Test Report issued under the responsibility of:

Intertek

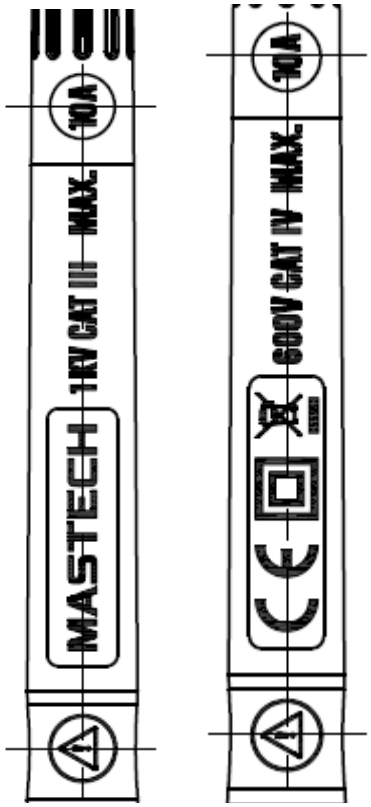
TEST REPORT
IEC 61010-031
Safety requirements for electrical equipment for measurement, control, and laboratory use
Part -031: Safety requirements for hand-held probe assemblies for electrical measurement and test

Report Reference No.....:	GZ11051010-1
Date of issue.....:	27 May 2011
Total number of pages.....:	31
CB Testing Laboratory.....:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Address.....:	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
Applicant's name.....:	Precision Mastech Enterprises(Hong Kong) Limited
Address.....:	Unit 1901, Yen Sheng Centre, 64 Hoi Yuen Road, Kwun Tong, Kowloon, Hong Kong
Test specification:	
Standard .....:	EN 61010-31:2002 (First Edition) + Amd 1:2008
Test procedure .....:	LVD
Non-standard test method……..:	N/A
Test Report Form No.....:	IEC 61010_031C
Test Report Form(s) Originator .....:	KTL (Korea Testing Laboratory)
Master TRF.....:	2008-08

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

Test item description ..... :	Test Lead
Trade Mark .....:	Mastech
Manufacturer.....:	Precision Mastech Enterprises(Hong Kong) Limited
Model/Type reference.....:	T3030C
Ratings.....:	1000 V CAT III 600 V CAT IV, MAX.10 A

Testing procedure and testing location:	
☒ **CB Testing Laboratory:**	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Testing location/ address ..... :	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
☐ **Associated CB Test Laboratory:**	
Testing location/ address ..... :	
Tested by (name + signature)..... :	Raymond Yin
Approved by (+ signature)..... :	Justin He
☐ Testing procedure: TMP	
Tested by (name + signature)..... :	
Approved by (+ signature)..... :	
Testing location/ address ..... :	
☐ Testing procedure: WMT	
Tested by (name + signature)..... :	
Witnessed by (+ signature) ..... :	
Approved by (+ signature)..... :	
Testing location/ address ..... :	
☐ Testing procedure: SMT	
Tested by (name + signature)..... :	
Approved by (+ signature)..... :	
Supervised by (+ signature)..... :	
Testing location/ address ..... :	
☐ Testing procedure: RMT	
Tested by (name + signature)..... :	
Approved by (+ signature)..... :	
Supervised by (+ signature)..... :	
Testing location/ address ..... :	

Summary of testing:	
Tests performed (name of test and test clause): All applicable test items	**Testing location:** Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
Summary of compliance with National Differences: None	
Copy of marking plate The following Markings are molded in the probe body: 	

Test item particulars ..... :	
Type of item tested ..... :	Measurement
Description of equipment function ..... :	The unit is only test probe for measurement
Classification ..... :	Type A
Protection class ..... :	II
Measurement category ..... :	III, IV
POLLUTION DEGREE ..... :	2
Environmental rating ..... :	standard
Operating conditions ..... :	continuous
Overall size of the equipment (W x D x H) ..... :	1220 mm
Mass of the equipment (kg) ..... :	0.075
Marked degree of protection to IEC 60529 ..... :	Ordinary equipment
Possible 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 2011
Date (s) of performance of tests ..... :	18 May 2011 – 25 May 2011

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

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

General product information:

The apparatus is a component, it shall be used with relevant measure apparatus.

