



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

TEST REPORT

IEC 61010-1/ EN 61010-1

Safety requirements for electrical equipment for measurement,
control, and laboratory use
Part 1: General requirements

General Information

Report Reference No.....: RV78081B-001

Prepared by (name and signature) ..: Maridee Winans

Approved by (name and signature) ..: Thomas Elders

Date of issue: 26 Jun 2017

Contents: 32 pages

Maridee Winans
Thomas Elders

Testing Laboratory: DNB Engineering, Inc.

Address: 5969 Robinson Ave Riverside, CA 92503

Testing location/procedure: DNB Engineering, Inc. TPTL [X] SMT[] TMP[]

Address: 5969 Robinson Ave Riverside, CA 92503

Applicant's name.....: Agate Technology

Address: 41743 Enterprise Circle N 105B, Temecula, CA 92592

Test specification:

Standard: EN 61010 – 1 : 2010

Test procedure: Third Party Testing Laboratory

Non-standard test method.....: None

Test Report Form No.....: IEC61010_C

TRF Originator.....: VDE

Master TRF.....: Dated 10-07-2011

Test item description: Vibration Sensor Test Set

Trademark: Agate Technology

Model/Type reference: AT-2040 (Inclusive of AT-2050, AT-2035 and AT-2030)

Rating(s): 120-240V 50-60Hz 15W



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Test item particulars	
Type of item tested.....	Process Control
Description of equipment function	Vibration Sensor Test Set
Installation/overvoltage category	II
Pollution degree	II
Environmental rating	Standard
Equipment mobility	Table Top
Connection to mains supply	Detachable Supply Cord
Operating conditions	Continuous
Overall size of the equipment (HxWxD)	
Mass of the equipment (kg)	
Marked degree of protection to IEC 60529	N/A
Accessories and detachable parts included in the evaluation	
	None
Options	None
Test case verdicts:	
Test case does not apply to the test object	N/A
Test object does meet the requirement	P(Pass)
Test object does not meet the requirement	F(Fail)
Testing	
Date of receipt of test item	18 May 2017
Date (s) of performance of tests	18 May 2017 through 19 May 2017



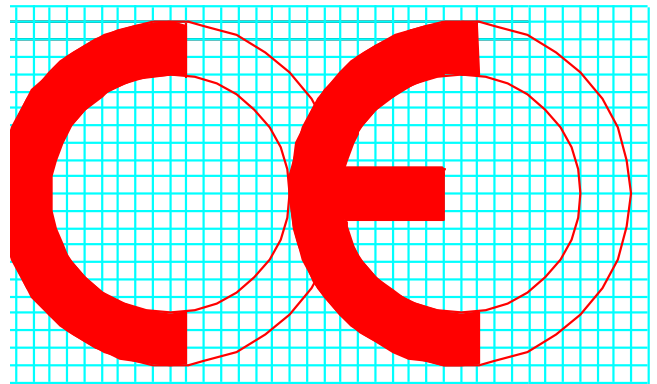
Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

CE Mark Information

DNB Job Number:	RV78081B-001	Date: 19 May 2017	Council Directive 2014/35/EU
Customer:	Agate Technology		
Model Number:	AT-2040 (Inclusive of AT-2040)	Serial Number: N/A	
Description:	Vibration Sensor Test Set		

The following Mark must appear on the body of each product shipped in a visible location. The only requirement is that it must have the same shape as depicted below and cannot be less than 5mm in height. The Mark to the left is how it should appear on your product. The Mark to right has been provided for your assistance in developing artwork. If the CE Mark is reduced or enlarged the proportions given in the graduated drawing must be respected.



In addition to the Mark above the following **Declaration of Conformity** is to be supplied with each product shipped. This information can be applied to each unit in the form of a label, or placed in supporting documentation shipped with each product, (e.g., Owner's Manual, Instruction Manual, etc.)

- Description of the apparatus to which it refers.
- Reference to the specifications, standards, directives, that it conforms with.
- Identification of the signatory empowered to bind the manufacturer or his authorized representative.
- Where one or more Directives apply (during a transitional period) only those Directives to which conformity has been demonstrated may be applied. Failure to list actual Directives implies compliance with all applicable Directives.
- Where appropriate, reference to the EC Type-examination certificate issued by a notified body. Not required on most manufacturers self declaration products.



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

The below sample Declaration of Conformity has been provided to assist you.
The final draft should be signed by a representative of your company.

DECLARATION OF CONFORMITY

Application of Council Directive: 2014/35/EU

Standards to which conformity
is declared:

EN61010-1:2010

Manufacturer's Name:

Agate Technology

Manufacturer's Address:

41743 Enterprise Circle N 105B
Temecula, CA 92592

Equipment Description:

Vibration Sensor Test Set

Equipment Class:

Class II

Model Number:

AT-2040 (Inclusive of AT-2040)

**I the undersigned, hereby declare that the equipment specified above conforms to
the above Directive(s) and Standard(s).**



