



सीएसआईआर - केंद्रीय खनन एवं ईंधन अनुसंधान संस्थान

CSIR - Central Institute of Mining and Fuel Research

(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद् (Council of Scientific & Industrial Research)

(अंतर्गत वैज्ञानिक तथा औद्योगिक अनुसंधान विभाग, विज्ञान और प्रौद्योगिकी मंत्रालय, भारत सरकार)

(Under the Department of Scientific & Industrial Research, Ministry of Science & Technology, Govt)

बारवा रोड, धनबाद - 826015, झारखंड, भारत / Barwa Road, Dhanbad - 826015, Jharkhand, India

(आईएसओ 9001 प्रमाणित संस्थान / ISO 9001 Certified Institute)



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Test & Assessment Report No.: IN/CIMFR/TR21/R/1654

Dated: 31 August, 2021

Equipment ID No.: 912B/20 ULR No.: TC596221000000403F Code No.: FES/68(I)/20-21

To,
M/s. Keskamat & Co.,
9/129, Adarsh Nagar,
Prabhadevi, Mumbai - 400030.

Subject: Type Examination Certificate along with test assessment report of Flameproof Weatherproof Enclosure Pan & Tilt head, Designated by Cat. No.: KK/PT/A/101-IIC & Model No.: KPT98-IIC in cast aluminium alloy LM-6 construction as per IS/IEC 60079-1:2014 for use in Gas Group: IIC, EPL Gb/Db atmosphere.

-(Test Report)

Your Ref. Appli. No.: KK/CCTV/REVALID/2021/10

Dated: 17/08/2020

Dear Sir,

Please find enclosed the Type Examination Certificate along with test assessment report of the above documents submitted by you.

This Institute reserves the right to review, amend or withdraw this 'Test Report' at any time, if considered necessary in the interest of safety.

Charges of Rs. 76,535/- (Rupees Seventy Six Thousand Five Hundred Thirty Five Only) including applicable GST involved towards the testing have been adjusted against the advance deposit made by you.

Kindly acknowledge receipt.

Thanking you.

Yours faithfully,

S. K. Mondal
27/8/2021

(S. K. MONDAL)
HOS
TESTING CELL

Encl: As above.

1. Test assessment report in *Triplicate*.

2. Type Examination Certificate

Copy to: 1. Head, Flameproof & equipment Safety

2. Bill section

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CSIR - CENTRAL INSTITUTE OF MINING AND FUEL RESEARCH
 (वैज्ञानिक तथा औद्योगिक अनुसंधान प्रसिद्ध)
 (COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH)

बजरवा रोड, मनमोहन नगर, दिल्ली - 110015, भारत
 BARWA ROAD, DELHI NAGAR, DELHI - 110015, INDIA

ज्वालामुहक एवं उपकरण सुरक्षा / **FLAMEPROOF & EQUIPMENT SAFETY**
 परीक्षण प्रमाण पत्र / **TEST CERTIFICATE**



NABL Certificate No.
 TC-3962

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FORMAT NO.: (CIMFR: DOM: FLP02: F-01:REV-01)
 (Flameproof & Equipment Safety)

Equipment ID No.: 912B/20 ULR No.: TC596221000000403F Code No.: FES/68(I)/20-21

Test & Assessment Report No.: IN/CIMFR/TR21/R/1654	Dated: 3/ August, 2021
Application Ref. No.: KK/CCTV/REVALID/2021/10	Dated: 17/08/2020

1. Applicant : M/s Keskanut & Co.,
9/129, Adarsh Nagar,
Prabhadevi, Mumbai - 400030.
2. Manufacturer : Same as above
3. Equipment : Flameproof cum Weatherproof enclosure for Pan & Tilt head.
4. Designated by : Cat. No.: KK/PT/A/101-IIC & Model No.: KPT98-IIC.
5. Type of protection : Ex db for Gas Group: IIC, EPL Gb & Db.
6. Electrical ratings : Rated 0.25HP/800mA/250W (2x125W), 240V AC 50Hz.
7. Temperature Class : T6 at 40°C amb.
8. Degree of Ingress Protection : IP-65 (Neoprene O ring gasket)
9. Material of Construction : Cast aluminium alloy LM-6.
10. Description of the equipment : Flameproof cum Weatherproof enclosure for Pan & Tilt head.

Description/ dimension	Volume (cc)		Min. Wall Thickness (mm)	Dimension (mm)	Nos. & Size of Bolts/Fasteners (mm)
	Gross	Net			
Motor Enclosure	16000	1800	10	Ø305x314	8M8x35mm
Terminal Enclosure	300	200			

Glass details	Max no. of aperture on cover
NIL	NIL

10. Nature of Flameproof Joint: Type of joints and gaps (Spigot joint, Cylindrical, & Threaded Joint)

Sl. No.	Description (Between flamepath and location)	Type of joint	Min. Flamepath (mm)		Gap and Thread Engaged	
			Req.	Spec.	Req.	Spec.
1.	Encl. body and main & terminal cover	Spigot	25	25	0.10	0.10
2.	Encl. body and moulded terminal stud	Cylindrical	25	25	0.10	0.10
3.	Encl. body and press fitted brass bush	Cylindrical	25	25	0.10	Press Fit
4.	Encl. press fitted brass bush and tilt shaft	Cylindrical	25	25	0.10	0.10
5.	Body & Cable entry	Threaded	8	25	5T(1.5P)	18T(1.5P)

Max. No. & size of cable entries: The maximum one numbers of following certified and approved FLP/WP double compression type cable gland/blanking plug/breather drainer can be used as following.

Sr. No.	Max. Size of Cable Entries	Nos. of Cable entries provided in test sample			
		Side - A	Side - B	Side - C	Side - D
1	M25X1.5P (L = 25mm, T=18T(1.5P))	01	NA	NA	NA

11. Name plate and warning inscription: The name-cum-warning inscription plate and rating plate made of Brass/SS is permanently fixed on the body of enclosure by hammer driven rivets leaving min. 3mm material thickness below the rivets. The warning inscription shall read as "DO NOT OPEN WHEN ENERGIZED".

Signature
 26.8.21

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बाबा साहेब आंबेडकर रोड - 826015, झारखण्ड, भारत। (Baba Saheb Ambedkar Road, Dhanbad - 826015, Jharkhand, India)

ज्वालकाल एवं उपकरण सुरक्षा (FLAMEPROOF EQUIPMENT SAFETY)

परिष्करण रिपोर्ट / TEST REPORT



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FORMAT NO.: (CIMFR: DQM: FLP02: F-01:REV-01)

(Flameproof & Equipment Safety)

Equipment ID No.: 912B/20 ULR No.: TC596221000000403F Code No.: FES/68(I)/20-21

12. Drawings: The unit is designed and constructed as flameproof and weatherproof in accordance with the following drawing conforming to the requirements of IS/IEC 60079-0:2017, IS/IEC 60079-1: 2014 and IS/IEC 60529-2001 (Reaffirmed 2014).

