



working for a safer tomorrow

KARANDIKAR LABORATORIES PVT. LTD. BOISAR

Format: F#07 b.1 Rev 10

TYPE TEST REPORT IS/IEC 60529:2001 (RA 2019)

Degrees of Protection Provided by Enclosures (IP Code)

Report No. : KLPL/BTG/23/09-95

ULR No. : TC411023000000211F

Discipline : Electrical Discipline

Group/Category : Environmental Test Facility

Sub-category : Ingress protection test

Date of issue : 14.10.2023

No. of pages : 06 PAGES + Annexure

Compiled by (+ signature) : Bhavesh Rawate

Designation: Testing Engineer

Approved by (+ signature) : Javed Shaikh

Designation: Dy. Laboratory Manager

Item Received On : 26.09.2023 in Good Condition

Test Completion Date : 28.09.2023

Client

Name : M/s. Meco Instruments Private Ltd.

: EL-1, MIDC Electronic Zone, TTC Industrial Ares, Mahape,
New Mumbai- 400 710.

Test Specification

Standard : IS/IEC 60529:2001 (RA 2019)

Specified IP-Code : IP65

Equipment Under Test

Type of Test Object : 4 Digit Triple Range Programmable Process Indicator

Model No. : TRPI-48

Sr. No. : MECO230902

Manufacturer : M/s. Meco Instruments Private Ltd.

Annexure :

Drawing No. : TRPI-48, Rev No.00, Dated: 03.10.2023 (Page01)
18802, Rev No.00, Dated: 14.02.2023 (Page01)

**NOTE : 1) This refers only to the particular item(s) submitted for testing.
2) If necessary, this report shall be reproduced ONLY in full.**



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Possible test case verdicts:

Test case does not apply to the test object : N (Not Applicable)

Test object does meet the requirement..... : P (Pass)

Test item does not meet the requirement : F (Fail)

Test case has not been checked : _____

General remarks:

"(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 point is used as the decimal separator.

The test results presented in this report relate only to the object tested.

This test report shall not be reproduced except in full without the written approval of the testing Laboratory.

IP6X test conducted at Laboratory (Boisar).

IPX5 test conducted at Laboratory (Boisar).

Note: - MAJOR EQUIPMENTS USED

Tests	Required Instruments	Id. No.	Cal Due Date	Used Y/N
5X / 6X	Vacuum Meter	K&A 1108/1-17	31.01.2024	Y
	Rotameter	K&A 426	05.01.2024	Y
	DTC with sensor	K&A 047/1	01.01.2024	Y
	Timer	K&A 047/2	05.01.2024	Y
X5	Nozzle 6.3 mm Dia	K&A 381	14.04.2024	Y
	Rotameter	K&A 1103-17	31.01.2024	Y
	Stop Watch	K&A 1171-18	07.10.2023	Y



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IS/IEC 60529:2001 (RA 2019)			
Clause	Requirement - Test	Result- Remark	Verdict
10	Marking.	--	N
11	General requirement for tests.		
11.1	Tests should be carried out under the standard atmospheric conditions described in IEC 60068-1	Followed	P
11.2	Test samples shall be in a clean and new condition.	Sample found clean	P
	The relevant product standard shall specify details such as: The number of samples to be tested;	One	P
	-conditions for mounting, assembling and positioning of the samples;	Vertical	P
	-the pre-conditioning, if any, which is to be used;	--	N
	-whether to be tested energized or not;	--	N
	-whether to be tested with its parts in motion or not;	Non-Operational	P
11.5	Empty enclosures		
	If the enclosure is tested without equipment inside, the manufacturer shall ensure that after the electrical equipment is enclosed the enclosure meets the declared degree of Protection of the final product.	--	N