Place: _____

Signature: _____

Full Name: _____

Position: _____



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

TABLE OF CONTENTS

General Information.....	1
<i>DECLARATION OF CONFORMITY</i>	4
TABLE OF CONTENTS.....	5
TEST RESULTS.....	6
CLAUSE 5 – MARKING AND DOCUMENTATION.....	6
CLAUSE 6 – PROTECTION AGAINST ELECTRIC SHOCK.....	10
CLAUSE 7 – PROTECTION AGAINST MECHANICAL HAZARDS.....	17
CLAUSE 8 – RESISTANCE TO MECHANICAL STRESSES.....	19
CLAUSE 9 – PROTECTION AGAINST THE SPREAD OF FIRE.....	20
CLAUSE 10 – TEMPERATURE LIMITS.....	22
CLAUSE 11 – PROTECTION AGAINST HAZARDS FROM LIQUIDS.....	23
CLAUSE 12 – PROTECTION AGAINST RADIATION.....	24
CLAUSE 13 – PROTECTION AGAINST LIBERATED GASES.....	25
CLAUSE 14 – COMPONENTS.....	26
CLAUSE 15 – PROTECTION BY INTERLOCKS.....	27
CLAUSE 16 – HAZARDS RESULTING FROM APPLICATION.....	27
CLAUSE 17 – RISK ASSESSMENT.....	27
<i>Appendix A Datasheets</i>	28



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

TEST RESULTS

Clause	Requirement + Test	Result - Remark	Verdict
5	CLAUSE 5 – MARKING AND DOCUMENTATION		
5.1.1	General		—
	Required equipment markings are:		Pass
	visible:		Pass
	From the exterior; or		Pass
	After removing a cover; or		Pass
	Opening a door		Pass
	After removal from a rack or panel		Pass
	Not put on parts which can be removed by an OPERATOR		Pass
	Letter symbols (IEC 60027) used		Pass
	Graphic symbols (IEC 61010-1: Table 1) used		Pass
5.1.2	Identification		—
	Equipment is identified by:		—
5.1.2a)	Manufacturer's or supplier's name or trademark	Agate Technology	Pass
5.1.2b)	Model number, name or other means	AT-2040	Pass
	Manufacturing location identified		Pass
5.1.3	Mains supply		—
	Equipment is marked as follows:		—
5.1.3a)	Nature of supply:		—
	1) a.c. RATED mains frequency or range of frequencies.....:	50-60Hz	Pass
	2) d.c. with symbol 1		N/A
5.1.3b)	RATED supply voltage(s) or range	120-240V AC	Pass
5.1.3c)	Max. RATED power (W or VA) or input current.....:	15W	Pass
	The measured value not more than 110 %		Pass
	If more than one voltage range:		—
	Separate values marked; or		N/A
	Values differ by less than 20 %		N/A
5.1.3d)	OPERATOR-set for different RATED supply voltages:		—
	Indicates the equipment set voltage		N/A



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
	PORTABLE EQUIPMENT indication is visible from the exterior		N/A
	Changing the setting changes the indication		N/A
5.1.3e)	Accessory mains socket-outlets accepting standard mains plugs are marked:	None provided	—
	With the voltage if it is different from the mains supply voltage		N/A
	For use only with specific equipment		N/A
	If not marked for specific equipment it is marked with:		—
	The maximum RATED current or power; or		N/A
	Symbol 14 with full details in the documentation		N/A
5.1.4	Fuses		—
	OPERATOR replaceable fuse marking (see also 5.4.5).....		N/A
5.1.5	TERMINALS, connections and operating devices		—
	Where necessary for safety, indication of purpose of TERMINALS, connectors, controls and indicators marked		Pass
	If insufficient space, symbol 14 used		Pass
5.1.5.1	General		Pass
	TERMINALS identified		Pass
	Other TERMINAL marking		Pass
5.1.5.2	Terminals		Pass
5.1.5.2a)	FUNCTIONAL EARTH TERMINALS (symbol 5 used)		Pass
5.1.5.2b)	PROTECTIVE CONDUCTOR TERMINALS:		—
	Symbol 6 is placed close to or on the TERMINAL; OR		Pass
5.1.5.2c)	TERMINALS control circuits (symbol 7 used)		Pass
5.1.5.2d)	HAZARDOUS LIVE TERMINALS supplied from the interior		—
	Standard MAINS socket outlet; or		N/A
	RATINGS marked; or		N/A
	Symbol 14 used		Pass
5.1.6	Switches and circuit breakers		—



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
	If disconnecting device, on or off position marked		N/A
5.1.7	Equipment protected by DOUBLE INSULATION or REINFORCED INSULATION		—
	Protected throughout (symbol 11 used)		N/A
	Only partially protected (symbol 11 not used)		N/A
5.1.8	Field-wiring TERMINAL boxes		—
	If TERMINAL or ENCLOSURE exceeds 60 °C:		—
	Cable temperature RATING marked		N/A
	Marking visible or beside TERMINAL		N/A
5.2	Warning markings		—
	Visible when ready for NORMAL USE		Pass
	Are near or on applicable parts		Pass
	Symbols and text correct dimensions and colour		Pass
	If necessary marked with symbol 14		Pass
	Statement to isolate or disconnect		Pass
5.3	Durability of markings		—
	The required markings remain clear and legible in NORMAL USE		Pass
5.4	Documentation		—
5.4.1	General		—
	Equipment is accompanied by documentation which includes:		—
5.4.1a)	Intended use;		Pass
5.4.1b)	Technical specification;		Pass
5.4.1c)	Name and address of manufacturer or supplier;		Pass
5.4.1d)	The information specified in 5.4.2 to 5.4.6;		Pass
5.4.1e)	Information about how to mitigate risks;		Pass
5.4.1f)	Specific accessories;		N/A
5.4.1g)	Accurate measurement of hazardous conditions;		N/A
5.4.1h)	Instructions for lifting and carrying;		N/A
	Warning statements and a clear explanation of warning symbols:		Pass