Sl. No.	Dwg. No.	Title	Rev.	Sheet	Date
1.	PT/101/A-IIC	Flameproof Weatherproof Pan & Tilt head	02	1 of 4 to 4 of 4	17/01/2020

13. Any other relevant information:

- As per Clause 4.3 Note - 3 of IS/IEC 60079-0:2017 the equipment mark IIC is suitable for application requiring Gas Group IIA or IIB equipment. And as per Clause 4.4 Note of IS/IEC 60079-0:2017 the equipment mark IIIC is suitable for application requiring Dust Group IIIA or IIIB equipment.
- The material of construction of the enclosure may be MS/SS/Cast iron instead of aluminum alloy for application in gas group IIA & IIB explosive atmosphere.
- Equal and equivalent medium class fit NPT threads of medium class fit conforming to requirements of ANSI/ASME B1.20.1 may be used instead of metric threads conforming to ISO 965-1 & 965-3 as per Clause No. 5.3 & 13 of IS/IEC 60079-1:2014.
- The above equipment may also be used in Db & Dc area as per IS/IEC 60079-31:2013.
- The above equipment has been earlier tested vide test report no.: KLPL/EX/R/12-012 Dated: 09/05/2012 as per IS/IEC 60079-1: 2007.

14. Declaration by the Applicant/Manufacturer:

(i) As to standards with which the equipment complies in respect of:

- Electrical equipment for Potentially Explosive atmosphere - General requirements: IS/IEC 60079-0: 2017
- As to flameproof protection IS/IEC 60079-1: 2014
- Ingress protection as per IS/IEC 60529: 2001(Reaffirmed 2014)
- Dust ignition protection by enclosure 't' IS/IEC60079-31:2013

(ii) Composition of the cast aluminum alloy declared by the manufacturer: Composition of cast aluminum alloy purported to be forming the material of construction of the enclosure has been declared by the manufacturer in the drawing having 7.5% in total of magnesium titanium and zirconium.

However no sample of the alloy was drawn from the prototype enclosure for verifying its chemical composition declared by the manufacturer.

15. Documents/Samples Submitted: i) Application form ii) Drawings iii) Sample

16. Condition of sample received: Good

17. Compliance of prototype or sample with documents: The test sample of electrical equipment submitted for the type tests complies with the manufacturers documents referred above.

Note: CIMFR has however not checked and tested the compliance of the equipment to any standard other than the above standards.

SCOPE OF THE TEST CERTIFICATE

The Test Certificate issued by CIMFR certifies that the equipment has been found to comply with the definition of Flameproof-Weatherproof equipment contained in the relevant Standard specifications. They do not vouch for the quality of the equipment in any other respect. The present test report pertains to the sample received only.

This Institute reserves the right to review, amend or withdraw this Test Report at any time if considered necessary in the interest of safety.

Rm
26.8.21

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सुरक्षा के उपकरणों के लिए / FOR APPROXIMATE EQUIPMENT SAFETY

प्रमाणन रिपोर्ट TEST REPORT

मूल प्रति
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FORMAT NO.: (CIMFR: DQM: FLP02: F-01:REV-01)

(Flameproof & Equipment Safety)

Equipment ID No.: 912B/20 ULR No.: TC596221000000403F Code No.: FES/68(I)/20-21

REPORT OF TEST

Date of Test: 26/08/2021

Test Equipment Used: (1) Computer, Kistler Piezo Electric Transducer and Charge Amplifier for conducting Explosion Pressure Tests, (2) Overpressure Test Setup

Result #A: Tests as per IS/IEC 60079-0:2017:

Clause	Tests	Remarks	Results (Complies, P-Pass, NA-Not Applicable, F-Fail) References
1	Scope		Complies
2	Normative references		Complies
3	Terms and Definitions		Complies
4	Equipment grouping	Gas Group: IIC, EPL Gb/Db	Complies
5	Temperature		
5.1.1	Ambient Temperatures	- 20° C to +50° C Amb.	Complies
6	Requirements for all electrical equipment		Complies
6.6	Electromagnetic and ultrasonic energy radiating equipment		NA
7	Non-metallic enclosures and non-metallic parts of enclosures		NA
7.1.2.4	Material used for cementing / Sealing		NA
7.2	Thermal Endurance		NA
8	Metallic Enclosure and metallic part of Enclosures	Cast aluminium alloy LM-6 construction	Complies
9	Fastener	450N/mm ²	Complies
10	Interlocking devices	Locking Screw	Complies
11	Bushings		Complies
12	Reserved for future use		NA
13	Ex components		NA
14	Connection facilities and terminal compartments		Complies
15	Connection facilities for earthing and bonding conductors		Complies
16	Entries into enclosures		Complies
17	Supplementary requirements for electric machines		NA
18	Supplementary requirements for switchgear		NA
19	Reserved for future use		NA
20	Supplementary requirements for external plugs and socket outlets and connectors for field wiring connection		NA
21	Supplementary requirements for luminaries		NA
22	Supplementary requirements for cap lights and hand lights		NA
23	Equipment incorporating cells and batteries		NA
24	Documentation		Complies
25	Compliance of prototype or sample with documents		Complies
26	Type tests		Complies
26.3	Tests in explosive test mixtures		
26.3	Tests for Flameproof (Ex 'd') protection	Verification for Compliance to Ex 'd' requirements as per IS/IEC 60079-1: 2014	P/As per Result #B
26.4	Test of enclosures		
26.4.2	Resistance to Impact		Complies

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जवाहर रोड, धनबाद - 826015, झारखण्ड, भारत (Jawahar Road, Dhanbad - 826015, Jharkhand, India)

परावर्तक एवं उपकरण सुरक्षा (Explosion Proof Equipment Safety)

परिष्कारित: TEST REPORT

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(Flameproof & Equipment Safety)

