appliance inlet	The appliance inlet complies with IEC 60320 and is located at the rear of the unit.  Where the power cord can be inserted without difficulties and should be approved and does not support the unit	P
3.2.4	Type and cross-sectional area (mm <sup>2</sup> ) of power supply cord .....	H05VV-F, 3G * 0.75 mm <sup>2</sup>	P
3.2.5	Cord anchorage		N
	Test: 25 Times; 1 s; pull (N) .....	---	—
	Longitudinal displacement < 2 mm .....	---	N
3.2.6	Protection of power supply cord	No parts under the equipment is likely to damage the power supply cord, no sharp edges.	N
3.2.7	Cord guard		N
	D (mm) .....	---	—
	Test: mass (g) .....	---	—

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict

	Radius of curvature of the cord < 1,5D	---	N
3.2.8	Supply wiring space	---	N

3.3	Wiring terminals for external power supply conductors		N
3.3.1	Terminals	No external power supply conductors.	N
3.3.2	Special non-detachable cord		N
	Type of connection .....	---	—
	Pull test at 5 N	---	N
3.3.3	Screws and nuts	---	N
3.3.4	Fixing of conductors	---	N
3.3.5	Connection of connectors	---	N
3.3.6	Size of terminals	---	N
	Nominal thread diameter (mm) .....	---	N
3.3.7	Protection against damage of conductors	---	N
3.3.8	Terminal location	---	N
3.3.9	Test with 8 mm stranded wire	---	N

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict

4	PHYSICAL REQUIREMENTS		P
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4.1	Stability and mechanical hazards		P
4.1.1	Stability tests		P
	Angle of 10 degree	This unit is of a stable mechanical construction and does not overbalance when tilted to an angle of 10 degrees from its normal upright position.	P
	Test: force (N) .....	Not floor standing.	N
4.1.2	Protection against personal injury	No moving parts.	N
4.1.3	Warning and means provided for stopping the moving part .....	No moving parts.	N
4.1.4	Edges and corners	Edges and corners of the enclosure are rounded.	P
4.1.5	Enclosure of a high pressure lamp	No lamp with cold pressure of 0.2Mpa or hot pressure of 0.4Mpa.	N

4.2	Mechanical strength and stress relief:		P
4.2.1	General	See below.	P
4.2.2	Internal enclosures 30 N $\pm$ 3 N; 5 s	No internal enclosure.	N
4.2.3	External enclosures 250 N $\pm$ 10 N; 5 s	250N applied to outer enclosure. No damage or other hazards.	P
4.2.4	Steel ball tests		P
	Fall test	500g steel sphere ball fall, from 1.3m height onto outer plastic enclosure. The test was done with all enclosure materials. No safety relevant damages.	P
	Swing test	500g steel sphere ball as pendulum onto outer plastic enclosure. The test was done with all enclosure materials. No safety relevant damages.	P
4.2.5	Drop test	Not hand-held.	N
4.2.6	Heat test for enclosures of molded or formed thermoplastic materials: 7h; T (°C) .....	Metal enclosure used.	N
4.2.7	Compliance criteria	No safety relevant damages.	P
4.2.8	Mechanical strength of cathode ray tubes	--	N



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Clause	Requirement + Test	Result - Remark	Verdict

