

<p align="center"><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></p>	
<b>Report reference No . :</b>	SE70523
Tested by	
(printed name and signature) : .....	Donny Chen
	
Approved by	
(printed name and signature) .....	Moses Kao
	
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Contents.....	33 Pages
Testing Laboratory Name.....	<b>AnCert Certification Co., Ltd.</b>
Address.....	2F, No. 128, Sinhu 2nd Rd, Neihu District, Taipei City 114.
Testing location.....	Taipei, Taiwan, Republic of China
<b>Applicant's Name</b> .....	<b>Titan Computer Co., Ltd.</b>
Address .....	25F, No. 27-8, Sec. 2, Jung-Jeng E. Road, Danshuei Jen, Taipei, Taiwan.
<b>Test specification</b>	
Standard .....	IEC 60950-1:2001 EN 60950-1:2001
Test procedure .....	Service of CE marking in LVD
Non-standard test method .....	N.A.
<b>Test item description</b> .....	
Description.....	POWER INVERTER
Trademark .....	
Manufacturer .....	Same as applicant
Model and/or type reference .....	HW-350XY ( X=A-Z or blank ; Y=0-9, A-Z or blank)
Serial number.....	The samples without serial numbers.
Rating(s) .....	i/p: 12Vdc, 33A o/p: 230Vac, 350W

<b>Particulars: test item vs. test requirements</b>	
Equipment mobility .....	Transportable equipment
Operating condition .....	Continuous
Tested for IT power systems.....	N.A.
IT testing, phase-phase voltage (V) .....	N.A.
Class of equipment .....	Class III
Mass of equipment (kg) .....	Max. 0.61
Protection against ingress of water.....	IPX0
<b>Test case verdicts</b>	
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)
Test case has not been checked .....	—

**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.

Comments:**Factory:**

Elite Power Manufacturing Co.

6F, No.25, Lane3, Sec.1, Chung-Chen East Rd., Tam-sui, Taipei, 251, Taiwan

General product information:

The equipment models HW-350XY are power inverter for the use in information technology equipment.

Maximum recommended ambient: 25°C

**1.1.2 - Additional requirements:**

Exposure to extreme temperatures, excessive dust, moisture or vibration; to flammable gases; to corrosive or explosive atmospheres:

This equipment is intended to operate in a "normal" environment (Offices and homes).

Electro medical equipment connected to the patient:

This equipment is not electro medical equipment intended to be physically connected to a patient.


Equipment used in vehicles, ships or aircrafts, in tropical countries, or at elevations > 2000m:

This equipment is intended to operate in a "normal" environment (Offices and homes).

**Copy of marking plate:**

**See Remark**

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1	GENERAL		<b>P</b>
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>Certified components are used in accordance with their ratings, certifications and they comply with applicable parts of this standard.</p> <p>Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 60950- 1 and the relevant component standard.</p> <p>Components, for which no relevant IEC-standard exists, have been tested under the conditions occurring in the equipment, using applicable parts of IEC 60950-1.</p>	P
1.5.3	Thermal controls	No thermal controls.	N
1.5.4	Transformers	No Transformers used.	N
1.5.5	Interconnecting cables	The interconnecting cables contain only SELV.	P
1.5.6	Capacitors in primary circuits .....	Class III equipment	N
1.5.7	Double insulation or reinforced insulation bridged by components	Class III equipment	N
1.5.7.1	General		—
1.5.7.2	Bridging capacitors		N
1.5.7.3	Bridging resistors		N
1.5.7.4	Accessible parts		N
1.5.8	Components in equipment for IT power systems	Class III equipment	N
1.6	Power interface		P
1.6.1	AC power distribution systems	Equipment is not directly connected to the AC mains supply.	N
1.6.2	Input current	(see appended table 1.6.2.)	P
1.6.3	Voltage limit of hand-held equipment	This appliance is not a hand-held equipment.	N