Equipment ID No.: 912B/20

ULR No.: TC596221000000403F

Code No.: FES/68(I)/20-21

26.4.3/ 26.4.4	Drop test	(Not a handheld equipment or portable device)	NA
26.4.5	Degree of protection (IP) by Enclosures		
26.4.5	Test of IP of equipment	IP-65 (Gasket 5mm thick)	Complies
26.5	Thermal tests		
26.5.1	Temperature measurement	T ₆ @ 40C amb	Complies
26.5.2	Thermal shock test		NA
26.6	Torque Test for bushings		
26.6	Torque test for bushings		
26.7	Non-metallic enclosures or non-metallic parts of enclosures		
26.8	Thermal endurance to heat		NA
26.9	Thermal endurance to cold		NA
26.10	Resistance to UV light		NA
26.11	Resistance to chemical agents for Group I Electrical Equipment		NA
26.12	Earth continuity test in non-metallic enclosure		NA
26.13	Surface resistance test of parts of enclosures of Non-metallic materials		NA
26.14	Measurement of capacitance		NA
26.15	Verification of ratings of ventilating fans		NA
26.16	Alternative qualification of elastomeric sealing O-rings	Neoprene / Silicone	Complies
27	Routine tests	Manufacturer's responsibility: Compliance to prototype of the product and physical measurement of gap and flamepath as per test report. Overpressure test as per Result #B2 for every sample.	
28	Manufacturer's responsibility	Conformity of the equipment to the applicable standards	Complies
29	Marking	(Ex Ib IIC T6 Gb) (Ex tb/te IIIC T85°C Db/Dc)	
30	Instructions	Instruction related to use, installation, maintenance, adjustment to be provided by the manufacturer along with the equipment.	

P. M.
26.8.21

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पत्ता: पी. ४, प्लॉट - ४२/०१५, डा. ४००००८, दिल्ली - ४२००१५, झारखण्ड, भारत

ज्वालन एवं उपकरण सुरक्षा / FLAMEPROOF & EQUIPMENT SAFETY

परीक्षण रिपोर्ट / TEST REPORT

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(Flameproof & Equipment Safety)

Equipment ID No.: 912B/20

ULR No.: TC596221000000403F

Code No.: FES/68(I)/20-21

Result #B: Tests in explosive mixtures: Tests for type of protection Ex 'd' as per IS/IEC 60079-1:2014.

Type Tests			
Clause No.	Description and relevant tests	Remarks	Results (Complies, P- Pass, NA-Not Applicable, F-Fail) References
1	Scope		Complies
2	Normative references		Complies
3	Terms and definitions		Complies
4	Level of protection (Equipment Protection Level, EPL)	Gas Group IIC, EPL-Gb/Db	Complies
5	Flameproof joints	Threaded & cylindrical/ Spigot joint	Complies
6	Sealed joints		NA
6.1	Cemented joints		Complies
6.1.2	Mechanical strength		NA
7	Operating rods		Complies
8	Supplementary requirements for shafts and bearings		NA
9	Tight transmitting parts		NA
10	Breathing and draining devices which form part of a flameproof enclosure		Complies
11	Fasteners and openings	450N/mm ²	Complies
12	Materials		Complies
13	Entries for flameproof enclosures		Complies
14	Verification and tests		Complies
15	Type Tests		Complies
15.1	General		Complies
15.2	Tests of ability of the enclosure to withstand pressure		Complies
15.2.1	General		P/As per Result #B1
15.2.2	Determination of Explosion Pressure (Reference Pressure)		P/As per Result #B2
15.2.3	Overpressure Test		P/As per Result #B2
15.3	Test for non-transmission of an internal ignition		Complies
15.3.1	General		NA
15.3.2	Electrical equipment of Groups I, IIA & IIB		P/As per Result #B3
15.3.3	Electrical equipment of Group IIC		NA
15.4	Tests of flameproof enclosures with breathing and draining devices		NA
15.4.1	General		NA
16	Routine tests	To be conducted by the manufacturer as per test Result #B2 for every sample.	NA
17	Switchgear for Group I		NA
18	Lamp holders and lamp caps		NA
19	Non-metallic enclosures and non-metallic parts of enclosures		NA
19.1	General		NA
19.2	Resistance to tracking and creepage distances on internal surfaces of the enclosure walls		NA
19.3	Requirements for type test		NA
19.4	Test of erosion by flame		NA
20	Marking	(Ex db IIC T6 Gb) (Ex db/nc IIC T85°C Db/Dc)	"DO NOT OPEN WHEN ENERGIZED"
20.2	Caution and warning markings		
21	Instruction	The manufacturer shall supply instruction manual of the equipment complying IS/IEC 60079-0:2017.	

26.2.25
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खनन एवं उपकरण सुरक्षा / FLAMEPROOF & EQUIPMENT SAFETY

परीक्षण रिपोर्ट / TEST REPORT

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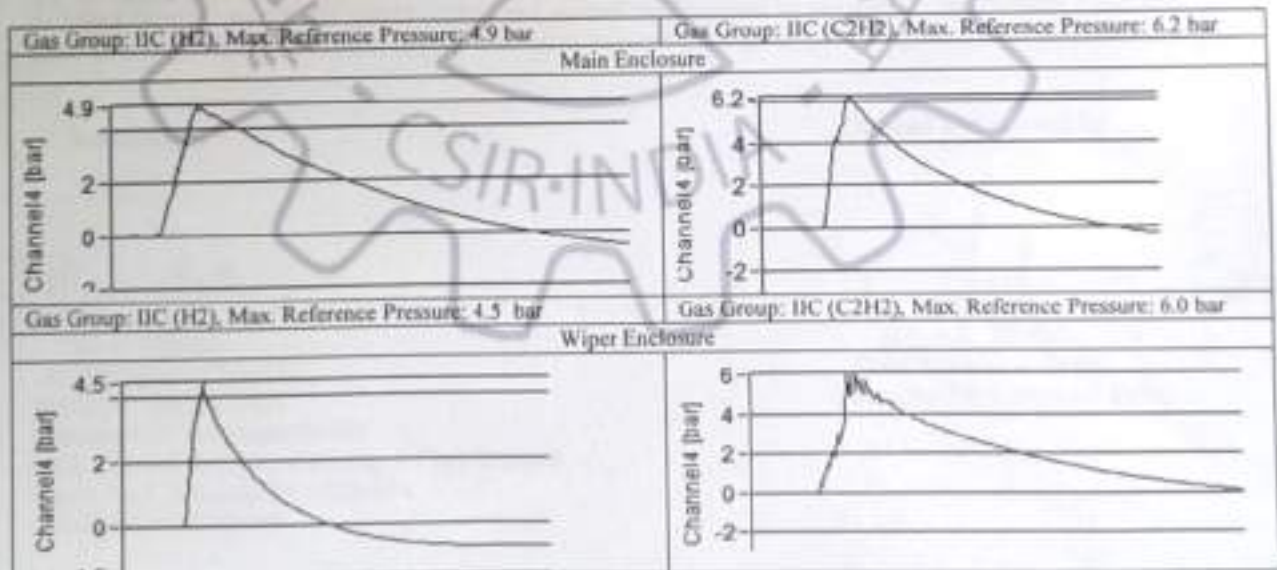
FORMAT NO.: (CIMPR: DQM: FLP02: F-01:REV-01)
(Flameproof & Equipment Safety)

