

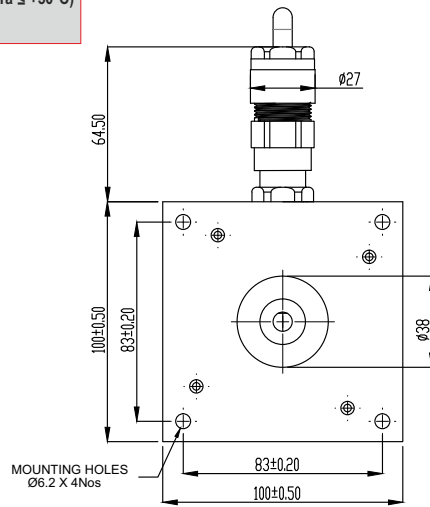
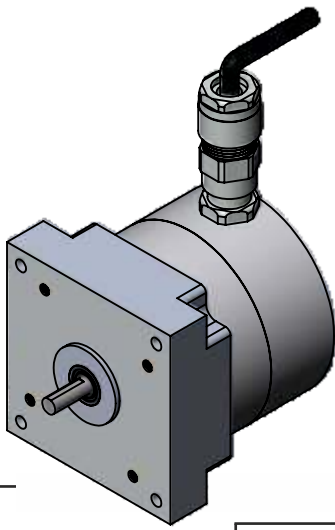
**SPECIFICATION SHEET**  
**Bholanath**

**STEPPER MOTOR**  
**BH60 SH 121 - 4004AF-FLP**  
**HIGH TORQUE HYBRID**

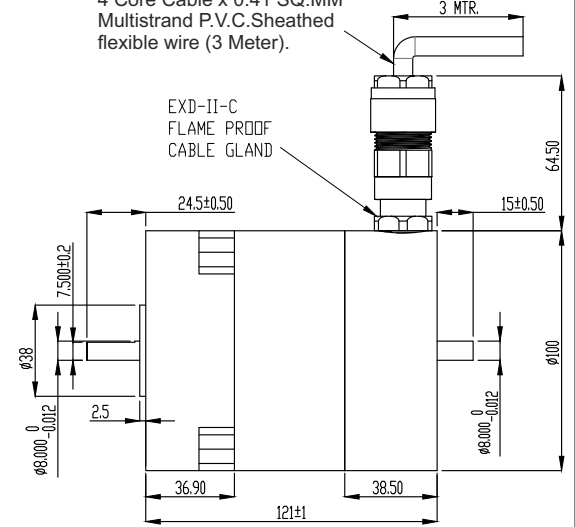


**Flame Proof Standard:-**

CLASS :- 1, ZONE :- 1, Ex db (IIA/IIIB/IIIC) T6 Gb (-20°C ≤ Ta ≤ +50°C)  
INGRESS PROTECTION:- IP 64



4 Core Cable x 0.41 SQ.MM  
Multistrand P.V.C.Sheathed  
flexible wire (3 Meter).



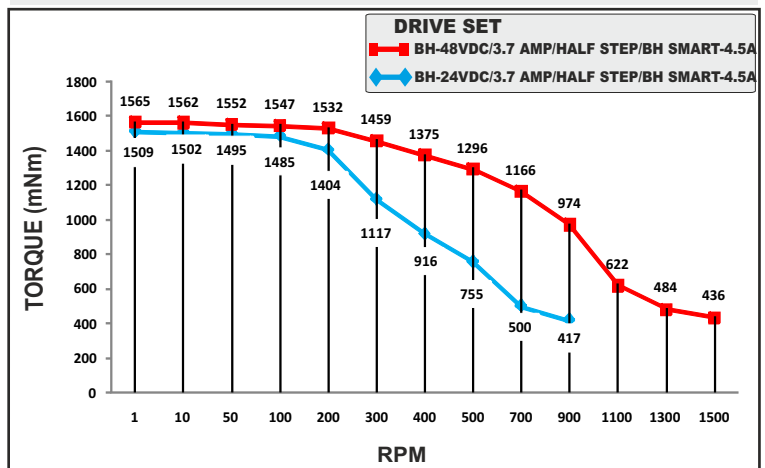
**TECHNICAL DATA**

**CHARACTERISTICS**

- Step Angle - 1.8°
- Step Angle Accuracy - ± 3 Arc Minute
- Insulation Class - H
- Protection Class - DIN 40050 - IP 64
- Ambient Temperature - 20°C + 50°C
- Temperature Rise - 80°C Max.  
( Rated Current Phase 2 ON )
- Insulation Resistance  
100 M Ohms Min.500 VDC
- Dielectric Strength  
500 VAC For One Minute
- Shaft Radial Play  
0.02 Max. Play ( 450 G Load )
- Shaft Axial Play  
0.08 Max. Play ( 450 G Load )
- Max.Radial Force  
28 N ( 20MM From Front Flange )
- Max.Axial Force  
10 N