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.6.4	Neutral conductor		N
1.7	Marking and instructions		P
1.7.1	Power rating	See below.	P
	Rated voltage(s) or voltage range(s) (V) .....	Not direct connect to the AC or	N
	Symbol for nature of supply, for d.c. only .....	DC mains supply.	N
	Rated frequency or rated frequency range (Hz) :	Not direct connect to the AC or	N
	Rated current (mA or A) .....	DC mains supply.	N
	Manufacturer's name or trademark or identification mark .....		P
	Type/model or type reference .....	HW-350XY	P
	Symbol for Class II equipment only .....	Class III equipment.	N
	Other symbols .....	Additional symbols or marking does not give rise to misunderstanding.	P
	Certification marks .....	See copy of marking plate.	N
1.7.2	Safety instructions	No precautions are necessary.	N
1.7.3	Short duty cycles	Equipment is designed for continuous operation.	N
1.7.4	Supply voltage adjustment .....	No voltage/frequency setting.	N
	Methods and means of adjustment; reference to installation instructions .....		N
1.7.5	Power outlets on the equipment .....	Not provided.	N
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference) .....	No safety involved indicator and switch.	N
1.7.7	Wiring terminals		—
1.7.7.1	Protective earthing and bonding terminals .....		N
1.7.7.2	Terminal for a.c. mains supply conductors		N
1.7.7.3	Terminals for d.c. mains supply conductors		N
1.7.8	Controls and indicators	Refer below:	—
1.7.8.1	Identification, location and marking .....	No controls.	N
1.7.8.2	Colours .....	No controls.	N
1.7.8.3	Symbols according to IEC 60417 .....	The are no switches in the equipment.	N
1.7.8.4	Markings using figures .....	No controls.	N

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.9	Isolation of multiple power sources .....	Only one connection supplying hazardous voltages and energy levels to the equipment.	N
1.7.10	IT power distribution systems		N
1.7.11	Thermostats and other regulating devices	No thermostats or other regulating devices.	N
1.7.12	Language(s) .....	User's manual and marking label are in English and German. Versions of other language will provided in national approval.	—
1.7.13	Durability	The marking withstands required tests.	P
1.7.14	Removable parts	No removable parts.	N
1.7.15	Replaceable batteries	No battery in the equipment.	N
	Language(s) .....	English and German.	—
1.7.16	Operator access with a tool.....	All areas containing hazard(s) are inaccessible to the operator.	N
1.7.17	Equipment for restricted access locations .....	Equipment not intended for installation in RAL.	N

2	PROTECTION FROM HAZARDS	P
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2.1	Protection from electric shock and energy hazards		P
2.1.1	Protection in operator access areas	Refer below:	P
2.1.1.1	Access to energized parts	Energized parts are not accessible.	P
	Test by inspection .....:	Complies.	P
	Test with test finger .....:	Complies.	P
	Test with test pin .....:	Complies.	P
	Test with test probe .....:	Not applicable.	N
2.1.1.2	Battery compartments .....:	No battery circuits in the equipment.	N
2.1.1.3	Access to ELV wiring	No internal wiring at ELV	N
	Working voltage (V <sub>peak</sub> or V <sub>rms</sub> ); minimum distance (mm) through insulation		—

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.1.1.4	Access to hazardous voltage circuit wiring	All accessible parts are separated from internal wiring at hazardous voltage by double or reinforced insulation, complying with 2.10.5 and 3.1.4.	P
2.1.1.5	Energy hazards .....	No energy hazard in operator access area. Checked by means of the test finger.	P
2.1.1.6	Manual controls	No shafts of knobs etc.	N
2.1.1.7	Discharge of capacitors in equipment		N
	Time-constant (s); measured voltage (V).....:		—
2.1.2	Protection in service access areas		N
2.1.3	Protection in restricted access locations		N

2.2	SELV circuits		P
2.2.1	General requirements	SELV limits are not exceeded under normal condition and after a single fault.	P
2.2.2	Voltages under normal conditions (V).....:	Within SELV limits.	P
2.2.3	Voltages under fault conditions (V) .....	Within SELV limits. (see appended table 2.2)	P
2.2.3.1	Separation by double insulation or reinforced insulation (method 1)	Method 1 used.	P
2.2.3.2	Separation by earthed screen (method 2)	Method 1 used.	N
2.2.3.3	Protection by earthing of the SELV circuit (method 3)	Method 1 used.	N
2.2.4	Connection of SELV circuits to other circuits .....	SELV circuits are only connected to other SELV and limited current circuit.	P