12	Tests for protection against access to hazardous parts indicated by the first characteristic numeral.				
First, characteristic Numeral.	Test means (Access probes)	Test force	Test Conditions Refer IS/IEC 60529:2001 (RA 2019)		
0	No test required	-	-	--	N
1	The access probe, sphere of 50 mm Ø shall not fully penetrate and adequate clearance shall be kept.	50N ±10%	Cl.12.2	--	N
2	The jointed test finger may penetrate up to 80 mm length but adequate clearance shall be kept.	30N ±10%	Cl.12.2	--	N
3	The access probe, sphere of 2.5 mm Ø shall not penetrate and adequate clearance shall be kept.	3N± 10%	Cl.12.2	--	N
4	The access probe of 1,0 mm Ø shall not penetrate and adequate clearance shall be kept.	1N± 10%	Cl.12.2	--	N
5	Test conditions for IP 5X: Same As Above	1N± 10%	Cl.12.2	--	N
6	Test conditions for IP 6X: Same As Above	1N± 10%	Cl.12.2	--	N

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Date: 14.10.2023

IS/IEC 60529:2001 (RA 2019)					
Clause	Requirement – Test			Result-Remark	Verdict
13	Tests for protection against solid foreign objects indicated by the First characteristic numeral.				
First, characteristic Numeral.	Test means (object probes and dust chamber)	Test force	Test Conditions Refer IS/IEC 60529:2001 (RA 2019)	--	
0	No test required	-	-	--	N
1	Rigid sphere without handle or guard 50 mm diameter.	50N ±10%	Cl.13.2	--	N
2	Rigid sphere without or guard 12, 5 mm diameter.	30N ±10%	Cl.13.2	--	N
3	Rigid steel rod 2,5mm diameter with edges free from burrs	3N± 10%	Cl.13.2	--	N
4	Rigid steel wire 1, mm diameter with edges free from burrs.	1N± 10%	Cl.13.2	--	N
5	Dust chamber, with under pressure	NA	Cl.13.4+13.5	--	N
6	Dust chamber, with under pressure	NA	Cl.13.4+13.6	For 8 hrs. as extraction rate is less than 40 Volumes per hour and max depression of 20mbar.	P
13.6.2	Acceptance conditions for the first characteristic numeral 6X. The protection is satisfactory if no hazardous deposit of dust is observable inside the UUT at the end of test.			No ingress of Powder found inside the UUT.	P





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Date: 14.10.2023

IS/IEC 60529:2001 (RA 2019)				
Clause	Requirement – Test		Result-Remark	Verdict
14	Tests for protection against water indicated by the second characteristic numeral.			
Second, characteristic Numeral.	Test means	Test Conditions Refer IS/IEC 60529:2001 (RA 2019)	--	
0	No test required	Cl.14.2.0	--	N
1	Drip box, Enclosure on turntable	Cl.14.2.1	--	N
2	Drip box, Enclosure in 4 fixed positions of 15 ° tilt	Cl.14.2.2	--	N
3	oscillating tube or spray nozzle, 60° from vertical	Cl.14.2.3	--	N
4	oscillating tube or spray nozzle, 180° from vertical	Cl.14.2.4	--	N
5	6.3-mm nozzle, tested with a spraying nozzle, distance 2.5 m to 3 m, water flow rate 12.5 l/min	Cl.14.2.5	6.3 mm nozzle, Flow rate 12.5 L/min, 2.5 – 3 m distance, 3 min duration.	P
6	12.5-mm nozzle, tested with a spraying nozzle, distance 2.5 m to 3 m, water flow rate 100 l/min	Cl.14.2.6	--	N
7	Immersion tank, Temporary immersion in water in service position,	Cl.14.2.7	--	N
8	Immersion tank, Continuous immersion subject to agreement.	Cl.14.2.8	--	N
-	Acceptance conditions for IPX5: The protection is satisfactory if no water has accumulated near the insulation, cable end or entered cables or interferes with the correct operation of the equipment.	Cl.14.3	No ingress of water observed inside the UUT.	P
-	Tests for protection against access to hazardous parts indicated by the additional letter.	Cl.15	--	N
SUMMARY OF INGRESS PROTECTION TESTS ACCORDING TO IS/IEC 60529:2001 (RA 2019) Conclusion of the IP65 test: PASS. The results of the tests were in compliance with the requirements in the standard IS/IEC 60529:2001 (RA 2019) UUT=Unit Under Test				