4.3	Construction details		P
4.3.1	Changing of setting for different power supply voltages	Full range circuit, no necessary adjustment.	P
4.3.2	Adjustment of accessible control devices	None that would cause hazard.	P
4.3.4	Prevention of dangerous concentration of dust, powder, liquid and gas	Equipment in intended use not considered to be exposed to these.	N
4.3.5	Fixing of knobs, grips, handles, levers		N
	Test: force (N) ..... :		N
4.3.6	Driving belts/couplings shall not ensure electrical insulation	Not used for insulation.	N
4.3.7	Retaining of sleeves	Sleeving on wiring reliable kept in position by cable ties or by the use of heatshrink sleeving.	P
4.3.9	Protection of loosening parts	Electrical and mechanical connections can be expected to withstand usual mechanical stress. For the protection, solder pins, cable ties and heatshrink tubing are used.	P
4.3.11	Resistance to oil and grease	Insulation not in contact with oil or grease.	N
4.3.12	Protection against harmful concentration of ionizing radiation, ultraviolet light, laser or flammable gases (for laser see IEC 60825-1)	---	N
4.3.13	Securing of screwed connections	No connection likely to be exposed to mechanical stress are provided in unit.	P
4.3.15	Openings in the top of enclosure	No opening provided on top of enclosure.	N
	Dimensions (mm) ..... :	---	—
4.3.16	Openings in the sides of enclosure	Provided numerous openings, see below.	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Dimensions (mm) .....	<p>Left side ventilation openings: overall 36.5 by 42 mm, 112 by 41 mm, opening 1.8 by 15.7 mm each.</p> <p>Right side ventilation openings: overall 36.5 by 42 mm, 112 by 41 mm, opening 1.8 by 15.7 mm each.</p> <p>Rear ventilation openings: Overall 104 by 11 mm, opening 3.7 by 11 mm each.</p> <p>Front ventilation openings: Overall 93 by 72 mm, opening 2.9 by 18 mm each.</p>	—
4.3.17	Interchangeable plugs and sockets	In operator and service area, mismatching prevented by incompatible form or location.	P
4.3.18	Torque test for direct plug-in equipment:		N
	Additional torque (Nm) .....	---	N
4.3.19	Protection against excessive pressure	---	N
4.3.20	Protection of heating elements in Class I equipment	No heating elements.	N
4.3.21	Protection of lithium batteries		P
	Construction of protection circuit .....	One diode and 1Kohm resistor connected in series.	P
4.3.22	Ageing of barrier/screen secured with adhesive		N
	Day 1: temperature (°C); time (weeks) .....	---	N
	Day 8/22/57: a) temperature (°C) for 1 h b) temperature (°C) for 4 h c) temperature (°C) over 8 h	---	N
	Day 9/23/58: a) relative humidity (%) for 72 h b) temperature (°C) for 1 h c) temperature (°C) for 4 h d) temperature (°C) over 8 h	---	N
4.4	Resistance to fire		P
4.4.1	Methods of achieving resistance to fire	Use of materials with the required flammability classes.	P



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Clause	Requirement + Test	Result - Remark	Verdict
4.4.2	Minimizing the risk of ignition	Electrical parts are not likely to ignite nearby materials. Parts not protected against overheating under fault conditions.  Temperature see 5.1	P
	Printed board: manufacturer; type; flammability .... :	See 1.5.1 appended table	P
4.4.3	Flammability of materials and components	See below	P
4.4.3.2	Material and component: manufacturer; type; flammability .....	Internal components except small parts are V-2, HF-2 or better.	P
4.4.3.3	Exemptions .....	Considered.	P
4.4.3.4	Wiring harnesses: manufacturer; flammability .....	Insulation material consists of PVC.	P
4.4.3.5	Cord anchorage bushings: manufacturer; flammability .....	No cord anchorage bushings.	N
4.4.3.6	Air filter assemblies: manufacturer; flammability ... :	No air filter assemblies.	N
4.4.4	Enclosures and decorative parts: manufacturer; type; flammability .....	See appended table 1.5.1	P
4.4.5	Conditions for fire enclosures	With having the following components:  -components with windings  -wiring  -semiconductor devices, transistors, diodes, integrated circuits.  -resistors, capacitors, inductors.  - The fire enclosure is required.	P
4.4.5.1	Components requiring fire enclosure: manufacturer; flammability .....	See 4.4.5	P
4.4.5.2	Components not requiring fire enclosure .....	See 4.4.5.	N
4.4.6	Fire enclosure construction	See 4.4.5  The bottom enclosure material is metal. No bottom ventilation openings:	P
4.4.7	Doors or covers in fire enclosures	No door or cover.	N
4.4.8	Flammable liquids	No flammable liquids in this unit.	N

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Clause	Requirement + Test	Result - Remark	Verdict
5	THERMAL AND ELECTRICAL REQUIREMENTS		P
5.1	Heating		P
	Heating tests	(see appended table)	P
5.2	Earth leakage current (Certified power supply used)		P
5.2.1	General	The leakage current was measured from primary to earth (done on certified power supply)	P
5.2.2	Leakage current	---	P
	Test voltage (V) .....	---	—
	Measured current (mA) .....	---	—
	Max. allowed current (mA) .....	3.5 mA.	—
5.2.3	Single-phase equipment	See 5.2.2	P
	Test voltage (V) .....	---	—
	Measured current (mA) .....	---	—
	Max. allowed current (mA) .....	---	—
5.2.4	Three-phase equipment	Single phase equipment.	N
	Test voltage (V) .....	---	—
	Measured current (mA) .....	---	—
	Max. allowed current (mA) .....	---	—
5.2.5	Equipment with earth leakage current exceeding 3,5 mA	Leakage current does not exceed 3.5 mA.	N
	Test voltage (V) .....	---	—
	Measured current (mA) .....	---	—
	Max. allowed current (mA) .....	---	—
	Cross-sectional area (mm <sup>2</sup> ) of internal protective earthing conductor .....	---	—
	Warning label	---	N
5.3	Electric strength		P
5.3.1	General	All test voltage were applied for 1 minute in warm conditions after the heating test of 5.1.  No isolation breakdown was observed (results see appended tables)	P