Equipment ID No.: 912B/20 ULR No.: TC596221000000403F Code No.: FES/68(I)/20-21

Result # B1: Determination of Explosion pressure (Reference Pressure Test) *

Gas mixture: Test with 31% Hydrogen in air and 14% Acetylene in air.						
No. of tests: 5 nos. test with each enclosure. Test Condition: Enclosure fitted with component, and clause 15.2.2.2						
Preliminary Pressure (reference pressure) Test						
Ignition - spark position	Gauge - sensor Position	Test with 31% Hydrogen in air		Test with 14% Acetylene in air		Remark
		Test Ref. No.	Max. Pressure in Bar	Test Ref. No.	Max. Pressure in Bar	
Motor Enclosure						
Body	Body	PPM/912B2001	4.8	PPM/912B2006	5.8	Satisfactory
Body	Body	PPM/912B2002	4.7	PPM/912B2007	6.2	Satisfactory
Body	Body	PPM/912B2003	4.9	PPM/912B2008	5.7	Satisfactory
Body	Body	PPM/912B2004	4.4	PPM/912B2009	5.8	Satisfactory
Body	Body	PPM/912B2005	4.7	PPM/912B2010	5.6	Satisfactory
Terminal Enclosure						
Body	Body	PPM/912B2011	4.5	PPM/912B2016	5.7	Satisfactory
Body	Body	PPM/912B2012	4.5	PPM/912B2017	5.8	Satisfactory
Body	Body	PPM/912B2013	4.2	PPM/912B2018	5.9	Satisfactory
Body	Body	PPM/912B2014	4.1	PPM/912B2019	6.0	Satisfactory
Body	Body	PPM/912B2015	4.0	PPM/912B2020	5.8	Satisfactory

*Results shown for the pressure time curve (enclosed) are the highest recorded value obtained in the test.



R.O.
26.8.21

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खनिक एवं उपकरण सुरक्षा (Flameproof & Equipment Safety)

परीक्षण रिपोर्ट / TEST REPORT

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FORMAT NO.: (CIMFR: DQM: FLP02: F-01:REV-01)

(Flameproof & Equipment Safety)

Equipment ID No.: 912B/20

ULR No.: TC596221000000403F

Code No.: FES/68(I)/20-21

Result #B2: Overpressure Test (Static Method): Hydraulic pressure test is conducted as per Cl. 15.2.3.2 of IS/IEC 60079-1: 2014).

Enclosure/Cat No:	Test reference no:	Over pressure (kg/cm ²) maintained for 10 sec.	Remark
Motor Enclosure	OPM/912B2021	9 kg/cm ²	No damage or deformation
Terminal Enclosure	OPM/912B2022	9 kg/cm ²	No damage or deformation

Result #B3: Test for Non transmission of internal ignition:

Gas Mixture: Test with 28% Hydrogen and 7.5% Acetylene in air for Gas Gr. IIC,

No. of Tests: 5 nos. tests with single enclosure for each gas

Test Condition: as per clause 13.3.3 Table 9 (No pre compression required)

Enclosure	Test Ref. Nos.	Gas Group	Gas Mixture % in Air	No. of Test	Result
Motor Enclosure	EIT/912B2023 to EIT/912B2027	IIC	28 % Hydrogen	Five	Pass
	EIT/912B2028 to EIT/912B2032		7.5 % Acetylene		
Terminal Enclosure	EIT/912B2033 to EIT/912B2037	IIC	28 % Hydrogen	Five	Pass
	EIT/912B2038 to EIT/912B2042		7.5 % Acetylene		

Conclusion: The Flameproof cum Weatherproof Enclosure for Pan & Tilt head, Designated by Cat. No.: KK/PT/A/101-IIC & Model No.: KPT98-IIC in cast aluminium alloy LM-6 construction, meets the test requirements for flameproofness as per IS/IEC 60079-1:2014 and general requirements as per IS/IEC 60079-0:2017 and dust ignition protection as per IS/IEC 60079-31: 2013 is deemed to be suitable for use in Gas Group: IIC, EPL Gb & Db atmosphere.

Reported By

Checked & Approved By

R. K. Mishra
26.8.21.
(R. K. Mishra)

Sr. Technical Officer (I)

Dated: 26th August, 2021

Flameproof & Equipment Safety

CSIR - Central Institute of Mining & Fuel Research

Barwa Road, DHANBAD - 826 015,

(JHARKHAND), INDIA

(Dr. A.K. SINGH)

Chief Scientist & HORG

Flameproof & Equipment Safety



TYPE EXAMINATION CERTIFICATE

FORMAT NO.: (CIMFR: DQM: FLP02: F-01: REV-01)
(Flameproof & Equipment Safety)

Test Certificate No.: CMF 21 INEx 0335
ULR No.: TC596221000000403F

Dated: 26/08/2021
(Issue No. 0)

- | | | |
|-----------------------------|---|---|
| 1. Applicant | : | M/S. KESHKAMAT & COMPANY
9/129, ADARSH NAGAR, PRABHADEVI,
MUMBAI - 400 038. |
| 2. Manufacturer | : | Same as above |
| 3. Equipment | : | Flameproof cum Weatherproof Enclosure for Pan & Tilt head |
| 4. Designated by | : | Cat. No.: KK/PT/A/101-IIC & Model No.: KPT98-IIC |
| 5. Type of protection | : | Ex db for Gas Group: IIC, EPL Gb & Db. |
| 6. Marking | : | Ex db IIC T6 Gb Ex tbc IIC T85° Db |
| 7. Material of construction | : | Cast aluminium alloy LM-6 |

This certificate is issued as verification that a sample/documentation was assessed and found to comply with the IS/IEC Standard listed below. This certificate relates to only design and construction of the equipment. It does not cover requirement related to manufacturing process and usage.


8. Standard: The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IS/IEC 60079-0:2017	Explosive atmospheres - Part 0: General requirements.
IS/IEC 60079-1:2014	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d".
IS/IEC 60079-31:2013	Explosive atmospheres - Part 31: Equipment Dust ignition protection by enclosure "t".

This type test certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the standards listed above.

9. Degree of ingress protection: IP-65 as per IS IEC 60529:2001 (Reaffirmed 2014)

10. Test & Assessment Reports: A sample(s) & documents of the equipment listed have successfully met the examination and test requirements as recorded in IN/CIMFR/TR21/R/1654 Dated: 31 August, 2021.


26.8.21.