	TABLE: 1 - Documents attached to this report	
Document No.	Document description	Page Numbers
Attachment	Photo	2

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

	TABLE: 3 - List of components and circuits relied on for safety				P
Unique component reference or location (including drawing reference if required)	Application/Function	Manufacturer (NOTE 1)	Part number	RATING (NOTE 2)	Evidence of acceptance (NOTE 3)
Plastic enclosure of probe body	Probe body	SILVER AGE ENGINEERING PLASTICS (DONGGUAN) CO LTD	730	PVC, V-0, 50℃	UL and tested with appliance
Lead wire	Cable	Dongguan Huayi Mastech Co., Ltd.	1803	18AWG, 80 ℃, 2000V, PVC insulation	E 229772 and tested with appliance

NOTE 1 - List all manufacturers concerned.
NOTE 2 - Electrical, mechanical, flammability, etc.
NOTE 3 - Licence number, file number or other documentary evidence of acceptance

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
5	MARKING AND DOCUMENTATION		P
5.1	Markings		P
5.1.1	Markings applicable for whole probe assembly not located on operator removable parts	Markings molded in the probe body	P
	Letter symbols (IEC 60027) used		P
	Graphic symbols (Table 1) used; or	Symbol  used	P
	if other symbol used; explained in accompanying documentation		N/A
	In case of less space for required markings:		N/A
	- symbol 10 of table 1 used		N/A
	- all necessary information included in documentation		N/A
5.1.2	Identification		P
5.1.2 a)	Name or registered trademark	Mastech	P
5.1.2 b)	For type B and C, also model no. or similar	Type A	N/A
	If designed for use with specific model this is made clear and		N/A
	model identified by marking or in documentation		N/A
5.1.3	Fuses	No fuse employed	N/A
	All details necessary for fuse replacement		N/A
	Includes rated voltage and current breaking capacity		N/A
	If selected according to particular application; marked with symbol 10 and information in documentation		N/A
5.1.4	Necessary identification for TERMINALS, connectors etc		N/A
5.1.6	Rating		P
	Maximum RATED voltage to earth	1000V CATIII 600V CATIV	P
	(CAT I) Symbol 10 used		N/A
	(CAT II-IV) Category marked	CAT III, CAT IV	P
	Nature of voltage (ac, dc etc.)	Applicable to both r.m.s and dc	N/A
	Reference connector intended for connection to voltages exceeding the values of 6.3.1.1	No reference connector	N/A

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
	For type A and type D only, the maximum RATED current unless specified for high impedance inputs	MAX. 10 A molded in the probe body	P
5.2	Warning markings		P
	Visible when ready for NORMAL USE		P
	If necessary marked with symbol 10		P
	Near or on particular parts of the PROBE ASSEMBLY		P
	Advise to disconnect or isolate during access to HAZARDOUS LIVE parts or		N/A
	marked with symbol 10 and information in the instruction manual		N/A
	Easily touched heated parts, if not self-evident, marked with symbol 9		N/A
5.3	Durability of markings		P
	The required markings are clear and legible (NORMAL USE)	see Form A.3	P
	Resist cleaning (clear, legible and not worked loose)		P
5.4	Documentation		N/A
5.4.1	General		N/A
5.4.1 a)	Technical specification		N/A
5.4.1 b)	Instructions for use		N/A
5.4.1 c)	Name and address of manufacturer or supplier		N/A
5.4.1 d)	The information specified in 5.4.2 to 5.4.4		N/A
	A clear explanation of warning symbols is in the documentation or		N/A
	Information is durably and legibly marked on the equipment		N/A
	Statement that symbol 10 means documentation needs to be consulted		N/A
5.4.2	Ratings		N/A
	Maximum voltage RATING		N/A
	Maximum current RATING		N/A
	Statement of the range of environmental conditions		N/A