EN 60950			
Clause	Requirement + Test	Result - Remark	Verdict

5.3.2	Test procedure	(see appended table)	P
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5.4	Abnormal operating and fault conditions		P
5.4.2	Motors	Certified fans used No hazard.	P
5.4.3	Transformers	Certified power supply used	P
5.4.4	Compliance of operational insulation:		P
	Method used .....	Certified power supply used	P
5.4.5	Electromechanical components in secondary circuits	No electromechanical components.	N
5.4.6	Other components and circuits	The power supply is protected by the following means: Fuse	P
5.4.7	Test in any expected condition and foreseeable misuse	Ventilation openings blocked test: Results see appended table 5.1. No hazards.	P
5.4.8	Unattended use of equipment having thermostats, temperature limiters etc.	None of these components are used.	N
5.4.9	Compliance	No fire propagated beyond the equipment. No molten metal was emitted. Electric strength test passed. (see appended table)	P
5.4.10	Ball-pressure test of thermoplastic parts; impression shall not exceed 2 mm	Certified power supply used.	N

6	CONNECTION TO TELECOMMUNICATION NETWORKS		N
---	--	--	---

6.1	General		N
6.2	TNV circuits		N
6.2.1.1	Limits of the TNV circuits	---	N
6.2.1.1 a)	TNV-1 circuits	---	N
6.2.1.1 b)	TNV-2 and TNV-3 circuits	---	N
6.2.1.2	Separation from other circuits and from accessible parts	---	N
	Voltage (V) in SELV circuits, TNV-1 circuits and accessible conductive parts in event of single insulation fault or component failure .....	---	N
6.2.1.3	Operating voltages generated externally	---	N



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Clause	Requirement + Test	Result - Remark	Verdict
	Voltage (V) in SELV circuit, TNV-1 circuit or accessible conductive part .....	---	—
6.2.1.4	Separation from hazardous voltages .....	---	N
	Insulation between TNV circuit and circuit at hazardous voltage	---	—
	Method used .....	---	—
6.2.1.5	Connection of TNV circuits to other circuits	---	N
	Insulation (mm) between TNV circuit supplied conductively from secondary circuit and hazardous voltage circuit .....	---	—
6.2.2.1	Protection against contact with bare conductive parts of TNV-2 and TNV-3 circuits	---	N
	Test with test finger	---	—
	Test with test probe	---	—
6.2.2.2	Battery compartments	---	N
	Marking next to door/on door	---	—
6.3	Protection of telecommunication network service personnel, and users of other equipment connected to the telecommunication network, from hazards in the equipment		N
6.3.1	Protection from hazardous voltages	---	N
6.3.2	Use of protective earthing		N
	Language of installation instructions .....	---	—
6.3.3.1	Insulation between TNV circuit and parts or circuitry that may be earthed	---	N
6.3.3.2	Exclusions .....	---	N
6.3.4.1	Limitation of leakage current (mA) to telecommunication network .....	---	N
6.3.4.2	Summation of leakage currents from telecommunication network .....	---	N
6.4	Protection of equipment users from voltages on the telecommunication networks		N
6.4.1	Separation requirements	---	N
6.4.2	Test procedure	---	N
6.4.2.1	Impulse test: separation between TNV-1 circuits/TNV-3 circuits and:		N
6.4.2.1 a)	unearthed conductive parts/non-conductive parts of the equipment expected to be held or touched during normal use; test at 2,5 KV	---	N

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Clause	Requirement + Test	Result - Remark	Verdict

6.4.2.1 b)	parts and circuitry that can be touched by the test finger except contacts of connectors that cannot be touched by test probe; test at 1,5 KV	---	N
6.4.2.1 c)	circuitry which is provided for connection of other equipment; test at 1,5 KV	---	N
6.4.2.2	Electric strength test: separation between TNV-1 circuits/TNV-3 circuits and:		N
6.4.2.2 a)	unearthed conductive parts/non-conductive parts of the equipment expected to be held or touched during normal use; test at 1,5 KV	---	N
6.4.2.2 b)	parts and circuitry that can be touched by the test finger except contacts of connectors that cannot be touched by test probe; test at 1,0 KV	---	N
6.4.2.2 c)	circuitry which is provided for connection of other equipment; test at 1,0 KV	---	N
6.4.2.3	Compliance criteria	---	N