2.3	TNV circuits		N
2.3.1	Limits	No TNV circuits in the equipment.	N
	Type of TNV circuits .....		—
2.3.2	Separation from other circuits and from accessible parts		N
	Insulation employed .....		—
2.3.3	Separation from hazardous voltages		N
	Insulation employed .....		—



IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.3.4	Connection of TNV circuits to other circuits		N
	Insulation employed .....		—
2.3.5	Test for operating voltages generated externally		N
2.4	Limited current circuits		N
2.4.1	General requirements	Limits are not exceeded.	N
2.4.2	Limit values		N
	Frequency (Hz).....		—
	Measured current (mA) .....		—
	Measured voltage (V) .....		—
	Measured capacitance (μF) .....		—
2.4.3	Connection of limited current circuits to other circuits		N
2.5	Limited power source <i>Complied with Limited power sources for output USB ports.</i>		N
	Inherently limited output		N
	Impedance limited output		N
	Overcurrent protective device limited output		N
	Regulating network limited output under normal operating and single fault condition		P
	Regulating network limited output under normal operating conditions and overcurrent protective device limited output under single fault condition		N
	Output voltage (V), output current (A), apparent power (VA) .....		—
	Current rating of overcurrent protective device (A)		—
2.6	Provisions for earthing and bonding <i>Class III equipment.</i>		N
2.6.1	Protective earthing		N
2.6.2	Functional earthing		N
2.6.3	Protective earthing and protective bonding conductors		N
2.6.3.1	General		N
2.6.3.2	Size of protective earthing conductors		N
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		—

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.6.3.3	Size of protective bonding conductors		N
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		—
2.6.3.4	Resistance (Ω) of earthing conductors and their terminations, test current (A) .....		N
2.6.3.5	Colour of insulation .....		N
2.6.4	Terminals		N
2.6.4.1	General		N
2.6.4.2	Protective earthing and bonding terminals		N
	Rated current (A), type and nominal thread diameter (mm) .....		—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N
2.6.5	Integrity of protective earthing		N
2.6.5.1	Interconnection of equipment		N
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N
2.6.5.3	Disconnection of protective earth		N
2.6.5.4	Parts that can be removed by an operator		N
2.6.5.5	Parts removed during servicing		N
2.6.5.6	Corrosion resistance		N
2.6.5.7	Screws for protective bonding		N
2.6.5.8	Reliance on telecommunication network or cable distribution system		N

2.7	Overcurrent and earth fault protection in primary circuits <i>Class III equipment.</i>		N
2.7.1	Basic requirements		N
	Instructions when protection relies on building installation		N
2.7.2	Faults not covered in 5.3		N
2.7.3	Short-circuit backup protection		N
2.7.4	Number and location of protective devices .....		N
2.7.5	Protection by several devices		N
2.7.6	Warning to service personnel .....		N

2.8	Safety interlocks		N
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IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict

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

2.9	Electrical insulation <i>Function insulation only.</i>		P
2.9.1	Properties of insulating materials	Neither natural rubber, materials containing asbestos nor hygroscopic materials are used as insulation. No driving belts or couplings used.	N
2.9.2	Humidity conditioning	Humidity treatment performed at 120 hr.	—
	Humidity (%) .....	91-95%	—
	Temperature (°C) .....	40°C	—
2.9.3	Grade of insulation	Insulation is considered to be functional, double or reinforced insulation.	P

2.10	Clearances, creepage distances and distances through insulation <i>Only SELV circuits inside the unit, for functional insulation see sub clause 5.3.4.</i>		P
2.10.1	General	<i>Function insulation only. See also sub clause 5.3.4.</i>	N
2.10.2	Determination of working voltage		N
2.10.3	Clearances		N
2.10.3.1	General		N
2.10.3.2	Clearances in primary circuits		N
2.10.3.3	Clearances in secondary circuits		N