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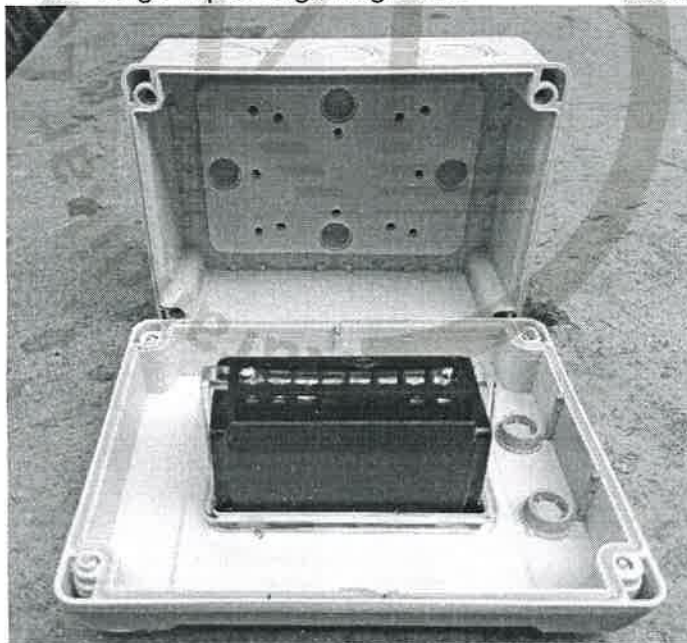
KARANDIKAR LABORATORIES PVT. LTD. BOISAR

Report No.: KLPL/BTG/23/09-95

Date: 14.10.2023



Picture1: 4 Digit Triple Range Programmable Process Indicator



Picture2: No ingress of powder & water observed

END OF REPORT

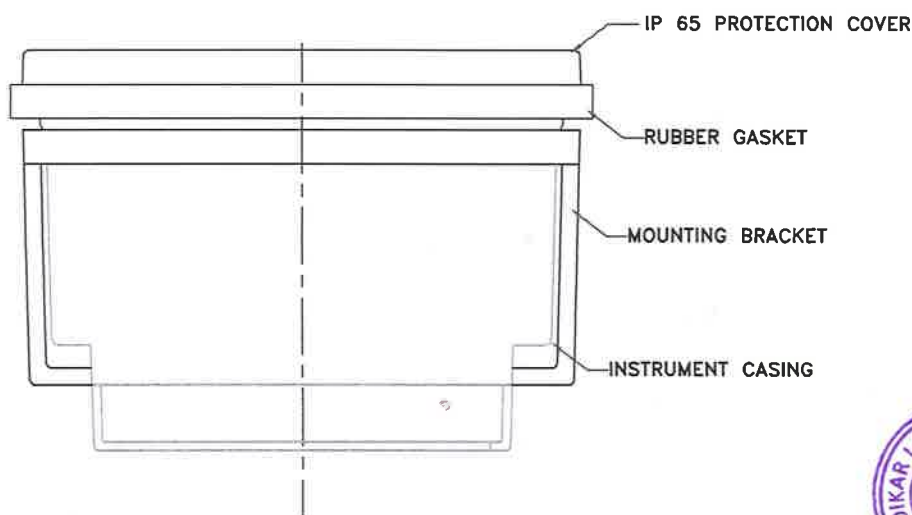
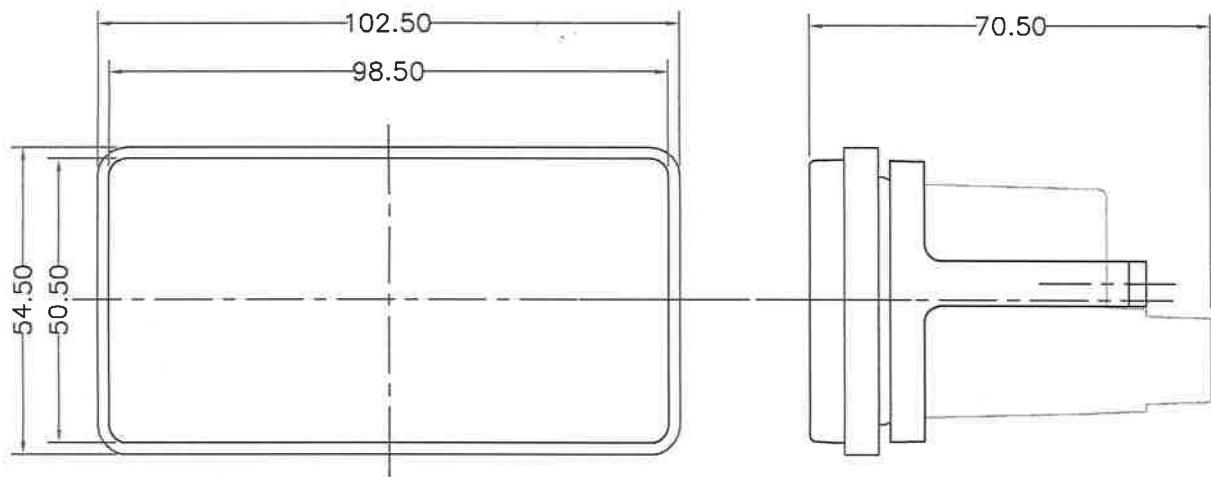