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
	Documentation provided with equipment.		Pass
5.4.2	Equipment RATINGS		—
	Documentation includes:		—
5.4.2a)	Supply voltage or voltage range	120-240V	Pass
	Frequency or frequency range	50-60Hz	Pass
	Power or current RATING	15W	Pass
5.4.2b)	Description of all input and output connections		Pass
5.4.2c)	RATING of insulation of external circuits, when such circuits are nowhere ACCESSIBLE		Pass
5.4.2d)	Statement of the range of environmental conditions		Pass
5.4.2e)	Degree of protection (IEC 60529)	IPX0	N/A
5.4.3	Equipment installation		—
	Documentation includes instructions for:		—
5.4.3a)	Assembly, location and mounting		Pass
5.4.3b)	Protective earthing		Pass
5.4.3c)	Connections to supply		Pass
5.4.3d)	PERMANENTLY CONNECTED EQUIPMENT:		—
	1) Supply wiring requirements		Pass
	2) If external switch or circuit-breaker, requirements and location recommendation		N/A
5.4.3e)	Ventilation requirements		Pass
5.4.3f)	Special services (e. g. air, cooling liquid)		N/A
5.4.3g)	Maximum sound power level		N/A
5.4.4	Equipment operation		—
	Instructions for use include:		—
5.4.4a)	Identification of operating controls		Pass
5.4.4b)	Positioning for disconnection		Pass
5.4.4c)	Interconnection		Pass
5.4.4d)	Specification of intermittent operation limits	Continuous operation	N/A
5.4.4e)	Explanation of symbols used		Pass
5.4.4f)	Replacement of consumable materials		N/A
5.4.4g)	Cleaning and decontamination (see 11.2)		Pass



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
5.4.4h)	Listing of any poisonous or injurious gases and quantities	None used	N/A
5.4.4i)	Risk-reduction procedures relating to flammable liquids	None used	N/A
5.4.4j)	Methods of reducing risks of burns		N/A
	A statement about protection impairment if used in a manner not specified by the manufacturer		Pass
5.4.5	Equipment maintenance		—
	Instructions include:		—
	Sufficient preventive maintenance and inspection information		Pass
	Replacement of hoses, etc.		N/A
	Specific battery type		N/A
	Any manufacturer specified parts		N/A
	RATING and characteristics of fuses		Pass
5.4.6	Integration or effects resulting from special conditions		N/A
6	CLAUSE 6 – PROTECTION AGAINST ELECTRIC SHOCK		—
6.1	General		—
6.1.1	Requirements		—
	ACCESSIBLE parts not HAZARDOUS LIVE in NORMAL CONDITION and SINGLE FAULT CONDITION		Pass
	Conformity is checked by the determination of 6.2 and 6.3 followed by the tests of 6.4 to 6.11		Pass
6.1.2	Exceptions		—
	Capacitance test		N/A
	Parts not HAZARDOUS LIVE 10 s after interruption of supply		N/A
6.2	Determination of ACCESSIBLE parts		—
6.2.1	General		Pass
	Determination of accessible parts according to 6.2.2 to 6.2.4		Pass
	Accessible parts not HAZARDOUS LIVE in normal use under the following conditions		Pass



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
6.2.1a)	Removing covers;		Pass
6.2.1b)	Opening doors;		Pass
6.2.1c)	Adjusting controls;		Pass
6.2.1d)	Replacing consumable materials;		Pass
6.2.1e)	Removing parts.		Pass
6.2.2	Examination		Pass
6.2.3	Openings above parts that are HAZARDOUS LIVE		N/A
6.2.4	Openings for preset controls		N/A
6.3	Permissible limits for ACCESSIBLE parts		—
6.3.1	Values in NORMAL CONDITION		Pass
6.3.2	Values in SINGLE FAULT CONDITION	See datasheet	Pass
6.4	Primary means of protection		Pass
6.4.1	General		Pass
	Accessible parts shall be prevented from becoming hazardous live by one or more of the following means.		Pass
6.4.1a)	Enclosures or protective barriers (see 6.4.2)		Pass
6.4.1b)	Basic insulation (see 6.4.3)		N/A
6.4.1c)	Impedance (see 6.4.4)		N/A
6.4.2	Enclosures and protective barriers		Pass
	Enclosures meet requirements of 8.1		Pass
	Creepage and Clearance distances meet the requirements of 6.7		Pass
6.5	Protection in SINGLE FAULT CONDITION		—
6.5.1	General		Pass
	The primary means of protection shall be supplemented by one of the following means.		Pass
6.5.1a)	Protective bonding		N/A
6.5.1b)	Supplementary insulation		Pass
6.5.1c)	Automatic disconnection of supply		N/A
6.5.1d)	Current or voltage limiting device		Pass
6.5.1e)	Reinforced insulation		Pass



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
6.5.1f)	Protective impedance		N/A
6.5.2	Protective bonding		—
6.5.2.1	General		N/A
6.5.2.2	Accessible conductive parts shall be bonded to the protective conductor terminal.		N/A
	The integrity of the protective bonding shall be assured as specified below.		N/A
6.5.2.2a)	Protective bonding shall consist of directly connected structural parts...		N/A
6.5.2.2b)	Soldered connections subject to mechanical stress...		N/A
6.5.2.2c)	Screw connections shall be secured against loosening.		N/A
6.5.2.2d)	Parts removable by the operator...		N/A
6.5.2.2e)	Movable conductive connections...		N/A
6.5.2.2f)	Metal braid of cables not used as protective bonding...		N/A
6.5.2.2g)	If mains power is passed through ground shall also be passed through...		N/A
6.5.2.2h)	Protective conductors may be bare or insulated. Insulation green and yellow...		N/A
6.5.2.3	Protective conductor terminal		N/A
	Protective conductor terminals shall meet the following requirements.		N/A
6.5.2.3a)	Contact surfaces metal...		N/A
6.5.2.3b)	Protective conductor of appliance inlet considered protective conductor terminal...		N/A
6.5.2.3c)	Equipment provided with rewirable cord and permanently connected equipment...		N/A
6.5.2.3d)	Equipment not requiring connection to mains...		N/A
6.5.2.3e)	Protective conductors for mains circuits equivalent current carrying capacity...		N/A
6.5.2.3f)	Protective conductor of plug connected equipment makes first breaks last...		N/A
6.5.2.3g)	If protective conductor terminal used for other purposes, Protective conductor applied first and independently secured...		N/A
6.5.2.3h)	Protective conductor required for protection against single fault...		N/A
6.5.2.3i)	Functional earth terminals connected independently...		N/A
6.5.2.3j)	If binding screw, suitable for application...		N/A