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
2.10.3.4	Measurement of transient voltage levels		N
2.10.4	Creepage distances		N
	CTI tests .....		—
2.10.5	Solid insulation		N
2.10.5.1	Minimum distance through insulation		N
2.10.5.2	Thin sheet material		N
	Number of layers (pcs) .....		—
	Electric strength test		—
2.10.5.3	Printed boards		N
	Distance through insulation		—
	Electric strength test for thin sheet insulating material		—
	Number of layers (pcs) .....		—
2.10.5.4	Wound components		N
	Number of layers (pcs) .....		—
	Two wires in contact inside wound component; angle between 45° and 90° .....		N
2.10.6	Coated printed boards		N
2.10.6.1	General		N
2.10.6.2	Sample preparation and preliminary inspection		N
2.10.6.3	Thermal cycling		N
2.10.6.4	Thermal ageing (°C) .....		N
2.10.6.5	Electric strength test		—
2.10.6.6	Abrasion resistance test		
	Electric strength test		—
2.10.7	Enclosed and sealed parts .....		N
	Temperature $T_1 = T_2 + T_{ma} - T_{amb} + 10K$ (°C) .....		N
2.10.8	Spacings filled by insulating compound .....		P
	Electric strength test		—
2.10.9	Component external terminations		N
2.10.10	Insulation with varying dimensions		N
3	WIRING, CONNECTIONS AND SUPPLY		P
3.1	General		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.1.1	Current rating and overcurrent protection	Adequate cross sectional areas on internal wiring and interconnecting cables.	P
3.1.2	Protection against mechanical damage	Wireways are smooth and free from edges. Wires are adequately fixed to prevent excessive strain on wire and terminals and avoiding damage to the insulation of the conductors.	P
3.1.3	Securing of internal wiring	Internal wiring is secured against excessive strain, loosening of terminals and damage to the conductor insulation.	P
3.1.4	Insulation of conductors	Insulation on internal conductors is considered to be of adequate quality and suitable for the application and the working voltage involved.	P
3.1.5	Beads and ceramic insulators	No beads or similar ceramic insulators on conductors.	N
3.1.6	Screws for electrical contact pressure	No electric screw connection.	N
3.1.7	Insulating materials in electrical connections	No contact pressure through insulating material.	N
3.1.8	Self-tapping and spaced thread screws	No screws.	N
3.1.9	Termination of conductors	Terminations cannot become displaced so that clearances and creepage distances can be reduced	P
	10 N pull test	Considered.	P
3.1.10	Sleeving on wiring	No sleeves.	N
3.2	Connection to an a.c. mains supply or a d.c. mains supply <i>Class III equipment. Not connect to AC or DC mains supply.</i>		P
3.2.1	Means of connection .....	Refer below:	—
3.2.1.1	Connection to an a.c. mains supply	The equipment is provided with an appliance inlet.	N
3.2.1.2	Connection to a d.c. mains supply	The equipment is not for connection to a d.c. mains supply.	N
3.2.2	Multiple supply connections	Only one supply connection.	N

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.2.3	Permanently connected equipment	The equipment is not intended for permanent connection to the mains.	N
	Number of conductors, diameter (mm) of cable and conduits .....		—
3.2.4	Appliance inlets	The appliance inlet complies with IEC 60320-1 and is properly placed to avoid hazards after insertion of the appliance coupler.	P
3.2.5	Power supply cords	Refer below:	N
3.2.5.1	AC power supply cords	Power supply cord is not provided with the equipment, refer to Summary of Testing	N
	Type.....		—
	Rated current (A), cross-sectional area (mm <sup>2</sup> ), AWG .....		—
3.2.5.2	DC power supply cords	Equipment is not connected to DC mains.	N
3.2.6	Cord anchorages and strain relief		N
	Mass of equipment (kg), pull (N) .....		—
	Longitudinal displacement (mm) .....		—
3.2.7	Protection against mechanical damage		N
3.2.8	Cord guards		N
	D (mm); test mass (g) .....		—
	Radius of curvature of cord (mm) .....		—
3.2.9	Supply wiring space		N
3.3	Wiring terminals for connection of external conductors		N
3.3.1	Wiring terminals	3.3.1 – 3.3.8: appliance inlet provided.	N
3.3.2	Connection of non-detachable power supply cords		N
3.3.3	Screw terminals		N
3.3.4	Conductor sizes to be connected		N
	Rated current (A), cord/cable type, cross-sectional area (mm <sup>2</sup> ) .....		—
3.3.5	Wiring terminal sizes		N
	Rated current (A), type and nominal thread diameter (mm) .....		—
3.3.6	Wiring terminals design		N