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
5.4.3	Operation		N/A
5.4.3 a)	Identification of operating controls		N/A
5.4.3 b)	Interconnection requirements		N/A
	Specification of accessories, materials etc		N/A
5.4.3 c)	Specification of intermittent operation limits		N/A
5.4.3 d)	Explanation of required and used symbols		N/A
5.4.3 e)	Replacement of consumables		N/A
5.4.3 f)	Definition of measurement category (if marked with CAT)		N/A
5.4.3 g)	If marked CAT I, a warning not to use in other CAT		N/A
5.4.3 h)	Cleaning if necessary		N/A
5.4.3 i)	Warning for the lower CAT of a combination of a PROBE ASSEMBLY and an accessory		N/A
	A statement against use in a manner not specified by the manufacturer		N/A
5.4.4	Maintenance		N/A
	Sufficient preventive maintenance and inspection for RESPONSIBLE BODY		N/A
	Parts to be supplied or examined by the manufacturer only		N/A
	RATING and characteristics of fuses (see 5.1.3)		N/A
6	PROTECTION AGAINST ELECTRIC SHOCK		P
6.1	General	see Form A.4	P
6.1.1	Exceptions		P
6.1.1 a)	Parts intended to be replaced by the operator (for example, fuses), but only if they have a warning marking according to 5.2		N/A
6.1.1 b)	PROBE TIPS, provided that they meet the requirements of 6.4.4	Refer to clause 6.4.4	P
6.2	Determination of ACCESSIBLE parts		N/A
	According to figure 3	Obvious to determine the accessible parts	N/A
6.3	Permissible limits for ACCESSIBLE parts		P
	Measurements performed according to figure 4		P
6.3.1	Values in NORMAL CONDITION	see Form A.6	P
6.3.2	Values in SINGLE FAULT CONDITION	see Form A.7	P

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
6.4	Insulation requirements for protection against electric shock		P
6.4.1	Connectors		N/A
6.4.1 a)	Connectors in fully mated position:	No such part	N/A
	i) Connecting probe to measuring equipment insulated by at least basic insulation		N/A
	ii) Intended to be HAND-HELD insulated by DOUBLE or REINFORCED INSULATION		N/A
6.4.1 b)	Connectors in partially mated position:		N/A
	insulated by at least BASIC INSULATION		N/A
	Voltage test with test finger (B.1)		N/A
6.4.1 c)	Connectors in unmated position:		N/A
	Except for locking or screw-held type connectors or limited current by PROTECTIVE IMPEDANCE:		N/A
	i) HAZARDOUS LIVE parts not ACCESSIBLE		N/A
	Up to 1 kV a.c. or 1.5 kV d.c., not ACCESSIBLE		N/A
	Above 1 kV a.c. or 1.5 kV d.c., voltage test with test finger		N/A
	ii) Stackable connectors		N/A
	HAZARDOUS LIVE parts separated by BASIC INSULATION from ACCESSIBLE parts		N/A
	CLEARANCE and CREEPAGE meet the requirements for BASIC INSULATION		N/A
	Voltage test in acc. to 6.6		N/A
6.4.2	HAND-HELD parts other than connectors		P
	HAZARDOUS LIVE parts separated by DOUBLE or REINFORCED INSULATION from ACCESSIBLE parts	see Form A.4	P
	CLEARANCE and CREEPAGE meet the requirements for DOUBLE or REINFORCED INSULATION	see Form A.9	P
	Voltage test in acc. 6.6 (specify parts)	see Form A.10	P
	REFERENCE CONNECTOR		N/A
6.4.3	Cables		P
	RATED for maximum voltage and current		P
	DOUBLE or REINFORCED INSULATION based on voltages (min 125 V/500 V) according to type of PROBE ASSEMBLIES .....:		N/A
	or for maximum RATED voltage .....:	Rated 1000V CATIII 600V CATIV	P