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
6.5.2.3k)	Contact pressure not capable of being reduced...		N/A
6.5.2.4	Impedance of protective bonding, plug connected equipment.		N/A
	Impedance shall not exceed 0.1Ω		N/A
6.5.2.5	Impedance of permanently connected equipment		N/A
	Protective bonding shall be of low impedance.	See datasheet	N/A
6.5.2.6	Transformer protective bonding screen		N/A
	Transformers fitted with screen for protective bonding shall meet the following requirements.		N/A
6.5.2.6a)	Test current...		N/A
6.5.2.6b)	Bonding impedance...		N/A
6.5.3	Supplementary insulation		N/A
	Meets requirements of 6.7...		N/A
6.5.4	PROTECTIVE IMPEDANCE		N/A
6.5.4a)	HIGH-INTEGRITY single component used (s. 14.6); or		N/A
6.5.4b)	A combination of components used; or		N/A
6.5.5	Automatic disconnection of the supply		N/A
	If used, it meets :		—
6.5.5a)	RATED disconnecting time within limit specified		N/A
6.5.5b)	RATED for maximum RATED LOAD		N/A
6.6	Connections to external circuits		Pass
6.6.1	General		Pass
	Connections do not cause ACCESSIBLE parts of the following to become HAZARDOUS LIVE in NORMAL CONDITION or SINGLE FAULT CONDITION:		Pass
	Protection achieved by separation unless short circuiting does not cause a hazard		Pass
	Instructions or marking include the following.		—
6.6.1a)	Rated conditions of terminal...		Pass
6.6.1b)	Required rating of insulation...		Pass
6.6.2	TERMINALS for external circuits		—



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
	TERMINALS which receive a charge from an internal capacitor are not hazardous live 10 s after disconnection of supply		N/A
6.6.3	Circuits with TERMINALS which are HAZARDOUS LIVE		—
	These circuits are:		—
	Not connected to ACCESSIBLE conductive parts; or		N/A
	Connected to ACCESSIBLE conductive parts, but are not MAINS CIRCUITS and have one TERMINAL contact at earth potential		N/A
	No ACCESSIBLE conductive parts are HAZARDOUS LIVE		N/A
6.6.4	TERMINALS for stranded conductors		—
	Located or shielded to prevent possibility of contact between hazardous live parts of different polarity		N/A
6.7	CLEARANCES and CREEPAGE DISTANCES		Pass
6.8	Procedure for dielectric strength tests		Pass
6.9	Constructional requirements for protection against electric shock		—
6.9.1	General		—
	If a failure could cause a HAZARD:		—
6.9.1a)	Security of wiring connections		Pass
6.9.1b)	Screws securing removable covers		Pass
6.9.1c)	Accidental loosening		Pass
	Easily damaged materials not used		Pass
	Non-impregnated hygroscopic materials not used		Pass
6.9.1d)	Clearances and creepage distances between enclosure and hazardous live parts not reduced		Pass
6.9.2	Insulating materials		—
	The following shall not be used as insulation for safety purposes.		—
6.9.2a)	Materials which can be easily damaged		Pass
6.9.2b)	Non-impregnated hygroscopic materials		Pass
6.9.3	Colour coding		—
	Green and yellow insulation shall not be used except for:		—



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
6.9.3a)	Protective earth conductors		N/A
6.9.3b)	Protective bonding conductors		N/A
6.9.3c)	Potential equalization conductors		N/A
6.9.3d)	Functional earth conductors		N/A
6.10	Connection to MAINS supply source and connections between parts of equipment		—
6.10.1	MAINS supply cords		—
	Rated for maximum current		Pass
	Meet requirements of IEC 60227 or IEC 60245		Pass
	Suitably heat resistant		Pass
	Detachable cords, both cord and appliance inlet have adequate temperature ratings		Pass
	Green and yellow conductors use only for connection to protective conductor terminal		Pass
	Detachable mains supply cords use connectors according to IEC 60320		Pass
6.10.2	Fitting of non-detachable MAINS supply cords		—
6.10.2.1	Cord entry		—
6.10.2.1a)	Inlet or bushing smoothly rounded; or		N/A
6.10.2.1b)	Insulated cord guard protruding $\geq 5D$		N/A
	The protective earth conductor is the last to take the strain		N/A
6.10.2.2	Cord anchorages:		—
6.10.2.2a)	Cord is not clamped by direct pressure from a screw		N/A
6.10.2.2b)	Knots are not used		N/A
6.10.2.2c)	Cannot push the cord into the equipment to cause a hazard		N/A
6.10.2.2d)	No failure of cord insulation in anchorage with metal parts		N/A
6.10.2.2e)	Compression bushing:		—
	1) Clamps all types and sizes of MAINS cords; and		N/A
	2) Is suitable:		—
	For connection to TERMINALS provided; or		N/A