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Annexure

CODE NO.
TRPI-48

Report No: KIP/IBTA/23/09-95

**MECO INSTRUMENTS PVT.LTD.**

Scale: 1:1

APPD. BY.

Tool Name

4 DIGIT TRIPLE RANGE PROGRAMABLE
PROCESS INDICATOR MODEL:TRPI-48

DRN BY. suresh

Part Name: ASSEMBLY

CKD BY.

Qty. 1 SET.

Date:03/10/2023

Material: POLYCARBONATE+EPDM

S.NO. REV.NO. DETAILS DATE APPD.BY

NOTE : TOLERANCE IF NOT SPECIFIED REFER FOLLOWING TABLE

0 TO 10MM DIMENSIONS = $\pm 0.1\text{MM}$	50 TO 100MM DIMENSIONS = $\pm 0.3\text{MM}$
10 TO 25MM DIMENSIONS = $\pm 0.15\text{MM}$	100 TO 200MM DIMENSIONS = $\pm 0.4\text{MM}$
25 TO 50MM DIMENSIONS = $\pm 0.20\text{MM}$	200 TO 500MM DIMENSIONS = $\pm 0.5\text{MM}$

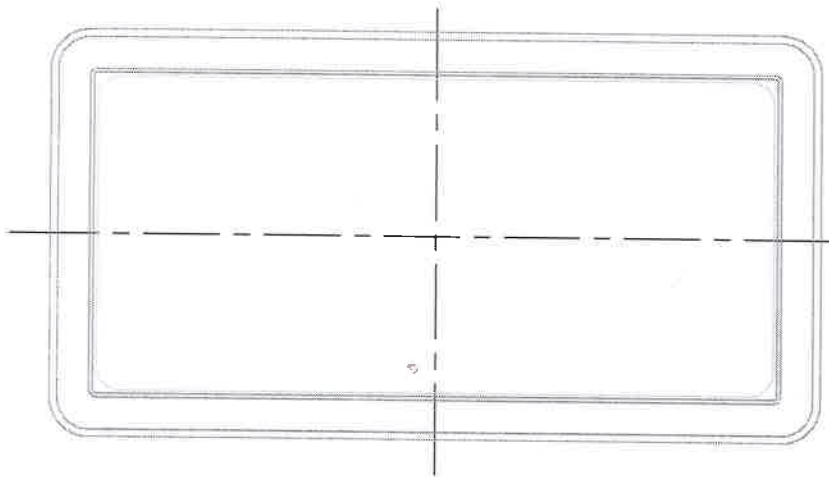
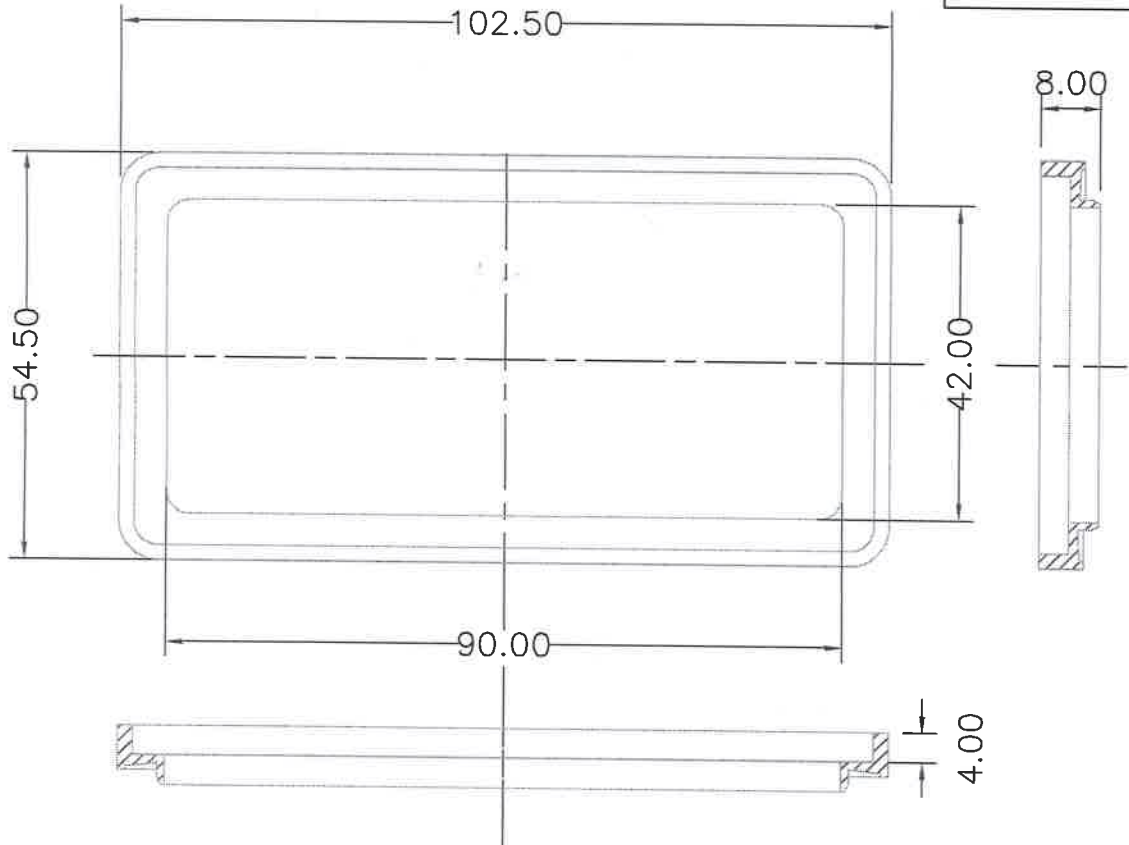