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
	Voltage test in acc. 6.6 (specify parts)	see Form A.10	P
6.4.4	PROBE TIPS		P
	BARRIER providing safe distance:		P
	- CLEARANCE and CREEPAGE meet the requirements for REINFORCED INSULATION	see Form A.9	P
	Spring-loaded squeeze PROBE ASSEMBLIES: (rated for WORKING VOLTAGE ≤1 kV)	No such part	N/A
	a) Actuation prevents touching HAZARDOUS LIVE parts		N/A
	b) Additional protective distance of 45 mm longer than for barrier		N/A
	Crocodile clips and similar without barrier: (rated for CAT I or II)		N/A
	- have tactile indication		N/A
6.4.5	DOUBLE INSULATION and REINFORCED INSULATION		P
	See 6.5, 6.6 and 6.7.2		P
6.4.6	PROTECTIVE IMPEDANCE		N/A
	Appropriate HIGH-INTEGRITY single component used for protection (see 12.3)	No such component	N/A
	Components, wires and connections are suitably RATED even for SINGLE FAULT CONDITION		N/A
6.5	CLEARANCES AND CREEPAGE DISTANCES		P
	CLEARANCES and CREEPAGE DISTANCES between circuits and parts	see Form A.4 and Form A.9	P
6.6	Voltage tests		P
	Humidity pre-conditioning (6.6.2) conducted		P
	Test voltages (6.6.4)	see Form A.4 and Form A.10	P
6.7	Constructional requirements		P
6.7.1	General		N/A
6.7.1 a)	Security of soldered wiring connections		N/A
6.7.1 b)	Screws securing removable covers are captive if their length affects isolation distances		N/A
6.7.1 c)	Accidental loosening		N/A
	The following is not used for safety purposes:		P
	1) Materials which can be easily damaged (enamel etc)		P

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
	2) Non-impregnated hygroscopic materials		P
6.7.2	ENCLOSURES of PROBE ASSEMBLIES with DOUBLE or REINFORCED INSULATION		P
	ENCLOSURE which surrounds all metal parts		P
	Small metal parts are separated from HAZARDOUS LIVE voltages by DOUBLE or REINFORCED INSULATION	No such part	N/A
	ENCLOSURES or parts made of insulating material fulfil requirements for DOUBLE or REINFORCED INSULATION.	see Form A.4 and Form A.9	P
	Protection for metal ENCLOSURES or parts is provided by one of the following:		N/A
	a) provision of an insulating coating or BARRIER on the inside of the ENCLOSURE		N/A
	b) CLEARANCES and CREEPAGE DISTANCES cannot be reduced by loosening of parts or wires		N/A
6.7.3	Corona and partial discharge		N/A
	No corona or partial discharge while operating at maximum voltage		N/A
6.7.4	Cable attachment		P
	Withstand forces likely to be encountered		P
6.7.4.1	Pull test	see Form A.11	P
6.7.4.2	Flexing/pull test	see Form A.11	P
6.7.4.3	Rotational flexing test	see Form A.11	P
6.7.5	Insulation of a probe cable		P
	Probe cable with a wear indicator provide DOUBLE or REINFORCED INSULATION when new, and at least BASIC INSULATION when the wear indicator is reached	Wear indicator employed	P
	PROBE CABLE without a wear indicator provide DOUBLE or REINFORCED INSULATION		N/A
	Voltage test in acc. 6.6 (specify parts):	see Form A.10	P
	- REINFORCED INSULATION: one unconditioned sample before cycling treatment		P
	- BASIC INSULATION: contrasting colour became visible during the cycling treatment		P
	- REINFORCED INSULATION: 250 cycles treatment without contrasting colour becoming visible.		N/A
7	PROTECTION AGAINST MECHANICAL HAZARDS		P
	Handling during normal use shall not lead to hazard		P