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
	It is designed for screened MAINS cord		N/A
6.10.2.2f)	Cord replacement does not cause a HAZARD and method of strain relief is clear		N/A
	Push-pull test		N/A
6.10.3	Plugs and connectors		—
	Equipment designed to operate at voltages below the level of 6.3.2 a) shall not fit the socket outlets of the mains supply system.		N/A
	Plug pins of cord connected equipment not hazardous live 5 s after disconnection of the supply		N/A
	On equipment with mains socket outlets:		—
6.10.3a)	If the outlet can accept a standard mains supply plug, there shall be a marking as specified in 5.1.3e)		N/A
6.10.3b)	If the outlet has a terminal contact for a protective earth conductor, the input mains supply connection to the equipment shall include a protective earth conductor		N/A
6.11	Disconnection from supply source		—
6.11.1	General		—
	Disconnects all current carrying conductors		Pass
6.11.2	Exceptions		—
6.11.2a)	Equipment supplied by low energy source; or		N/A
6.11.2b)	Equipment connected to impedance protected supply; or		N/A
6.11.2c)	Equipment constitutes an impedance protected load		N/A
6.11.3	Requirements according to type of equipment		—
6.11.3.1	PERMANENTLY CONNECTED EQUIPMENT and multi-phase equipment		—
	Employs switch or circuit-breaker		N/A
	If switch or circuit-breaker is not part of the equipment, documentation specifies:		—
6.11.3.1a)	Switch or circuit-breaker to be included in building installation		N/A
6.11.3.1b)	Location		N/A
6.11.3.1c)	Marking		N/A



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
6.11.3.2	Single-phase cord-connected equipment		—
	Equipment is provided with:		—
6.11.3.2a)	Switch or circuit-breaker; or		N/A
6.11.3.2b)	Appliance coupler (disconnectable without TOOL); or		Pass
6.11.3.2c)	Separable plug (without locking device)		Pass
6.11.4	Disconnecting devices		—
6.11.4.1	General		—
	Electrically close to the supply		Pass
6.11.4.2	Switches and circuit-breakers		—
	When used as disconnection device:		—
	Meets IEC 60947-1 and IEC 60947-3		N/A
	Marked to indicate function		N/A
	Not incorporated in MAINS cord		N/A
	Does not interrupt protective earth conductor		N/A
	If has other contacts meets separation requirements of 6.6 and 6.7		N/A
6.11.4.3	Appliance couplers and plugs		—
	Where an appliance coupler or separable plug is used as the disconnecting device (see 6.11.2.2):		—
	Readily identifiable and easily reached by the OPERATOR		Pass
	Single-phase PORTABLE EQUIPMENT cord length ≤ 3 m		Pass
	Protective earth conductor connected first and disconnected last		Pass
7	CLAUSE 7 – PROTECTION AGAINST MECHANICAL HAZARDS		—
7.1	General		—
	Conformity is checked by 7.2 to 7.6		Pass
7.2	Sharp edges		—
	Easily touched parts shall be smooth and rounded		Pass
	Easily touched parts shall not cause a hazard in single fault condition		Pass
7.3	Moving parts	No accessible moving parts	—



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
7.3.1	General		—
	Moving parts not able to crush, etc.		N/A
7.3.2	Exceptions		—
7.3.2a)	Easily touch moving parts which are obviously intended to operate on parts or materials external to the equipment		N/A
7.3.2b)	Operator access during routine maintenance		N/A
7.3.3	Risk Assessment for mechanical hazards		—
	Risks shall be reduced to a tolerable level by at least the applicable minimum protective measures of table 12		N/A
7.3.4	Limitation of force and pressure		—
	Maximum tolerable continuous contact pressure is 50 N/m ² , with a maximum force of 150 N		N/A
	Maximum tolerable temporary force for body contact areas is 250 N		N/A
7.3.5	Gap limitations between moving parts		—
7.3.5.1	Access normally allowed		—
	If the force or pressure of the moving parts exceed the limits of 7.3.4 and if a body part could be inserted between moving parts, the width of the gap shall not decrease from a value larger than the minimum gap of table 13		N/A
7.3.5.2	Access normally prevented		—
	While parts are moving, gaps between moving parts into which body parts could be inserted shall not increase to more than the acceptable gap of table 14		N/A
7.4	Stability		—
	Equipment and assemblies shall be physically stable		Pass
	Stability shall be maintain after opening doors, drawers etc		Pass
	Castors and supports rated for maximum weight		Pass
	Conformity tests:		—
7.4a)	10° tilt test		Pass



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
7.4b)	multi-directional force test		Pass
7.4c)	downward force test		Pass
7.4d)	Castor test		Pass
7.4e)	Castor support test		Pass
7.5	Provisions for lifting and carrying		—
7.5.1	General		—
	Equipment or parts having a mass of 18 kg or more shall be provided with a means for lifting and carrying.		N/A
7.5.2	Handles and grips		—
	If carrying handles or grips are fitted to the equipment they shall be capable of withstanding a force of four times the weight of the equipment.		N/A
7.5.3	Lifting devices and supporting parts		—
	Parts of lifting devices and parts that support heavy loads shall be rated for the maximum load or shall be tested to withstand four times the maximum static load		N/A
7.6	Wall Mounting		—
	Mounting brackets on equipment intended to be mounted on a wall or ceiling shall withstand a force of four times the weight of the equipment.		N/A
7.7	Expelled parts		—
	Equipment contains or limits the energy		Pass
	Protection not removable without the aid of a TOOL		Pass
8	CLAUSE 8 – RESISTANCE TO MECHANICAL STRESSES		—
8.1	General		—
	Equipment shall not cause a hazard when subjected to mechanical stresses likely to occur in normal use.		Pass
8.2	Enclosure rigidity tests		—
8.2.1	Static test		Pass
8.2.2	Impact test		Pass
8.3	Drop test		—