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
3.3.7	Grouping of wiring terminals		N
3.3.8	Stranded wire		N
3.4	Disconnection from the mains supply <i>Class III equipment. Not connect to AC or DC mains supply.</i>		P
3.4.1	General requirement	The appliance coupler will be acting as disconnect device.	P
3.4.2	Disconnect devices	The appliance coupler will be acting as disconnect device.	P
3.4.3	Permanently connected equipment	Not permanently connected equipment.	N
3.4.4	Parts which remain energized	No parts remain energized after the disconnect device is pull out.	N
3.4.5	Switches in flexible cords	No cord set.	N
3.4.6	Single-phase equipment and d.c. equipment	The disconnect device disconnects both poles simultaneously.	P
3.4.7	Three-phase equipment	Single phase equipment.	N
3.4.8	Switches as disconnect devices	No switches provided.	N
3.4.9	Plugs as disconnect devices	The appliance coupler will be regarded as disconnect device, no warning is required.	N
3.4.10	Interconnected equipment	No interconnections using hazardous voltages.	N
3.4.11	Multiple power sources	One power source only.	N
3.5	Interconnection of equipment		P
3.5.1	General requirements	Considered.	P
3.5.2	Types of interconnection circuits..... :	SELV and limited current circuits.	P
3.5.3	ELV circuits as interconnection circuits	No ELV interconnection.	N
4	PHYSICAL REQUIREMENTS <i>As there are no hazardous voltages present in the unit or other hazards foreseeable, the tests of this clause was not performed but replaced by the construction review only.</i>		N
4.1	Stability		P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
	Angle of 10°	Unit does not overbalance at 10°	P
	Test: force (N) ..... :	The unit is not floor-standing.	N

4.2	Mechanical strength		P
4.2.1	General	Complies with the requirement also after tests described below are applied.	P
4.2.2	Steady force test, 10 N		P
4.2.3	Steady force test, 30 N	No internal enclosure.	N
4.2.4	Steady force test, 250 N	No hazard. The test is performed at all sides of enclosure.	P
4.2.5	Impact test	Refer below:	—
	Fall test	No hazard as result from the steel sphere fall test.	P
	Swing test	No hazard as result from the steel sphere swing test.	P
4.2.6	Drop test	transportable equipment. No damage after 1m drop.	P
4.2.7	Stress relief test	Metal enclosure	P
4.2.8	Cathode ray tubes	CRT(s) not used in the equipment.	N
	Picture tube separately certified..... :		—
4.2.9	High pressure lamps	No high pressure lamps in the equipment.	N
4.2.10	Wall or ceiling mounted equipment; force (N) .... :	Not intended to be mounted on a wall or ceiling.	N

4.3	Design and construction		P
4.3.1	Edges and corners	All edges and corners are rounded and/or smoothed.	P
4.3.2	Handles and manual controls; force (N) ..... :	No knobs, grips, handles, lever etc.	N
4.3.3	Adjustable controls	No controls.	N
4.3.4	Securing of parts	No loosening of parts impairing creepage distances or clearances is likely to occur.	P



IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.3.5	Connection of plugs and sockets	SELV connectors do not comply with IEC 60320-1 or IEC 60083.	P
4.3.6	Direct plug-in equipment	Not intended to plug directly into a wall socket-outlet.	N
	Dimensions (mm) of mains plug for direct plug-in .....		N
	Torque and pull test of mains plug for direct plug-in; torque (Nm); pull (N) .....		N
4.3.7	Heating elements in earthed equipment	No heating elements provided.	N
4.3.8	Batteries	No batteries in the equipment.	N
4.3.9	Oil and grease	Insulation is not exposed to oil, grease etc.	N
4.3.10	Dust, powders, liquids and gases	The equipment does not contain flammable liquids or gases.	N
4.3.11	Containers for liquids or gases	No containers for liquids or gases in the equipment.	N
4.3.12	Flammable liquids .....	The equipment does not contain flammable liquid.	N
	Quantity of liquid (l) .....		N
	Flash point (°C) .....		N
4.3.13	Radiation; type of radiation .....	Refer below:	N
4.3.13.1	General	Refer below:	N
4.3.13.2	Ionizing radiation	The equipment does not generate ionizing radiation.	N
	Measured radiation (pA/kg) .....		—
	Measured high-voltage (kV) .....		—
	Measured focus voltage (kV) .....		—
	CRT markings .....		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials	The equipment does not produce significant UV radiation.	N
	Part, property, retention after test, flammability classification .....		N
4.3.13.4	Human exposure to ultraviolet (UV) radiation .....	The equipment does not produce significant UV radiation.	N
4.3.13.5	Laser (including LEDs)	No lasers and LEDs.	N
	Laser class .....		—