**SPECIFICATION BH60SH121 - 4004 AF-FLP**

MODEL	Bipolar
1 Rated Voltage V	2.76
2 Current / Phase A	4
3 Resistance / Phase ± 10% Ω	0.69
4 Inductance / Phase ± 20% mH	2.65
5 Holding Torque Nm	3.1
6 Rotor Inertia G-CM <sup>2</sup>	840
7 Weight KG.	3.5 KG ± 0.1
8 No of Lead N <sup>0</sup>	4
9 Operating Voltage VDC	24 - 48



**STEPPER MOTOR -BH60SH121-4004AF-FLP**



**Bholanath Precision Engineering Pvt.Ltd.**

11,Kembros Ind.Estate , Sonapur Lane , Bhandup (W),Mumbai - 400078.  
Telefax/Phone : 25662856/25664338/67993260 Email : support@bholanath.in  
Mobile No : 9920903825/9821671733/9930514603/9819515543/9323166582.

*P.T.O For Flame Proof Certificate.*



working for a safer tomorrow

# Karandikar Laboratories



F 08 CE Rev. 02

- 1) **Ex EQUIPMENT TYPE EXAMINATION REPORT**
- 2) TE Report Number: **KLPL/Ex/21-127X Issue no.00** Dated: **18-12-2021**
- 3) Ex Equipment: **Flameproof hybrid stepper motor**  
**Model: FLP-NEMA 24**
- 4) Manufacturer: **Bholanath Precision Engg.Pvt.Ltd**  
Plot No.1, Gut No.203, Dahagaon Wada Road,  
Taluka-Shahapur, Dist-Thane-421302  
Maharashtra, INDIA
- 5) This equipment and any acceptable variation thereto are specified in the schedule to this report and the documents therein referred to
- 6) Karandikar Laboratories Pvt. Ltd. reports that this equipment has been found to comply with requirements of the following standards relating to the design and construction of equipment for explosive gas/dust atmospheres as applicable.
- 7) This TE Report was issued as verification that a sample, was assessed, tested and found to comply with the IS / IEC standards listed below.  
**IS/IEC 60079-0: 2017 and IS/IEC 60079-1: 2014.**
- 8) The Examination and Test results are recorded in KLPL's confidential  
**Report No.: KLPL/Ex/BPE-21/004 Dated: 18-12-2021**
- 9) The sign X if placed after the TE report number; it indicates that the equipment is subject to specific conditions of use specified in the schedule to this TE Report.
- 10) This Report does not indicate compliance with electrical safety and performance requirements other than those expressly included in the above listed standards.
- 11) The marking of the Equipment shall include the following:  
**Ex db IIC T6 Gb (-20 °C ≤ Ta ≤ +50 °C)**

Page 1 of 4



*A. V. Karandikar*  
**Ajit Karandikar**  
CEO

This certificate may only be reproduced in its entirety, without any change, schedule included and is subject to Karandikar Laboratories general terms & conditions

**Karandikar Laboratories Pvt. Ltd.**

Laboratory : Gat No. 142, Boisar Chilhar Road, Opp. Union Park, At Betegaon, Boisar (E) - 401501, Dist - Palghar Tel. : 02525-284 931/989

Head Office : B-101, Ansa Indl. Estate, Saki Vihar Road, Sakinaka, Andheri (E), Mumbai-400072. Tel. : 022-28471395 / 97 / 98 / 28470126

Email : sales@karandikarlab.com Website : www.karandikarlab.com

In association with



helping to make the world safer





working for a safer tomorrow

TE Report No.: KLPL/Ex/21-127X Issue No.00  
Dated: 18-12-2021



**SCHEDULE**

F 08 CE Rev. 02

**12) Details of Type Examination Reports Issued: -**

TE Report No.	Issue No.	Report No.	Date	Reason for Issue
KLPL/Ex/21-127X	00	KLPL/Ex/BPE/21-004	18-12-2021	Original issue

**13) Description of equipment**

The motor is a Flameproof hybrid stepper motor, Model: FLP-NEMA 24. Motor enclosure is constructed from cast aluminium alloy of grade ADC12, top cover & bottom cover are constructed from aluminium alloy of grade AL-6063T6. The enclosure and top cover forms spigot joint. The enclosure and bottom cover forms spigot joint. Top cover and shaft forms cylindrical joint. Bottom cover and shaft forms cylindrical joint. Top cover & bottom cover are secured on enclosure with 04 nos. stainless steel pan head screw type Z of size M4X0.5PX75L-6g of class A2-70, minimum yield stress 450MPa as per ISO 7045. The motor is provided with Ex d IIC & IP66 certified stainless steel double compression cable gland. The cable gland, Type: 501/453 RAC is approved against PESO approval no A/P/HQ/TN/104/5793 (P450038/3) dated 29/07/2019 and IECEx certificate No. IECEx CML 19.0045X, Issue No:1, Date of Issue: 2021-09-28. The internal net volume of the motor is 40 cm<sup>3</sup> (Approx).