सीएसआईआर - केंद्रीय खनन एवं ईंधन अनुसंधान संस्थान
CSIR - CENTRAL INSTITUTE OF MINING AND FUEL RESEARCH
 (सामाजिक तथा औद्योगिक अनुसंधान परिषद)
(COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH)
 सिविल रोड, धनबाद, झारखण्ड - 826015, भारत
 BAIWA ROAD, DHANBAD, JHARKHAND - 826015, INDIA
 ज्वालामुह एवं उपकरण सुरक्षा, **FLAME PROOF & EQUIPMENT SAFETY**
 परीक्षण प्रमाण पत्र **TEST CERTIFICATE**



NABL Certificate No.
TC-5962

TYPE EXAMINATION CERTIFICATE

Test Certificate No.: CMF 21 INEx 0335
 ULR No.: TC596221000000403F

Dated: 26/08/2021
 (Issue No. 0)

SCHEDULE

11. Description of equipment: Flameproof cum Weatherproof enclosure for Pan & Tilt head Cat. No.: KK/PT/A/101-IIC & Model No.: KPT98-IIC cast aluminium alloy LM6 construction, Electrical Rating : 0.25HP/800mA/250W (2x125W), 240V AC 50Hz

Description/ dimension	Volume (cc)		Min. Wall Thickness (mm)	Dimension (mm)	Nos. & Size of Bolts/Fasteners (mm)
	Gross	Net			
Motor Enclosure	16000	1800	10	Ø305x314	8M8x25mm
Terminal Enclosure	300	200			

12. Drawing and documents:

Sl. No.	Drg. No.	Title	Rev.	Sheet	Date
1.	PT/101/A-IIC	Flameproof Weatherproof Pan & Tilt head	02	1 of 4 to 4 of 4	17/01/2020

13. Routine Testing: A routine overpressure test in accordance with IS IEC 60079-1:2014 clause 16 shall be carried out at a pressure of 9 Kg/cm² for a period of at least 10 seconds and test results must be recorded. The overpressure test shall be considered satisfactory, if no permanent deformation or damage invalidating type of protection is observed. The joints shall in no place have been permanently enlarged and no leakage through the walls of the enclosure is observed.

14. Specific conditions of use: Not Applicable

15. Details of certificate changes (for issue 1 and above): Not Applicable.

16. Additional Information: Not Applicable.

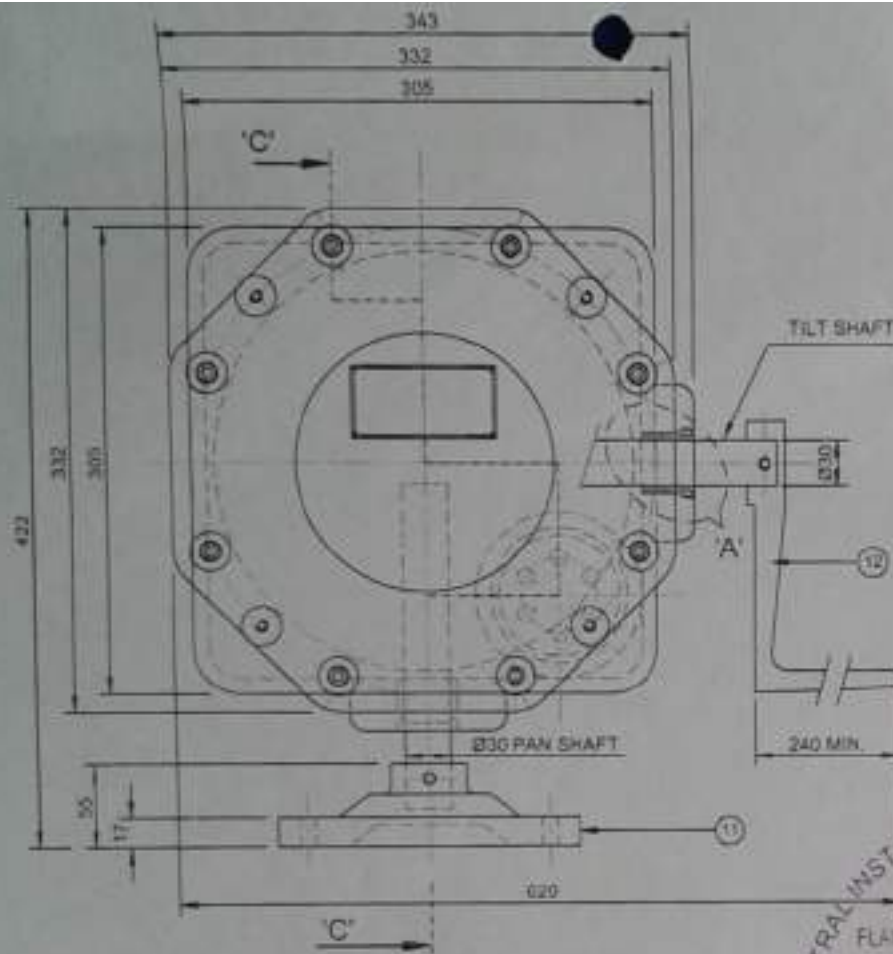
17. History: The above equipment has been earlier tested and certified by Karandikar vide test report no.: KLPL/Ex/R/12-012 Dated: 09/05/2012 as per IS/IEC 60079-1: 2007. This certificate (CMF 21 INEx 0335, Issue No. 0, Dated: 26/08/2021) supersedes the above mentioned test reports.

Approved & issued on behalf of CSIR-CIMFR

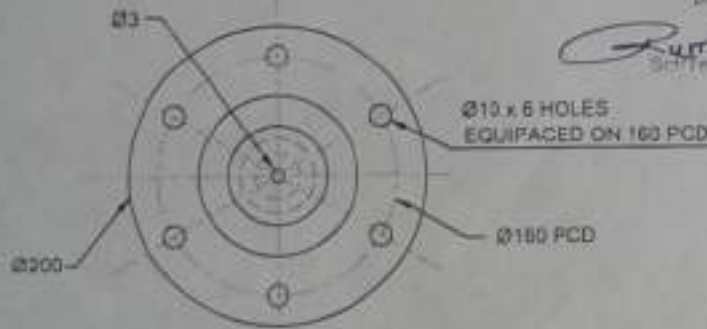
(Dr. A. K. Singh)
 Chief Scientist & HORG

This Institute reserves the right to review, amend or withdraw this Type Examination certificate at any time if considered necessary in the interest of safety.