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
8	MECHANICAL RESISTANCE TO SHOCK AND IMPACT		P
	Withstand shock and impact likely to occur in NORMAL USE		P
8.1	Rigidity test		P
	20 N applied three times		P
8.2	Drop test		P
	Three samples dropped		P
8.3	Impact swing test		P
	Probe subjected to impact against a hardwood board		P
	After the tests of 8.1 to 8.3:		P
	Voltage tests in acc. to 6.6	(see Form A.10)	P
	Inspections:		P
8a)	HAZARDOUS LIVE parts not accessible		P
8b)	ENCLOSURE shows no cracks (hazard)		P
8c)	CLEARANCES not less than their permitted values	(see Form A.9)	P
8d)	BARRIERS not damaged or loosened		P
8e)	No damage which could cause spread of fire		P
9	TEMPERATURE LIMITS AND PROTECTION AGAINST THE SPREAD OF FIRE		P
9.1	General		P
	Any heating does not cause a HAZARD in NORMAL CONDITION nor in SINGLE FAULT CONDITION		P
	No spread of fire outside the PROBE ASSEMBLY		P
	Easily touched surfaces not exceeding the following limits in NORMAL CONDITION :		P
	- metal less than 55 °C	No such part	N/A
	- non-metallic less than 70 °C		P
	- wires and cables less than 75 °C		P
	Temperatures in SINGLE FAULT CONDITION less than 105 °C		N/A
	Easily touched heated surfaces recognizable or marked with symbol 9 of table 1 (s. 5.2), if necessary for functional reasons	No such part	N/A
	Circuits separated by at least by BASIC INSULATION, if protection depends on separation of circuits		N/A
9.2	Temperature tests	see Form A.12	P

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
10	RESISTANCE TO HEAT		P
10.1	Integrity of CLEARANCES and CREEPAGE DISTANCES		P
	Requirements of 6.5 are met at an ambient temperature of 40 °C of maximum RATED ambient temperature (if higher)	see Form A.9	P
10.2	Resistance to heat		P
	Probe assemblies with non-metallic ENCLOSURES are resistant to elevated temperatures:	see Form A.13	P
11	PROTECTION AGAINST HAZARDS FROM FLUIDS		N/A
11.1	General		N/A
	OPERATOR and surrounding area are protected against HAZARDS from fluids if PROBE ASSEMBLIES containing or intended to be used with fluids	No fluid employed	N/A
11.2	Cleaning		N/A
	Cleaning procedure applied three times to the PROBE ASSEMBLY		N/A
11.3	Specially protected PROBE ASSEMBLIES		N/A
	Where the equipment is RATED or marked by the manufacturer the requirements of IEC 60529 are fulfilled		N/A
	After the tests of 11.1 to 11.3:		N/A
	Accessible parts do not exceed the limits of 6.3.1		N/A
	Voltage tests in acc. to 6.6		N/A
12	COMPONENTS		P
12.1	General		P
	Safety components operated within their specified RATINGS	see Table 3, probe body and cable	P
	Components approved by a recognized testing authority for conformity	see Table 3	P
	Those components comply with one of the following :		N/A
12.1 a)	comply with all applicable safety requirements in relevant IEC standards		N/A
	and subjected to the tests of this standard if necessary for application		N/A
12.1 b)	comply with all relevant requirements of this standard		N/A