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.3.13.6	Other types ..... :	The equipment does not generate other types of radiation.	N
4.4	Protection against hazardous moving parts		N
4.4.1	General	No moving parts.	N
4.4.2	Protection in operator access areas	No moving parts.	N
4.4.3	Protection in restricted access locations	Not intended for installation in RAL.	N
4.4.4	Protection in service access areas	Unintentional contact is not likely in service access areas.	N
4.5	Thermal requirements		P
4.5.1	Maximum temperatures	(see appended table 4.5)	P
	Normal load condition per Annex L ..... :	Rated load with continuous operation.	N
4.5.2	Resistance to abnormal heat		N
4.6	Openings in enclosures		P
4.6.1	Top and side openings	Transportable equipment.	N
	Dimensions (mm) ..... :		—
4.6.2	Bottoms of fire enclosures	Transportable equipment.	N
	Construction of the bottom ..... :		—
4.6.3	Doors or covers in fire enclosures	No doors or covers in fire enclosure.	N
4.6.4	Openings in transportable equipment	No openings.	P
4.6.5	Adhesives for constructional purposes	No barrier secured by adhesive inside enclosure.	N
	Conditioning temperature (°C)/time (weeks)..... :		—
4.7	Resistance to fire		P
4.7.1	Reducing the risk of ignition and spread of flame	Method 1 is used.	P
	Method 1, selection and application of components wiring and materials	(See appended table 4.7)	P
	Method 2, application of all of simulated fault condition tests		—
4.7.2	Conditions for a fire enclosure	Refer below:	P
4.7.2.1	Parts requiring a fire enclosure	The fire enclosure is required to cover all parts.	P

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
4.7.2.2	Parts not requiring a fire enclosure	The fire enclosure is required to cover all parts.	N
4.7.3	Materials		P
4.7.3.1	General	Components and materials have adequate flammability classification. See appended table 1.5.1.	P
4.7.3.2	Materials for fire enclosures	The fire enclosure is of min. V- 1 material.	P
4.7.3.3	Materials for components and other parts outside fire enclosures	No parts outside the fire enclosure.	N
4.7.3.4	Materials for components and other parts inside fire enclosures	Other materials inside fire enclosure are minimum V-2 material.	P
4.7.3.5	Materials for air filter assemblies	No air filters in the equipment.	N
4.7.3.6	Materials used in high-voltage components	No parts exceeding 4kV.	N

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

5.2	Electric strength		N
5.2.1	General		N
5.2.2	Test procedure		N

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	There are no motors in the equipment.	N
5.3.3	Transformers	See Annex C.	P
5.3.4	Functional insulation .....	Complies with c).	P
5.3.5	Electromechanical components	No electromechanical components in secondary circuits.	N
5.3.6	Simulation of faults	See the enclosed fault condition tests.	P
5.3.7	Unattended equipment	No thermostats, temperature limiters or thermal cut-outs.	N
5.3.8	Compliance criteria for abnormal operating and fault conditions	No reduction of clearance and creepage distances. Electric strength test is made on reinforced insulation.	P

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

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

6.2	Protection of equipment users from overvoltages on telecommunication networks		N
6.2.1	Separation requirements	Not connected to telecommunication networks.	N
6.2.2	Electric strength test procedure		N
6.2.2.1	Impulse test		N
6.2.2.2	Steady-state test		N
6.2.2.3	Compliance criteria		N
6.3	Protection of the telecommunication wiring system from overheating		N
	Max. output current (A) .....	Not connected to telecommunication networks.	—
	Current limiting method .....		—

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		N
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7.1	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment	Not connected to cable distribution systems.	N
7.2	Protection of equipment users from overvoltages on the cable distribution system		N
7.3	Insulation between primary circuits and cable distribution systems		N
7.3.1	General		N
7.3.2	Voltage surge test		N
7.3.3	Impulse test		N