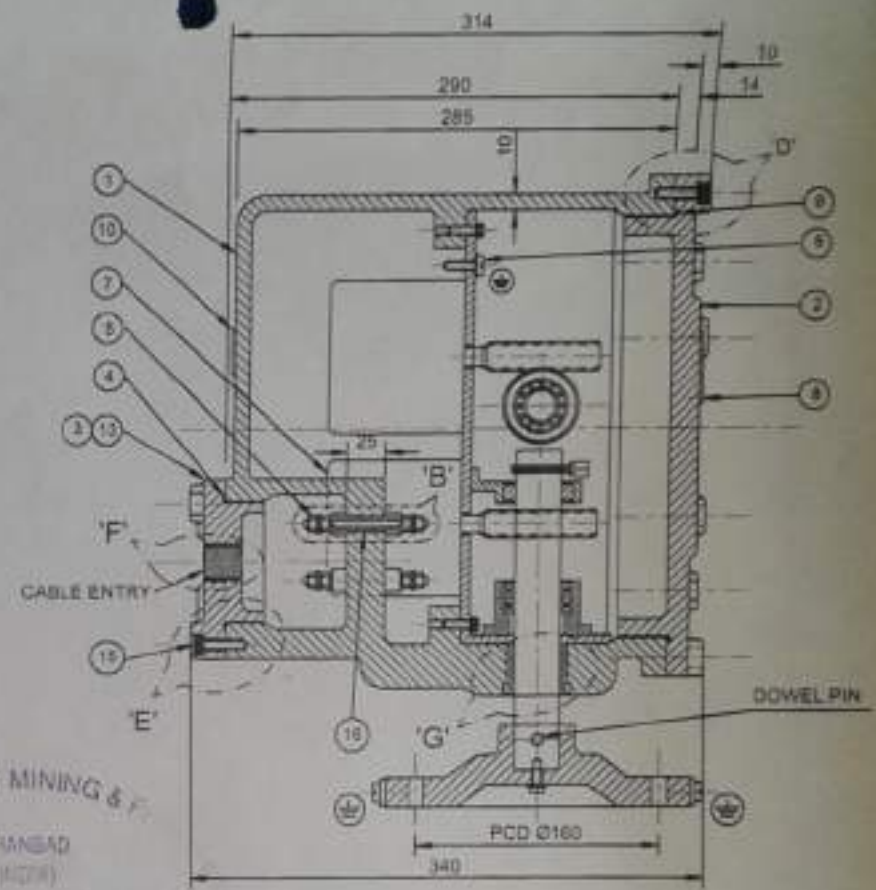
26.8.21



FRONT VIEW



BOTTOM VIEW



SECTION C - C

CENTRAL INSTITUTE OF MINING & FUEL TECHNOLOGY
 DRAWN BY (MOR)
 FLAME PROOF
 CENTR
 No. B/NOV FR/1R 211 R/1694
 DATED 31/8/24

Ramishra
 Sr. Testing C.

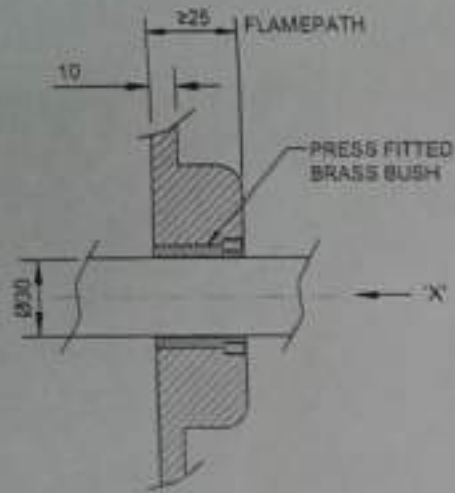
ALL DIMENSIONS ARE IN mm.
 TOLERANCE IN OVERALL DIMENSIONS +1-10mm.
 EXCEPT FOR FLAME PATH & GAP

REV. NO.	REV. DATE	CHANGE	APPC
2	17.01.2023	AS PER AMENDED STANDARD	
1	04.11.2015	REVISED ORIGINAL DRAWING	
0	10.08.2007	ORIGINAL	

	DOC DA	DM MM	SCALE N.T.S.
DRAWN <i>Suman</i>	CHECKED <i>[Signature]</i>	ENGINEER <i>[Signature]</i>	

Keshkamat & Company
 MUMBAI - 400 030

TITLE	FLAMEPROOF / WEATHERPROOF PAN & TILT HEAD
MODEL	KPT98-IIC
AS PER	IS/IEC: 60079-1 (2014) IS/IEC: 60079-0 (2011) IS/IEC: 60529 (2001)
CAT. NO.	KK/PT/A/101 - IIC
DRG. NO.	PT/101/A - IIC
SHEET	1 OF 4
SIZE	B

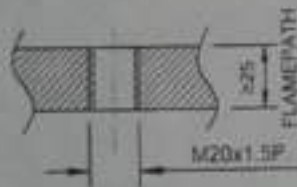


DETAIL AT 'A'



DETAIL AT 'G'

TYPICAL 'X' & 'M' VALUES
 $k = 0.08$
 $m = 0.09$

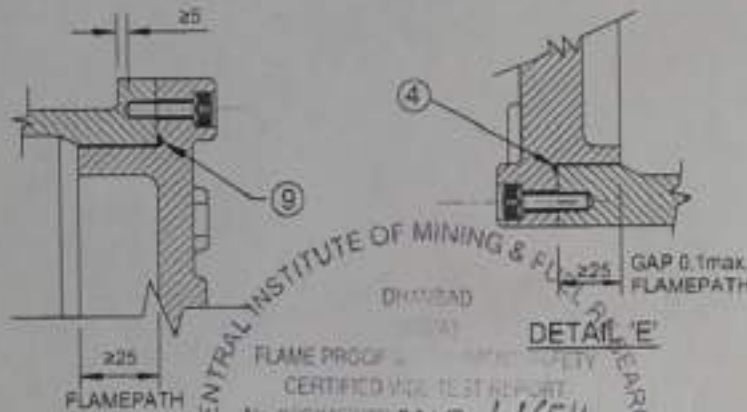


DETAIL AT 'F'

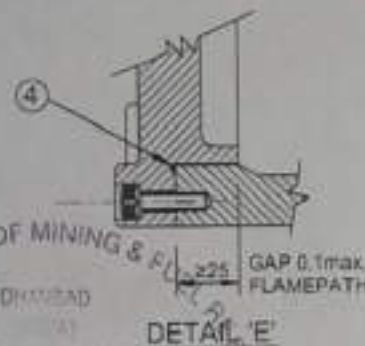
GRUB SCREW M5x8
 FOR BUSH LOCKING



VIEW FROM 'X'

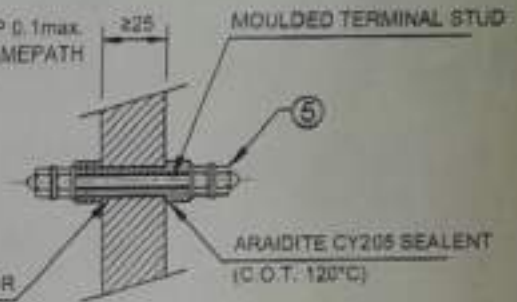


DETAIL 'D'



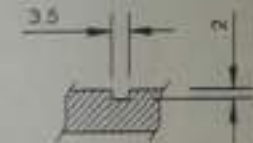
DETAIL 'E'

GAP 0.1 max.
 FLAMEPATH

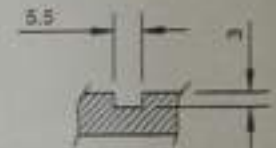


DETAIL AT 'B'

ID OF WALL $\varnothing 11 +0.05 / -0.00$
 OD OF BACKLITE INSULATOR
 $\varnothing 11 +0.00 / -0.05$
 DIA. CLEARANCE OF 0.1 mm.