CODE NO:TRPI-48

All Dimensions Are In 'mm' 1 OF 1

Annexure

CODE NO.

18802



Report NO: HPL/1BTG/23/09-95



MECO INSTRUMENTS PVT.LTD.

Scale: 1:1

APPD. BY.

Tool Name

4 DIGIT TRIPLE RANGE PROGRAMABLE
PROCESS INDICATOR MODEL:TRPI-48

DRN BY. suresh

Part Name:

RUBBER GASKET

CKD BY.

Qty.

1 NO.

Material:

EPDM

Date:14/02/2023

S.NO.	REV.NO.	DETAILS	DATE	APPD.BY
3.				
2.				
1.				

NOTE : TOLERANCE IF NOT SPECIFIED REFER FOLLOWING TABLE

0 TO 10MM DIMENSIONS = $\pm 0.1\text{MM}$	50 TO 100MM DIMENSIONS = $\pm 0.3\text{MM}$
10 TO 25MM DIMENSIONS = $\pm 0.15\text{MM}$	100 TO 200MM DIMENSIONS = $\pm 0.4\text{MM}$
25 TO 50MM DIMENSIONS = $\pm 0.20\text{MM}$	200 TO 500MM DIMENSIONS = $\pm 0.5\text{MM}$

CODE NO:18802

All Dimensions Are In 'mm' 1 OF 1