6.5	Protection of telecommunication wiring system from overheating		N
	Maximum continuous output current (A) ..... :	---	—



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Clause	Requirement + Test	Result - Remark	Verdict

A	ANNEX , TESTS FOR RESISTANCE TO HEAT AND FIRE		N
A.1	Flammability test for fire enclosures of moveable equipment having a total mass exceeding 18 kg, and of stationary equipment		N
A.2	Flammability test for fire enclosures of moveable equipment having a total mass not exceeding 18 kg, and for materials located within fire enclosures		N
A.3	High current arcing ignition test	---	N
A.3.6	Number of arcs .....	---	N
A.4	Hot wire ignition test	---	N
A.4.6	Ignition time (s) .....	---	N
A.5	Hot flaming oil test	---	N
A.6	Flammability test for classifying materials V-0, V-1 or V-2	---	N
A.7	Flammability test for classifying foamed materials HF-1, HF-2 or HBF	---	N
A.8	Flammability test for classifying materials HB	---	N
A.9	Flammability test for classifying materials 5V	---	N
A	Tested material		N
	Preconditioning: 7days (168 hr); temperature (°C) . :	---	—
	Mounting of samples during test .....	---	—
	Wall thickness .....	---	—
	Sample 1 burning time .....	---	—
	Sample 2 burning time .....	---	—
	Sample 3 burning time .....	---	—
	Material: compliance with the requirements	---	—
	Manufacturer of tested material .....	---	—
	Type of tested material .....	---	—
	Additional information .....	---	—

B	ANNEX , MOTOR TESTS UNDER ABNORMAL CONDITIONS		N
B.1	General requirements	---	N
	Position .....	---	—
	Manufacturer .....	---	—
	Type .....	---	—
	Rated voltage (V) or current (A) .....	---	—



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Clause	Requirement + Test	Result - Remark	Verdict

B.2	Test conditions	---	N
B.3	Maximum temperatures	(see appended table 5.4)	N
B.4	Running overload test	---	N
B.5	Locked-rotor overload test	---	N
	Test duration (days) .....	---	—
	Electric strength test: test voltage (V) .....	---	—
B.6	Running overload test for DC motor in secondary circuits	---	N
B.7	Locked-rotor overload test for DC motor in secondary circuits		N
B.7.2	Test time (h) .....	---	N
B.7.3	Test time (h) .....	---	N
B.8	Test for motors with capacitors	---	N
B.9	Test for three-phase motors	---	N
B.10	Test for series motors	---	N
	Test voltage (V) .....	---	—

C	ANNEX , TRANSFORMERS		P
	Position .....	Located on approved power supply	—
	Manufacturer .....	--	—
	Type .....	--	—
	Rated values .....	--	—
	Temperatures	(see appended table 5.1)	P
	Thermal cut-out	(see appended table 5.1)	P
C.1	Overload test	---	P
	Conventional transformer	---	N
C.2	Insulation		P
	Precautions .....	(see transformer construction check next page)	P
	Retaining of end turns of all windings	Dto	P
	Earthing test at 25 A	---	N
C.3	Electric strength test	Certified power supply used	P

C.2	Safety isolation transformer (Located on approved power supply)	P
Construction details: Certified power supply used		



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Clause	Requirement + Test	Result - Remark	Verdict

	Manufacturer .....	--	
	Type .....	--	
	Recurring peak value	--	
	Required clearance for reinforced insulation	--	
	Effective voltage rms	--	
	Required creepage for reinforced insulation	--	
	Measured min. creepage	--	
	Location		
	Primary-Secondary	--	
	Primary-Core	--	
	Secondary-Core	--	
	Construction: Certified power supply used		
	Pin numbers	--	
	Primary	--	
	Secondary	--	
	Bobbin material	--	
	Thickness	--	
	Electrical strength test With AC 3000V after humidity treatment	Passed	

H	ANNEX H , IONIZING RADIATION		N
	Ionizing radiation		N
	Measured radiation .....	---	—
	Measured high-voltage (kV) .....	---	—
	CRT markings .....	---	—
	Certified by .....	---	—
	Standard used .....	---	—
U	ANNEX , INSULATED WINDING WIRES FOR USE AS MULTIPLE LAYER INSULATION		N
	See separate test report	---	N