The motor complies the degree of protection IP65 as per IS/IEC 60034-5:2000.

**Pre-certified device details**

Item	Manufacturer/Type	Certificate No.	PESO approval	Standard	Ex code
Cable gland, Type: 501/453 RAC	Hawke International, Oxford Street West, Ashton under Lyne OL7 0NA, United Kingdom	IECEx certificate No. IECEx CML 19.0045X, Issue No:1, Date of Issue: 2021-09-28	PESO approval no: A/P/HQ/TN/104/5793 (P450038/3) Dated 29/07/2019	IS/IEC 60079-0: 2017, IS/IEC 60079-1: 2014.	Ex db IIC Gb





working for a safer tomorrow

TE Report No.: KLPL/Ex/21-127X Issue No.00  
Dated: 18-12-2021



### SCHEDULE

F 08 CE Rev. 02

**Cable entries:**

The motor is provided with one threaded entry of size M20X1.5P-6H having threaded axial length of 15 mm. The cable entry port when mated with Ex db certified cable gland will form a flamepath meeting the requirements of the standard.

**Earthing:**

One external earth point of the size M4 is provided with spring and tab washers as specified in the approved drawing. The terminals are suited for a connection of a 4 mm<sup>2</sup> conductor.

**14) Model Designation:**

Model No.	Product	Rating
FLP-NEMA 24	Flameproof hybrid stepper motor	48 Vd.c, I <sub>LC</sub> = 1 A & I <sub>pk</sub> = 2.80 A Maximum

**15) Drawings & Documents**

Drawing Number	Sheet Nos.	Issue & Rev.	Date	Title
NEMA24-FLP-1658-1	1 OF 2	0	06-11-2020	FLAMEPROOF HYBRID STEPPER. MODEL: FLP-NEMA24
NEMA-24-FLP-1658-2	2 OF 2	0	06-11-2020	FLAMEPROOF HYBRID STEPPER. MODEL: FLP-NEMA24

*Drawings listed above are finally accepted as accurately representing the product for which this evaluation report has been prepared. These drawings provide necessary information as required by the above referred standards.*

**16) Temperature Class:**

Considering the maximum ambient of +50 °C, the requested temperature class of "T6" is acceptable.

**17) Electrical Rating:**

48 Vd.c, I<sub>LC</sub> = 1 A & I<sub>pk</sub> = 2.80 A Maximum







working for a safer tomorrow

TE Report No.: KLPL/Ex/21-127X Issue No.00  
Dated: 18-12-2021



### SCHEDULE

F 08 CE Rev. 02

#### 18) Specific conditions of use:

1. The manufacturer has maintained larger length and more stringent gaps of flameproof joints than required by the standard. The user must refer to manufacturer before carrying out any repair or refurbishment to the equipment. The flame path length, gap and threads observed in approved drawing must never be modified.
2. The fastening screws for top cover & bottom cover with enclosure of spigot joint shall be stainless steel pan head screw of size M3X0.5PX75L-6g, property class A2-70 and minimum yield stress of 450MPa as per ISO 7045.
3. The motor should not be run without SMPS supply of 48 Vd.c
4. For pre-certified Ex device Cable gland, Type: 501/453 RAC: IECEx CML 19.0045X
  - a. All glands for use with braided cables are only suitable for fixed installations, the cable for which must be effectively clamped to prevent pulling and twisting as detailed below: "Cable glands may be fitted with an optional external clamp or a second accessory option type Hawke Gland Mounted Clamp (GMC)".

#### 19) Routine test:

- The motor Flameproof hybrid stepper motor, Model: FLP-NEMA 23 has not been subjected to 4 times overpressure test and hence manufacturer needs to conduct routine overpressure test at **4.50 bar** on each enclosure for period of 10 seconds in accordance with clause 16.1.2 of IS / IEC 60079 -1: 2014.

#### 20) Additional details:

BIS LIMS QR Code: (Only for BIS report)	100000141392
Date of receipt of sample:	14-06-2018
Tests started on:	12-12-2019
Tests completed on:	20-09-2021

END OF DOCUMENT



Page 4 of 4

This certificate may only be reproduced in its entirety, without any change, schedule included and is subject to Karandikar Laboratories general terms & conditions

**Karandikar Laboratories Pvt. Ltd.**

Email : sales@karandikarlab.com Website : www.karandikarlab.com