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
	and subjected to the tests of relevant IEC component standard if necessary for application		N/A
12.1 c)	comply with all relevant requirements of this standard only if there is no relevant IEC standard		P
12.2	Fuses		N/A
	Voltage RATING	No fuse	N/A
	Breaking capacity and current rating..... :		N/A
12.3	HIGH-INTEGRITY components		N/A
	Positions of use	No such component	N/A
	Evaluated to IEC Publications		N/A
	A single electronic device which employs electron conduction in a vacuum, gas or semiconductor is not used as HIGH-INTEGRITY component		N/A
12.3.1	Resistors used in PROTECTIVE IMPEDANCE		N/A
12.3.1 a)	Withstand twice the dissipation at RATED voltage		N/A
12.3.1 b)	Withstand twice the RATED voltage for 1 s		N/A
12.3.1 c)	Distance across resistor or assembly:		N/A
	fulfil requirements for DOUBLE or REINFORCED INSULATION	see Form A.9	N/A
	If heating occurs at maximum working voltage, CLEARANCE complies with temperature corrected value		N/A
13	Prevention of HAZARD from arc flash and short-circuits		P
13.1	General		P
	PROBE TIPS and crocodile clips are constructed to mitigate the risk of arc flash and short-circuits.		P
13.2	Exposed conductive parts		P
13.2. a)	PROBE ASSEMBLIES RATED for CAT III or IV, the exposed conductive part of a PROBE TIP ≤ 4 mm.	3.80 mm	P
13.2. b)	Special applications within CAT I where the energy levels not support arc flash or fire, the exposed conductive part of a PROBE TIP ≤ 80 mm		N/A
13.2. c)	Other PROBE ASSEMBLIES, the exposed conductive part of a PROBE TIP ≤ 19 mm.		N/A
13.2. d)	The outer surfaces of the jaws of crocodile or similar clips RATED for CAT II, III, or IV are not conductive.		N/A

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict
	HAZARDOUS LIVE parts are not ACCESSIBLE when closed		N/A

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

4.4.2	**TABLE: Summary of SINGLE FAULT CONDITIONS**			**Form A.1**	N/A
Subclause	Title	Does not apply	Carried out	Comments	
4.4.2.1	Equipment or parts for short-term or intermittent operation				
4.4.2.2	Outputs of type B and type C PROBE ASSEMBLIES				
4.4.2.3	Insulation between circuits and parts				
4.4.2.4	Components of type B and type C PROBE ASSEMBLIES			see Form A.2	
List below all SINGLE FAULT CONDITIONS not covered by 4.4.2.1 to 4.4.2.4:					
Supplementary information: (see Form A.2 for details of tests)					

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

4.4	**TABLE: Testing in single FAULT CONDITION – Results**			**Form A.2**	**N/A**
Test sub clause	Fault No.	Fault description	Td 4.4.3 (NOTE)	How was test terminated Comments	Meets 4.4.4
NOTE Td = Test duration in h:min:s Record voltage test on Form A.10 and temperature tests on Form A..12 Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.					
Supplementary information:					

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

5.3	**TABLE: Durability of markings**	**Form A.3**	P

Marking method (see NOTE)	Agent
1)	A Water
2)	B Isopropyl alcohol
3)	C (specify agent)
4)	D (specify agent)
5)	E (specify agent)

NOTE – Where applicable include print method, label material, ink or paint type, fixing method, adhesive and surface to which marking is fixed.

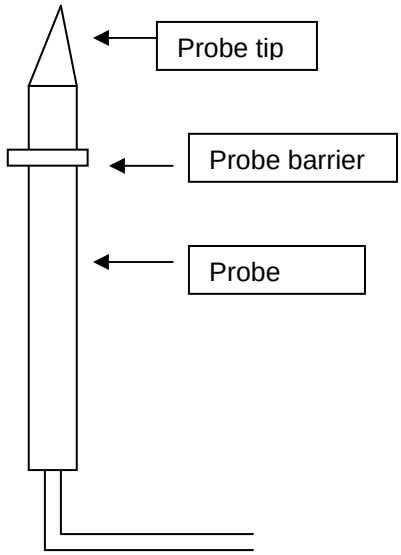
Marking location	Marking method (see above)
Identification (5.1.2)	Molded
Fuses (5.1.3)	N/A
TERMINALS and operating devices (5.1.4)	N/A
DOUBLE/REINFORCED equipment (5.1.5)	Molded
Rating (5.1.6)	Molded
Warning marking (5.2)	Molded

Method	Test agent	Remains legible Verdict	Label loose Verdict	Curled edges Verdict	Comments
molded	B	Yes	Yes	Yes	

Supplementary information:

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

6	**TABLE: Protection against electric shock - Block diagram**	**Form A.4**	



POLLUTION DEGREE... : 2	Measurement category (overvoltage category).. :	CAT IV 600 V	CAT III 1000 V

Location or description	Insulation type (NOTE 1)	Maximum working voltage (NOTE 2)	CREEPAGE DISTANCE (NOTE 3) PWB mm	CTI	Other mm	CTI	CLEARANCE (NOTE 3) mm	Test voltage (NOTE 2) V	Comments
Probe tip to barrier	RI	CAT IV 600 V CAT III 1000 V	--	--	31.5	IIIa-b	31.5	6880	

NOTE 1 – Type of insulation:	NOTE 2 - Types of voltage	NOTE 3 - MEASUREMENT CATEGORY (OVERVOLTAGE CATEGORIES)
BI = BASIC INSULATION DI = DOUBLE INSULATION PI = PROTECTIVE IMPEDANCE RI = Reinforced INSULATION SI = Supplementary INSULATION	Peak impulse test voltage (pulse) r.m.s. d.c. peak	or POLLUTION DEGREES which differ from these should be shown under "Comments".

Supplementary Information:

Limits: pollution degree 2, material group IIIa-b

Cr=20.0 mm(RI), CL=14.3 mm(RI)

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

6.2	**TABLE: List of ACCESSIBLE parts**		**Form A.5**	P
6.1.1	Exceptions			—
6.2	Determination of ACCESSIBLE parts			—
Item	Description	Determination method (NOTE 5)	Exception under 6.1.1 (NOTE 4)	
Probe body	--	Visual	--	

NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.1)
NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see 6.2)
NOTE 3 – Parts are considered to be ACCESSIBLE if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see note to paragraph 1 of 6.4).
NOTE 4 – Capacitor test may be required
NOTE 5 – The determination methods are: visual; rigid test finger; jointed test finger; pin 3 mm diameter.

Supplementary information:

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

6.3.1	**TABLE: Values in NORMAL CONDITION** (see NOTE 1)	**Form A.6**	P
6.1.1	Exceptions	11.1 General	
6.3.1	Values in NORMAL CONDITION	11.2 Cleaning	
		11.3 Specially protected PROBE ASSEMBLIES	

Item	Voltage			Current				Capacitance		10 s test			Comments
(see Form A.5)	V r.m.s.	V peak	V d.c.	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	μC	mJ	V	μC	mJ	
Probe body	117.0	165.4	--	A1	0.15	0.48	--	--	--	--	--	--	

NOTE 1 – The requirements of 6.3.1 include drying out (if specified).

Supplementary information:

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

6.3.2	**TABLE: Values in SINGLE FAULT CONDITION**										**Form A.7**	N/A
Item (See Form A.4)	Sub clause and fault No. (see FormA.2)	Voltage			Transient (see NOTE)		Current				Capacitance	Comments
		V r.m.s.	V peak	V d.c.	V	s	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	µF (NOTE)	
NOTE – Transient voltages must be below the limits given from Figure 1 and the capacitance below the limits from figure 5 of IEC 61010-031.												
Supplementary information:												

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

6.4.6	**TABLE: PROTECTIVE IMPEDANCE**	**Form A.8**	N/A

A high INTEGRITY single component		
Component	Location	Comments

A combination of components		
Component	Location	Comments

A combination of BASIC INSULATION and a current or voltage limiting device		
Component	Location	Comments

Supplementary information:

IEC 61010-031			
Clause	Requirement + Test	Result – Remark	Verdict

6.5	**TABLE: CLEARANCES and CREEPAGE DISTANCES** **Form A.9**	**P**
6.4	Insulation requirements for protection against electric shock	P
6.7.2	ENCLOSURES of PROBE ASSEMBLIES with DOUBLE or REINFORCED INSULATION	P
8	Mechanical resistance to shock and impact	P
10.1	Integrity of CLEARANCES and CREEPAGE DISTANCES	P

Location (see Form A.4)	Measured (initial)		Verdict	Mechanical tests (note)				Test at max. RATED ambient	Measured after test (if required)		Verdict	
	CREEPAGE DISTANCE	CLEARANCE		Applied force	Rigidity	Drop	Impact swing		CREEPAGE DISTANCE	CLEARANCE		
	mm	mm		N	(8.1)	(8.2)	(8.3)	(10.2)	mm	mm		
Probe tip and barrier	31.5	31.5	P	30N	20N	1 m	0.37m	70	31.5	31.5	P	

NOTE – Refer to Form A.10 for voltage tests following the above tests.