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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>	
1. Power Plug	Various	Various	250 V ac, 10 A	VDE0620, IEC60320	VDE	
2. Power Cable	Various	H05VVH2-F	3G 0.75m mm <sup>2</sup>	VDE 0281	VDE	
3. Power Connector	Various	Various	250 V ac, 10 A	VDE0620, IEC60320	VDE	
4. Switch	Marquardt	1852	250 V ac, 4 A	VDE0630	VDE	
5. Inlet	Rong Feng	SS-120	250 V ac, 10 A	IEC60320	VDE	
6. Power supply	Universal Micro Electronics	UP0653S-01	Input: 100-240 V ac, 50/60 Hz,1.5A. Output: +12 V dc/2.5 A -12 V dc/0.5 A +5 V dc/6 A	IEC60950	UL, TUV	
7. PCB	Various	Various	V-1 min. 105°C	UL94	UL	
8. Enclosure Material	---	Metal	1.0 mm thick minimum.	---	---	
9. DC Fans	Delta	DFB0912H	12 V dc, 0.3 A, 44.14CFM	EN60950	VDE	
	Adda	AD0912HB- A70GL	12 V dc, 0.25 A 48.4CFM	EN60950	VDE	
10. CPU Fan	Adda	AD0512HB-G70	12 V dc, 0.1 A, 10.4CFM	EN60950	VDE	
11. Hard Disk	Various	Various	5/12 V dc, 0.3/0.5 A maximum.	EN60950	UL, TUV	
12. Floppy Disk Drive	Various	Various	5/12 V dc, 1.5/1.8 A maximum.	EN90950	UL, TUV	
13 LI-Ion Battery	Rayvoac	BR2032	3.0 V dc, 150mAh	--	UL	

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1.6	TABLE: electrical data (in normal conditions)					P
fuse #	Irated (A)	U (V)	P (W)	I (A)	Ifuse (A)	condition/status
In SPS	---	90/50Hz	42.1	0.78	0.78	Maximum Normal Load
	1.5	100/50Hz	41.9	0.72	0.72	Maximum Normal Load
	1.5	240/50Hz	42.4	0.38	0.38	Maximum Normal Load
	---	264/50Hz	42.7	0.36	0.36	Maximum Normal Load
	---	90/60Hz	42.1	0.78	0.78	Maximum Normal Load
	1.5	100/60Hz	41.9	0.72	0.72	Maximum Normal Load
	1.5	240/60Hz	42.4	0.37	0.37	Maximum Normal Load
	---	264/60Hz	42.7	0.36	0.36	Maximum Normal Load

5.1	TABLE: temperature rise measurements		P
	test voltage (V) .....	90/264/240 ventilation opening blocked/CPU fan /DC fan locked.	—
	t1 (°C) .....	---	—
	t2 (°C) .....	---	—
Temperature rise dT of part/at:		dT (K)	Required dT (K)
Room Ambient		24°C/24°C/23°C/23°C/24°C	--
Power supply PWB near BR1		21/15/30/17/30	65
Power supply L1 coil		12/9/28/11/26	65
Power supply C6body		12/11/30/13/23	65
Power supply T1 coil		19/24/44/29/37	55
Power supply T1 core		16/22/41/24/38	55
Power supply PWB near D6		19/23/35/30/39	65
U19 body		23/23/43/32/23	65
B1 body		10/10/30/20/10	--
PWB near CPU		6/6/28/20/6	--
U6 body		8/8/29/17/8	--
Enclosure outside on top		1/1/14/5/1	25



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5.3	TABLE: electric strength measurements		P
test voltage applied between:		test voltage (V)	breakdown
Primary and secondary		DC 4242V	No
Primary and ground		DC 3000V	No

5.4	TABLE: fault condition tests						P
	ambient temperature (°C) .....					25 °C, if no else specified	--
	model/type of power supply .....					UP0653S-01	--
	manufacturer of power supply .....					Universal Micro Electronics	--
	rated markings of power supply .....					See table 1.5.1	--
No.	component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	result
01	Ventilation openings	Blocked	240	2.0 hrs	--	--	Temperature of T1 core/coil = 67/64°C no hazard.
02	CPU Fan	Stalled	240	1.5 hrs	--	--	Temperature of T1 core/coil = 52/47°C, no hazard.
03	DC Fan	Stalled	240	1.2 hrs	--	--	Temperature of T1 core/coil = 61/62°C, no hazard.



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Clause	Requirement + Test	Result - Remark	Verdict

Appendix Photos – Front view of MBPC-641XXX-XXX



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Clause	Requirement + Test	Result - Remark	Verdict

Appendix Photos – Rear View of MBPC-641XXX-XXX



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Clause	Requirement + Test	Result - Remark	Verdict

Appendix Photos – Interior construction of Model MBPC-641XXX-XXX



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Clause	Requirement + Test	Result - Remark	Verdict

Appendix Photos – Interior view of MBPC-641XXX-XXX