GROOVE DETAILS FOR $\varnothing 3$ mm GASKET



GROOVE DETAILS FOR $\varnothing 5$ mm GASKET

CENTRAL INSTITUTE OF MINING & FUEL TECHNOLOGY
 DIVISION OF MINING SAFETY RESEARCH
 FLAME PROOF PAN & TILT HEAD
 CERTIFIED INCL. TEST REPORT
 No. INCM/FR/TH/331R/1654
 DATED 31/8/21
 Rameshwar
 ScVT Testing Officer

ALL DIMENSIONS ARE IN mm.
 TOLERANCE IN OVERALL DIMENSIONS ± 0.10 mm,
 EXCEPT FOR FLAME PATH & GAP

TITLE: FLAMEPROOF / WEATHERPROOF
 PAN & TILT HEAD

MODEL: KPT98-IIC
 AS PER IS/IEC: 60079-1 (2014)
 IS/IEC: 60079-0 (2011)
 IS/IEC: 60529 (2001)

CAT NO. KK/PT/A/101 - IIC

DRG. NO. PT/101/A - IIC

REV. NO.	REV. DATE	CHANGE	APPD.
2	17.01.2020	AS PER AMENDED STANDARD	
1	04.11.2010	REVISED ORIGINAL DRAWING	
0	10.08.2007	ORIGINAL	

DOC.	DIM.	SCALE
GA	mm	N.T.S.

DRAWN: *Sanjay* CHECKED: *B* ENGINEER: *Sudhakar*

Keshkamat & Company
 MUMBAI - 400 030

SHEET
 2 OF 4
 SIZE
 B

NOTE DETAILS -

FLAMEPROOF, WEATHERPROOF ENCLOSURE FOR PAN & TILT HEAD ASSEMBLY FOR OCTV IS MADE AS PER SPECIFICATIONS GIVEN BELOW

- MATERIAL OF CONSTRUCTION - IS LMS THE COMBINATION IS AS GIVEN BELOW
 COPPER = 0.1% MAX, MAGNESIUM = 0.1%, IRON = 0.5%,
 ZINC = 0.1% MAX, LEAD = 0.1% MAX, MAGANESE = 0.5% MAX,
 NICKEL = 0.1% MAX, SILICON = 10 TO 13% BY DIFFERENCE MAX.
 ALTERNATELY THE CONSTRUCTION MATERIAL CAN BE SS 304, SS 316, MAGNESIUM CONTENT NOT MORE THAN 8% IN TOTAL OF MAGNESIUM AND TITANIUM BY MASS.
 SURFACE FINISH CANNOT BE MORE THAN 6.3um AS PER ISO-418.
- 25mm IS MAINTAINED AS FLAME PATH ALONG THE SPIGOT JOINTS AND THE CLEARANCE BETWEEN THE SPIGOT PORTION (ID OF THE BODY AND OD OF THE COVER) IS MAINTAINED AS 0.1mm.
 NEOPRENE RUBBER GASKET IS PROVIDED ON THE FLANGE PORTIONS FOR WEATHERPROOFING. THESE ARE ONLY SUPPLEMENT AND DO NOT FORM PART OF FLAMEPROOF JOINTS. ANY DISPLACEMENT / CHANGE OF THE GASKET WILL NOT HAMPER FLAMEPROOFNESS OF THE EQUIPMENT.
- THE MATERIAL THICKNESS AT THE BOTTOM AND AROUND THE TAPPED HOLES AND BUND HOLES IS 3mm.
- THE ALLEN / HEX HEAD SCREWS / BOLTS USED HAVE YIELD STRENGTH 240 N/mm² AS PER ISO 4762.
- NAME PLATE & WARNING PLATES MADE OF S.S. MATERIAL ARE PROVIDED AND ARE FIXED WITH HAMMER DRIVEN RIVETS.
- WALL THICKNESS IS MAINTAINED = 10mm MIN.
- 1 NO - CABLE ENTRY PORTS (M19 x 1.5 PITCH) ARE PROVIDED FOR CABLES AS PER ISO 985-1 & ISO 985-3.
- HYDRO TEST PROCEDURE DETAILS
 STATIC PRESSURE = 10 Kg/cm² OR 1.5 TIMES TEST PRESSURE, WHICHEVER IS GREATER
- INGRESS PROTECTION = IP - 66
- VOLUME AND DIMENSION DETAILS
 1) GROSS VOLUME = 19000 CC.
 2) EFFECTIVE VOLUME = 2000 CC.
 3) WEIGHT = 24 Kg.
- TEMPERATURE CLASS = TB (-20° C TO +40° C) THE SURFACE TEMPERATURE OF THE EQUIPMENT WILL NOT GO ABOVE 85° C
- TESTING BOSS IS PROVIDED NEAR SHAFT ENTRY.
- THICKNESS AROUND ALL THREADED HOLES / BUND HOLES FOR BOLTS = 5 mm.
- DIMETRICAL CLEARANCE BETWEEN BUSH AND SHAFT IS MAINTAINED AT 0.1mm AND IT REMAINS SAME AFTER THE COMPLETION OF THE ASSEMBLY.
- EARTHING OF THE MACHIN IS DONE AT INSIDE AND OUTSIDE AS SHOWN, BY USING M8 x 10 CHEESE HEAD SCREWS WHICH HAS THREADED AND FIRM NON CORROSIVE BONDING. EARTHING CONDUCTOR USED SHALL BE 4 mm² EXTERNALLY.
- MAXIMUM WIDTH / GAP OF THE FLANGED PORTION OF THE SPIGOTTED JOINT = 0.5 mm
- THREADING ON THE BASE PLATE FOR FIXING THE M10 SCREWS.
- NEOPRENE GASKET @ 5mm THICKNESS IS USED FOR IP PROTECTION OF IP: 66 ON THE MAIN ENCLOSURE WHERE THE MOTOR AND OTHER PARTS ARE INSTALLED.
 THE OTHER NEOPRENE GASKET IS FOR THE SECOND ENCLOSURE OR TERMINAL ENCLOSURE OF Ø3 mm THICKNESS & Ø95mm FOR INGRESS PROTECTION IP: 65.
 THE GROOVE FOR GASKET IS MADE ON COVER AS SHOWN AND MADE TO THE DIMENSIONS OF GASKET, SO THAT IT IS EVENLY COMPRESSED BETWEEN COVER AND BODY. THIS WILL NOT GET LOOSEN AND LOSE ITS PROPERTIES. "O" RING WILL BE RETAINED WITH COVER.
- DEPTH OF THREADS AND BOLT ENGAGEMENT IS MAINTAINED TO 30mm.
- PITCH BETWEEN TWO CABLE GLAND ENTRY = 55 mm AS SHOWN IN THE DRAWING.
- TOLERANCE FOR ALL THREADS - FIT TOLERANCE BK CABLE ENTRY SIZE M20 x 1.5P AS PER ISO 985-1 & ISO 985-3
- ELECTRICAL RATING : 110 VAC / 240 VAC, 350 WATTS FOR MAIN ENCLOSURE.