Supplementary information:

IEC 61010-031			
Clause	Requirement + Test	Result - Remark	Verdict

6.6	**TABLE: Voltage tests**	**Form A.10**	P
4.4.4	Conformity after application of fault conditions[1]		N/A
6.4	Insulation requirements for protection against electric shock		P
6.7.2	ENCLOSURES of PROBE ASSEMBLIES with DOUBLE or REINFORCED INSULATION		P
6.7.5	Insulation of a probe cable		P
8	Mechanical resistance to shock and impact		P
11	Protection against hazards from fluids		N/A
[1] Record the fault, test or treatment applied before the voltage test			
	Test site altitude .....:	m	—
	Test voltage correction factor (see Table 10)....:		—

Location or references from Forms A.2 and A.4	Clause or sub-clause	Humidity Yes/No	Working voltage V	Test voltage r.m.s./peak/d.c V	Comments	Verdict
Probe tip to probe body	6.4	No	CAT III 1000 V CAT IV 600 V	6880 Vrms	--	P
Probe tip to probe body	6.7.2	No		6880 Vrms	--	P
Probe tip to probe body	6.7.5	No		4300 Vrms	--	P
Probe tip to probe body	8	No		6880 Vrms	--	P
Supplementary information:						

IEC 61010-031			
Clause	Requirement + Test	Result - Remark	Verdict

6.7.4	TABLE: Cord anchorage of cable attachment						Form A.11	P
Location	Pull N	Verdict	Flexing/ pull	Verdict	Rotational flexing	Verdict	Comment	
Cable to probe body	36	P	8.1	P	500	P		
Cable to equipment	36	P	8.1	P	500	P		
Supplementary information:								

IEC 61010-031			
Clause	Requirement + Test	Result - Remark	Verdict

9.	**TABLE : Temperature Measurements** **Form A.12**	P
9.1	Surface temperature limits - NORMAL CONDITION and / or SIGNLE FAULT CONDITION	

Operating conditions:			
Frequency ..... :	-- Hz	Test room ambient temperature (t_a) ..... :	23.1°C
Voltage ..... :	-- V	Test duration ..... :	2 h 30 min

Part / Location	t_m °C	t_c °C	t_{max} °C	Verdict	Comments
Probe body	27.9	44.8	70	P	
Cable	26.9	43.8	75	P	
Connector (To equipment)	27.2	44.1	70	P	

NOTE 1 - t_m = measured temperature
t_c = t_m corrected (t_m–t_a+ 40 °C or max. RATED ambient)
t_{max} = maximum permitted temperature
NOTE 2 - See also 12.1 with reference to component operating conditions
NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Form use additional form if necessary
NOTE 4 - The tests of 6.7.4.1 to 6.7.4.3 are performed before temperature tests.

Supplementary information:

IEC 61010-031			
Clause	Requirement + Test	Result - Remark	Verdict

10.2	**TABLE: Resistance to heat of non-metallic enclosures**				**Form A.13**	**P**
	Test method used:					—
	Non operative treatment.....:	[V]				
	Empty ENCLOSURE.....:	[ ]				
	Operative treatment.....:	[ ]				
	Temperature during tests .....:					—
	ENCLOSURE samples tested were .....:					—
Description	Material	Comments				Verdict
Probe assembly	PVC					P
	Voltage test (6.6) .....:	6880	V	r.m.s./peak/d.c.		r.m.s
Supplementary information:						

Probe assembly

Probe body

Connector to equipment

Wear indicator