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
8.3.1	Equipment other than hand-held equipment and direct plug in equipment.		Pass
8.3.2	Hand-held equipment and direct plug in equipment		N/A
9	CLAUSE 9 – PROTECTION AGAINST THE SPREAD OF FIRE		—
9.1	General		—
9a)	Fault test of 4.4; or		N/A
9b)	Application of 9.1 (eliminating or reducing the sources of ignition); or		Pass
9c)	Application of 9.2 (containment of fire within the equipment)		Pass
9.2	Eliminating or reducing the sources or ignition within the equipment		—
	The possibility of ignition and occurrence of fire is considered to be reduced to a tolerable level if all the following requirements a) b) c), if applicable, are met		—
9.2a)	The voltage, current and power available to the circuit are limited as specified in 9.4 or;		N/A
	Insulation between parts at different potentials meets the requirements for basic insulation		Pass
9.2b)	Any ignition hazard related to flammable liquids is reduced to a tolerable level as specified in 9.5	The equipment uses no flammable liquids.	N/A
9.2c)	In circuits designed to produce heat, no ignition occurs when tested in single fault condition.	No circuits are designed to produce heat.	N/A
9.3	Containment of the fire within the equipment, should it occur		—
9.3.1	General		—
	The possibility of the spread of fire outside the equipment is considered to be reduced to a tolerable level if the equipment meets one of the following constructional requirements.		Pass
9.3.1a)	Energizing of the equipment is controlled by an OPERATOR held switch		N/A
9.3.1b)	Enclosure is conform with constructional requirements of 9.3.2 and		Pass
	Requirements of 9.5 are met		N/A
9.3.2	Constructional requirements		—



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
	The following constructional requirements shall be met		—
9.3.1a)	Insulating material on which components are mounted shall have a flammability classification of V-2 or better.		Pass
9.3.1b)	Insulated wires and cables shall retard flame propagation.		Pass
9.3.1c)	The enclosure shall meet the following requirements.		—
	The bottom and sides of the enclosure of circuits that are not limited circuits according to 9.4 shall comply with one of the following requirements.		—
	i) Have no openings		Pass
	ii) Be made of metal with perforations as specified in table 16		Pass
	iii) Be a metal screen with mesh not exceeding 2 mm x 2 mm.		N/A
	iv) Have openings with baffles according to figure 12		N/A
	The enclosure and any baffle or flame barrier shall be made of metal or of non-metallic materials having a flammability classification of V-1 or better.		Pass
	The enclosure and any baffle or flame barrier shall have adequate rigidity.		Pass
9.4	Limited-energy circuits		—
	A limited energy circuit is a circuit that meets the following criteria.		—
9.4a)	Potential not more than 30 r.m.s. and 42.4 V peak, or 60 V dc		N/A
9.4b)	Current limited by one of following means:		—
	1) Inherently or by impedance; or		N/A
	2) Overcurrent protective device; or		N/A
	3) A regulating network limits also in SINGLE FAULT CONDITION		N/A
9.4c)	Is separated by at least BASIC INSULATION		N/A
	If overcurrent protective device used:		—
	Fuse or a non adjustable electromechanical device		N/A



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
9.5	Requirements for equipment containing or using flammable liquids	The equipment uses no flammable liquids.	—
	Flammable liquids contained in or specified for use with equipment do not cause spread of fire		N/A
	Risk is reduced to a tolerable level :		—
9.5a)	The temperature of surface or parts in contact with flammable liquids is 25 °C below fire point		N/A
9.5b)	The quantity of liquid is limited		N/A
9.5c)	Flames are contained within the equipment		N/A
	Detailed instructions for risk-reduction provided		N/A
9.6	Overcurrent protection		—
9.6.1	General		—
	Equipment intended to be connected to the mains supply shall be provided with over-current protection.		Pass
	A minimum of basic insulation is required between mains-connected parts of opposite polarity on the supply side of the over-current protection device.		Pass
	Devices not in the protective conductor		Pass
	Fuses or single-pole circuit-breakers not fitted in neutral (multi-phase)		Pass
9.6.2	PERMANENTLY CONNECTED EQUIPMENT	.	—
	Overcurrent device:		—
	Fitted within the equipment; or		N/A
	Specified in manufacturer's instructions		N/A
9.6.3	Other equipment		N/A
	Protection within the equipment		N/A
10	CLAUSE 10 – TEMPERATURE LIMITS		—
10.1	Surface temperature limits for protection against burns		—
	Easily touched surfaces within the limits		Pass
	Heated surfaces necessary for functional reasons exceeding specified values:		—
	Are recognizable as such by appearance or function; or		N/A