CENTRAL INSTITUTE OF MINING & FUEL RESEARCH
 DHANBAD
 FLAME PROOF & EQUIPMENT SAFETY
 CERTIFIED VULNERABILITY TEST REPORT
 DATED 21/11/2020
 21/11/2020
 3/18/21
 HOS


BILL OF MATERIAL

SER. NO.	DESCRIPTION	MATERIAL	QTY.	REMARKS
1	ENCLOSURE BODY	LMS	1	
2	ENCLOSURE COVER	LMS	1	
3	TERMINAL ENCLOSURE	LMS	1	
4	"O" RING / CORD GASKET	NEOPRENE	1	Ø3
5	TERMINAL STUDS FOR CONNECTION	BRASS / BAKKELITE	8	
6	CHEESE HEAD SCREW WITH SPRING WASHERS FOR EARTHING	BRASS	3	M8 x 10 L
7	MOTOR WITH GEAR BOX ASSEMBLY (240V)	240V AC	2	
8	NAME PLATE	S.S.	1	
9	GASKET - NEOPRENE (MAIN COVER)	NEOPRENE	1	Ø5mm
10	WARNING PLATE	S.S.	1	
11	MOUNTING BASE (Ø250mm)	C.I.	1	
12	PLATFORM	LMS & CI	1	240 x 290 x 15
13	COVER FOR TERMINAL ENCLOSURE			
14	HARDWARE USED FOR ENCLOSURE			
	ALLEN / HEX HEAD SCREW / BOLTS WITH SPRING WASHER	S.S.	12	
15	HARDWARE USED INSIDE THE ENCLOSURE			
	ALLEN CAP BOLTS FOR REMOVING REAR COVER	S.S.	4	M8 x 50 LG
	ALLEN HEX HD SCREW	S.S.	6	M8 x 30 LG
	ALLEN HEX HD SCREW	S.S.	2	M8 x 20 LG
	ALLEN HEX HD SCREW	S.S.	2	M5 x 10 LG
	ALLEN HEX HD SCREW	S.S.	4	M8 x 25 LG
	ALLEN HEX HD SCREW	S.S.	4	M8 x 25 LG
	ALLEN HEX HD SCREW	S.S.	12	M8 x 15 LG
	RIVET 1/8" HAMMER DRIVEN	ALU	8	
16	BAKELLITE BUSH Ø11mm	BAKELLITE	8	SEE DATASHT

ALL DIMENSIONS ARE IN mm.
 TOLERANCE IN OVERALL DIMENSIONS +/- 10mm
 EXCEPT FOR FLAME PATH & GAP

2	17.01.2020	AS PER AMENDED STANDARD		
1	04.11.2016	REVISED ORIGINAL DRAWING		
0	10.08.2007	ORIGINAL		
REV. NO.	REV. DATE	CHANGE	APPRO.	
		DOC. GA	DIM. mm	SCALE N.T.S
DRAWN <i>Devaran</i>		CHECKED <i>[Signature]</i>	ENGINEER <i>[Signature]</i>	
Keshkamat & Company MUMBAI - 400 030				

TITLE: FLAMEPROOF / WEATHERPROOF PAN & TILT HEAD	
MODEL:	KPT98-IIC
AS PER:	IS/IEC: 60079-1 (2014) IS/IEC: 60079-0 (2011) IS/IEC: 60529 (2001)
CAT. NO.	KK/PT/A/101 - IIC
DRG. NO.	PT/101/A - IIC
SHEET 3 OF 4	SIZE B

		KESHKAMAT & COMPANY W/129, ADARSH NAGAR, PRABHADEVI, MUMBAI-400 030, INDIA	
TYPE : FLAMEPROOF CUM WEATHERPROOF PAN & TILT HEAD "Ex db II C T6 Gb"		MODEL : KPT98-IIC	
CAT NO : KK/PT/A/101 - IIC		SR. NO :	
DRG. NO : PT/101/A - IIC		AS PER IS/IEC: 60079-1 (2014) IS/IEC: 60079-0 (2011) IS/IEC: 60529 (2001)	
CIMFR CERT. NO.			
ISOLATE SUPPLY BEFORE OPENING			

50

100

NAME PLATE
(ITEM No. 8)

	
WARNING	
ISOLATE SUPPLY BEFORE OPENING	

20

40

WARNING PLATE


REVISION (ITEM No. 10)

CENTRAL INSTITUTE OF MINING & FUEL RESEARCH
DURGAMCHAOI
FLAME PROOF & EXPLOSION SAFETY
CERTIFIED VIDE TEST REPORT
NO. IN-CIMFR/PT/18/1654
DATED 31/08/21
R. Umishra
Sr. Testing Officer

ALL DIMENSIONS ARE IN mm.
TOLERANCE IN OVERALL DIMENSIONS +/-10mm.
EXCEPT FOR FLAME PATH & GAP

REV. NO.	REV. DATE	CHANGE	APPD.
2	17.01.2020	AS PER AMENDED STANDARD	
1	04.11.2010	REVISED ORIGINAL DRAWING	
0	10.08.2007	ORIGINAL	

	DOC. GA	DIM mm	SCALE N.T.S.
DRAWN <i>Samson</i>	CHECKED <i>KS</i>	ENGINEER <i>Shankar</i>	

 **Keshkamat & Company**
MUMBAI - 400 030

TITLE : FLAMEPROOF / WEATHERPROOF PAN & TILT HEAD	
MODEL : KPT98-IIC	
AS PER: IS/IEC: 60079-1 (2014) IS/IEC: 60079-0 (2011) IS/IEC: 60529 (2001)	
CAT NO. KK/PT/A/101 - IIC	SHEET 4 OF 4
DRG. NO. PT/101/A - IIC	SIZE A