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		N
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.1.1	Samples .....		—
	Wall thickness (mm) .....		—
A.1.2	Conditioning of samples; temperature (°C) .....		N
A.1.3	Mounting of samples .....		N
A.1.4	Test flame (see IEC 60695-11-3)		N
	Flame A, B, C or D .....		—
A.1.5	Test procedure		N
A.1.6	Compliance criteria		N
	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.2.1	Samples, material .....		—
	Wall thickness (mm) .....		—
A.2.2	Conditioning of samples		N
A.2.3	Mounting of samples .....		N
A.2.4	Test flame (see IEC 60695-11-4)		N
	Flame A, B or C .....		—
A.2.5	Test procedure		N
A.2.6	Compliance criteria		N
	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
	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.3.1	Mounting of samples		N
A.3.2	Test procedure		N

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
A.3.3	Compliance criterion		N

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		N
B.1	General requirements		N
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
B.2	Test conditions		N
B.3	Maximum temperatures		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 d.c. motors in secondary circuits		N
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N
B.7.1	Test procedure		N
B.7.2	Alternative test procedure; test time (h) .....		N
B.7.3	Electric strength test		N
B.8	Test for motors with capacitors		N
B.9	Test for three-phase motors		N
B.10	Test for series motors		N
	Operating voltage (V) .....		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		N
	Position .....		—
	Manufacturer .....		—
	Type .....		—
	Rated values .....		—
	Method of protection.....		—
C.1	Overload test		N
C.2	Insulation		N
	Protection from displacement of windings .....		N

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

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

E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N
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F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10)		N
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G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		N
G.1	Summary of the procedure for determining minimum clearances		N
G.2	Determination of mains transient voltage (V) .....		N
G.2.1	AC mains supply		N
G.2.2	DC mains supply		N
G.3	Determination of telecommunication network transient voltage (V) .....		N
G.4	Determination of required withstand voltage (V) ..		N
G.5	Measurement of transient levels (V) .....		N
G.6	Determination of minimum clearances .....		N

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

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



IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
K.6	Stability of operation		N
L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.1)		P
L.1	Typewriters		N
L.2	Adding machines and cash registers		N
L.3	Erasers		N
L.4	Pencil sharpeners		N
L.5	Duplicators and copy machines		N
L.6	Motor-operated files		N
L.7	Other business equipment	See 1.6.2	P
M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		N
M.1	Introduction		N
M.2	Method A		N
M.3	Method B		N
M.3.1	Ringling signal		N
M.3.1.1	Frequency (Hz) .....		—
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
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N
M.3.2.2	Tripping device		N
M.3.2.3	Monitoring voltage (V).....		N
N	ANNEX N, IMPULSE TEST GENERATORS (see 2.10.3.4, 6.2.2.1, 7.3.2 and clause G.5)		N
N.1	ITU-T impulse test generators		N
N.2	IEC 60065 impulse test generator		N
P	ANNEX P, NORMATIVE REFERENCES		N
Q	ANNEX Q, BIBLIOGRAPHY		N

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

R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		N
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6)		N
R.2	Reduced clearances (see 2.10.3)		N

S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		N
S.1	Test equipment		N
S.2	Test procedure		N
S.3	Examples of waveforms during impulse testing		N

T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N
		See separate test report	—

U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N
			N

V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		N
V.1	Introduction		N
V.2	TN power distribution systems		N

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

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

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		N
Y.1	Test apparatus .....		N
Y.2	Mounting of test samples .....		N
Y.3	Carbon-arc light-exposure apparatus .....		N
Y.4	Xenon-arc light exposure apparatus .....		N

<sup>1)</sup> an asterisk indicates a mark which assures the agreed level of surveillance

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

1.6.2	TABLE: electrical data (in normal conditions)					<b>P</b>
fuse #	I rated (A)	U (V)	P (W)	I (A)	I fuse (A)	condition/status
F1	33.0	12.5	411	32.8	32.8	Maximum normal load

2.1.1.5	TABLE: max. V, A, VA test				<b>N</b>
Voltage (Rated) (V)	Current (Rated) (A)	Voltage (Max) (V)	Current (Max.) (A)	VA (Max.) (VA)	

2.2.2	TABLE: Hazardous voltage measurement			<b>N</b>
Transformer	Location	max. Voltage		Voltage Limitation Component
		V peak	V d.c.	