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
	Are marked with symbol 13		N/A
	Guards are not removable without TOOL		N/A
10.2	Temperatures of windings		Pass
	Limits not exceeded in:		—
	NORMAL CONDITION		Pass
	SINGLE FAULT CONDITION		Pass
10.3	Other temperature measurements		Pass
	Following measurements conducted if applicable:		—
10.3a)	Value of 60 °C of field-wiring TERMINAL box not exceeded	None used	N/A
10.3b)	Surface of flammable liquids and parts in contact with this liquids	None used	N/A
10.3c)	Surface of non-metallic ENCLOSURES	None used	N/A
10.3d)	Parts made of insulating material supporting parts connected to MAINS supply		Pass
10.3e)	TERMINALS carrying a current more than 0.5 A		Pass
10.4	Conduct of temperature test		Pass
10.5	Resistance to heat		Pass
10.5.1	Integrity of CLEARANCE and CREEPAGE DISTANCES		Pass
10.5.2	Non-metallic ENCLOSURES		N/A
	After treatment:		N/A
	No HAZARDOUS LIVE parts ACCESSIBLE;		N/A
	Tests of 8.1 and 8.2		N/A
	In case of doubt, tests of 6.8 (without humidity preconditioning)		N/A
10.5.3	Insulating material		Pass
10.5.3a)	Parts supporting parts connected to MAINS supply		Pass
10.5.3b)	TERMINALS carrying a current more than 0.5 A		Pass
	Examination of material data; or		Pass
	in case of doubt::		—
	1) Ball pressure test; or		N/A
	2) Vicat softening test of ISO 306		N/A
11	CLAUSE 11 – PROTECTION AGAINST HAZARDS FROM LIQUIDS	None used	—



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
11.1	General		N/A
11.2	Cleaning		N/A
11.3	Spillage		N/A
11.4	Overflow		N/A
11.5	Battery electrolyte		—
	Battery electrolyte leakage presents no hazard		Pass
11.6	Specially protected equipment		N/A
11.7	Fluid pressure and leakage		—
11.7.1	Maximum pressure		—
	Maximum pressure of any part does not exceed P_{RATED}		N/A
11.7.2	Leakage and rupture at high pressure		N/A
	Test to IEC 60335 (refrigeration only)		N/A
11.7.3	Leakage from low-pressure parts		N/A
11.7.4	Overpressure safety device		—
	Does not operate in NORMAL USE		N/A
	Meets ISO 4126-1; and		N/A
	It is conform with:		—
11.7.4a)	Connected as close as possible to parts intended to be protected		N/A
11.7.4b)	Easy access for inspection, maintenance and repair		N/A
11.7.4c)	Adjustment only with TOOL		N/A
11.7.4d)	No discharge towards person		N/A
11.7.4e)	No HAZARD from deposit of discharged material		N/A
11.7.4f)	Adequate discharge capacity		N/A
11.7.4g)	No shut-off valve between overpressure safety device and protected parts		N/A
12	CLAUSE 12 – PROTECTION AGAINST RADIATION	Equipment produces no radiation	—
12.1	General		—
	Equipment provides protection		N/A
12.2	Equipment producing ionizing radiation		N/A
12.2.1	Ionizing radiation		N/A



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
12.2.2	Accelerated electrons		N/A
12.3	Ultra-violet (UV) radiation		—
	No unintentional and HAZARDOUS escape of UV radiation		N/A
12.4	Micro-wave radiation		—
	Power density does not exceed 10 W/m ² :		N/A
12.5	Sonic and ultrasonic pressure		—
12.5.1	Sound level		N/A
12.5.2	Ultrasonic pressure		N/A
12.6	Laser sources (IEC 60825-1)		N/A
13	CLAUSE 13 – PROTECTION AGAINST LIBERATED GASES	The equipment uses no hazardous gases.	—
13.1	Poisonous and injurious gases		N/A
	Attached data/test reports demonstrate conformity		N/A
13.2	Explosion and implosion		—
13.2.1	Components		—
	Components liable to explode:		—
	Pressure release device provided; or		N/A
	Apparatus incorporates OPERATOR protection (see also 7.6)		N/A
	Pressure release device:		—
	Discharge without danger		N/A
	Cannot be obstructed		N/A
13.2.2	Batteries and battery charging		—
	If explosion or fire hazard could occur:		—
	Protection incorporated in the equipment; or		Pass
	Instructions specify batteries with built-in protection		N/A
	In case of wrong type of battery used:		—
	No HAZARD; or		N/A
	Warning by marking and within instructions		N/A
	Equipment with means to charge rechargeable batteries:		—
	Warning against the charging of non-rechargeable batteries; and		Pass



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
	Type of rechargeable battery indicated; or		Pass
	Symbol 14 used		Pass
	Battery compartment design		Pass
	Single component failure		N/A
	Polarity reversal test		N/A
13.2.3	Implosion of cathode ray tubes		—
	If maximum face dimensions > 160 mm :		—
	Intrinsically protected and correctly mounted; or		N/A
	ENCLOSURE provides protection:		N/A
	If non-intrinsically protected:		—
	Screen not removable without TOOL		N/A
	If glass screen, not in contact with surface of tube		N/A
14	CLAUSE 14 – COMPONENTS		Pass
14.1	General		Pass
	Where safety is involved, components meet relevant requirements		Pass
14.2	Motors	None used	—
14.2.1	Motor temperatures		—
	Does not present a HAZARD when stopped or prevented from starting; or		N/A
	Protected by overtemperature or thermal protection device conform with 14.3		N/A
14.2.2	Series excitation motors		—
	Connected direct to device, if overspeeding causes a HAZARD		N/A
14.3	Overtemperature protection devices		N/A
	Devices operating in a SINGLE FAULT CONDITION		N/A
14.3a)	Reliable function is ensured		N/A
14.3b)	RATED to interrupt maximum current and voltage		N/A
14.3c)	Does not operate in NORMAL USE		N/A
14.4	Fuse holders		N/A
	No access to HAZARDOUS LIVE parts		N/A
14.5	Mains voltage selecting devices		N/A
	Accidental change not possible		N/A