2.5	TABLE: limited power source measurements			N
	Limits	Measured	Verdict	
According to Table 2B with (normal condition)				
Current (in A)				
Apparent power (in VA)				

2.10.2	Table: working voltage measurement			N
Location		RMS Voltage (V)	Peak Voltage (V)	Comments <sup>1)</sup>

IEC 60950-1 / EN 60950-1						
Clause	Requirement – Test			Result – Remark		Verdict
2.10.3 and 2.10.4	TABLE: clearance and creepage distance measurements					N
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)

2.10.5	TABLE: distance through insulation measurements				<b>N</b>
distance through insulation di at/of:	Up (V)	test voltage (V)	required di (mm)	di (mm)	

4.5	TABLE: maximum temperatures		<b>P</b>
	test voltage (V) .....		—
	t <sub>amb1</sub> (°C) .....	-	—
	t <sub>amb2</sub> (°C) .....	-	—
maximum temperature T of part/at::	T (°C)	allowed T <sub>max</sub> (°C)	
<b>Test Voltage for Front</b>	<b>12Vdc</b>	<b>--</b>	
T1 coil	51.2	105	
T1 core	50.8	105	
C14 body	47.0	85	
C2 body	52.6	85	
PWB near Q3	47.6	105	
PWB near Q12	56.5	105	
PWB near TH1	32.5	105	
PWB near TH2	72.7	105	
Inlet wire near position	43.8	65	
Output wire near Line	39.4	65	
Outlet Body near Line	33.8	65	
Switch Body	27.0	95	
Inlet body near position	34.4	95	
Enclosure outside near T1	37.7	95	

IEC 60950-1 / EN 60950-1			
Clause	Requirement – Test	Result – Remark	Verdict
Ambient		25.0	--

4.5.2	TABLE: ball pressure test of thermoplastic parts		<b>N</b>
	allowed impression diameter (mm) .....	≤ 2 mm	—
Part		test temperature (°C)	impression diameter (mm)

5.1.6	TABLE: touch current measurement			<b>N</b>
Condition	L → terminal A (mA)	N → terminal A (mA)	Limit (mA)	comments

5.2	TABLE: electric strength tests, impulse tests and voltage surge tests		<b>P</b>
test voltage applied between:		test voltage (V) a.c. / d.c.	breakdown Yes / No
DC input to Metal enclosure		500Vac	No

5.3	TABLE: fault condition tests					<b>P</b>
	ambient temperature (°C) .....		--			—
	model/type of power supply .....		--			—
	manufacturer of power supply .....		See page 1			—
	rated markings of power supply .....		See page 1			—
component No.	fault	test voltage (V)	test time	fuse No.	fuse current (A)	Result
T1(Pin 2 to Pin 4)	s-c	12	10min	F1	32.8 to 1.0	Unit shutdown, no hazards.

The test results were tested in test item 2.2.2, 2.2.3, 2.2.4 SELV Reliability Test. - Unit was wapped a metal foil around enclosure while evaluated Accessible Part in 2.2.2, 2.2.3, 2.2.4 SELV Reliability Test.



Remarks

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Manufacturer site: **Titan Computer Co., Ltd.**

25F, No. 27-8, Sec. 2, Jung-Jeng E. Road, Danshuei Jen, Taipei, Taiwan.

1. The instructions specified by the standard have to be in official language of each country, however, only English is checked for this report. It is the applicant responsibility to provide instruction in each official language of the EU.
2. This report is submitted for the exclusive use of the client to whom it is addressed. Its significance is subject to the adequacy and representative character of the sample(s) and to the comprehensiveness of the tests, examinations or surveys made.
3. The CE marking may only be used if all relevant and effective EC directives are complied with.
4. The test results are true for the test sample(s) only.
5. A part of this report or certificate should not be duplicated in any way; however, the duplication of the whole document is allowed.
6. The equipment models HW-350XY are Power Inverter of scope in IEC/ EN 60950-1. The test samples are pre-production without serial number.
7. The test samples were pre-production samples without serial numbers.