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Clause	Requirement + Test	Result - Remark	Verdict
14.6	Mains transformers tested outside equipment		N/A
14.7	Printed circuit boards		Pass
	Data shows conformity with FV-1 of IEC 60707 or better; or		Pass
	Test shows conformity with FV-1 of IEC 60707 or better; or		N/A
	Thin film flexible PCB with limited-energy circuit used		N/A
14.8	Circuits or components used as transient overvoltage limiting devices		—
	After test, no sign of overload or degradation		N/A
15	CLAUSE 15 – PROTECTION BY INTERLOCKS		—
15.1	General		—
	Interlocks are designed to remove a hazard before OPERATOR exposed		Pass
15.2	Prevention of reactivation		Pass
15.3	Reliability		—
	Single fault unlikely to occur; or		Pass
	Cannot cause a HAZARD		N/A
16	CLAUSE 16 – HAZARDS RESULTING FROM APPLICATION		—
16.1	Reasonable foreseeable misuse		—
	No hazards shall arise if adjustments, knobs or other software-based or hardware-based controls are set in a way not intended and not described in the instructions.		Pass
16.2	Ergonomic aspects		—
	If the following factors could give rise to a hazard, a risk assessment shall be documented taking into account at least the following aspects:		—
16.2a)	Limitation of body dimensions;		Pass
16.3b)	Displays and indicators;		Pass
16.3c)	Accessibility and conventions of controls;		Pass
16.3d)	Arrangements of terminals;		Pass
17	CLAUSE 17 – RISK ASSESSMENT		—
	If examination of the equipment shows that hazards not fully addressed in clauses 6 to 16 might arise, then risk assessment is required.	No further risk assessment required.	N/A



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

Appendix A Datasheets



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

EN 61010-1 5.1.3	Input Power Readings
------------------	----------------------

Customer	Agate Technology			DNB job	78081B
Address	41743 Enterprise Circle N 105B			Tech.	Thomas Elders
	Temecula, CA 92592			Date	19 May 2017
EUT	Vibration Sensor Test Set			M/N	AT-2040
Test Equipment List					
Manufacturer	Model Number	Serial Number	Description	Calibrated	Cal. Due
Voltek	PM3000	970149-6	Power Analyzer	12 Aug 2016	12 Aug 2017

Conditions of Test: Measured input shall not exceed rated input.

Input Power Readings				Notes:
Voltage (V)	Freq. (Hz)	Current (A)	Power (W)	
254	50	.077	8.9	
230	50	.081	8.5	
207	50	.085	8.3	
132	60	.114	8	
120	60	.122	7.9	
100	60	.139	8	

Tested by	Thomas Elders	Date	19 May 2017
Witness		Date	



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

EN 61010-1 6.3.2	Leakage Current
------------------	-----------------

Customer	Agate Technology	DNB job	78081B
Address	41743 Enterprise Circle N 105B	Tech.	Thomas Elders
	Temecula, CA 92592	Date	19 May 2017
EUT	Vibration Sensor Test Set	M/N	AT-2040

Test Equipment List					
Manufacturer	Model Number	Serial Number	Description	Calibrated	Cal. Due
A.R.	510L	A130511	Leakage Meter	10 Jun 2016	10 Jun 2017

Conditions of Test: Leakage Current Shall not exceed 3.5mA r.m.s.

Line leakage Test							Voltage/Freq. Inputs	
							254VAC	60Hz
	Neutral		Reverse		Ground		Equipment State	
Step	Switch	LED	Switch	LED	Switch	LED	On	Off
1.	Open	On	Normal	Off	Open	On	788 μ A	N/A
2.	Open	On	Reverse	On	Open	On	1181 μ A	N/A
3.	Closed	Off	Normal	Off	Open	On	462 μ A	N/A
4.	Closed	Off	Reverse	On	Open	On	1180 μ A	N/A

Tested by	Thomas Elders	Date	19 May 2017
Witness		Date	



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

EN 61010-1 6.8	Dielectric Strength Test
----------------	--------------------------

Customer	Agate Technology	DNB job	78081B
Address	41743 Enterprise Circle N 105B	Tech.	Thomas Elders
	Temecula, CA 92592	Date	19 May 2017
EUT	Vibration Sensor Test Set	M/N	AT-2040

Test Equipment List					
Manufacturer	Model #	Serial #	Description	Calibrated	Cal. Due
ROD-L	M100BVS5	20505	Hipot Tester	14 Apr 2017	14 Apr 2018

Conditions of Test: There shall be no breakdown or repeated flashover during tests.

Dielectric Strength				
Prior to Humidity Conditioning		Voltage	Duration	Breakdown
1.	Primary to Chassis	3000Vrms	60 seconds	No
2.				
3.				
4.				
5.				

Tested by	Thomas Elders	Date	19 May 2017
Witness		Date	



Engineering
5969 Robinson Ave.
Riverside, CA 92503
(951) 637-2630

EN 61010-1:2010

EN 61010-1 6.10.3	Capacitance Test
-------------------	------------------

Customer	Agate Technology	DNB job	78081B
Address	41743 Enterprise Circle N 105B	Tech.	Thomas Elders
	Temecula, CA 92592	Date	19 May 2017
EUT	Vibration Sensor Test Set	M/N	AT-2040

Test Equipment List					
Manufacturer	Model #	Serial #	Description	Calibrated	Cal. Due
Lecroy	9400	85905	Oscilloscope	14 Apr 2017	14 Apr 2018

Probe	Peak Voltage	Frequency	Disconnect phase	Voltage @ 5 s
Line-Neutral	359	50	90°	0
Line-Neutral	359	50	270°	0
Line-Ground	359	50	90°	0
Line-Ground	359	50	270°	0

Tested by	Thomas Elders	Date	19 May 2017
Witness		Date	