
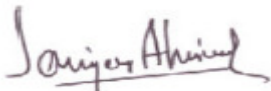





PURCHASE SPECIFICATIONS
FOR
PIN SWITCH SOCKETS FOR
OIL RIGS APPLICATION



SPECIFICATION NO:	OR12631
REVISION NO:	01
DATE:	04.07.2019

PREPARED BY:	CHECKED BY:	APPROVED BY:
		
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ISSUED BY:

CONTROL EQUIPMENT ENGINEERING DIVISION
BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL-462022 (INDIA)



SPECIFICATION FOR SWITCH SOCKETS FOR OIL MINES APPLICATION

1.0 GENERAL:

This specification covers the requirement for supply of weather proof, explosion proof, plug & sockets with integral switch, suitable for Class 1, Zone-1 & 2 gas group IIA & IIB. The above requirement is for Oil mines application in India under dusty & 100% humid & rainy outdoor locations.

2.0 TECHNICAL SPECIFICATIONS :

2.1 SWITCH SOCKET 16A,230V AC , 3PIN (P+N+E)

i)	Rating	- 16 A, 230VAC, 50Hz Supply
ii)	No. of Pins	- 3 Pin (P+N+E)
iii)	Enclosure Material	- Cast Aluminum alloy
iv)	Enclosure type	- Ex-d as per IS/IEC 60079-1(2007) & IS/IEC 60079-0(2004)
v)	Area	- Zone-1&2 of Haz. area as per IS-5572
vi)	Gas Group	- IIA & IIB
vii)	Protection	- IP-65 / IP-66 as per IS-12063
viii)	Temperature Class	- T6
ix)	Gasket	- End less Neoprene Gasket
x)	Earthing	- 1 inside, 2 outside M6
xi)	Finish	- Epoxy coated light grey shade 631 of IS-5
xii)	Connections	- TB/Stud type suitable for 2.5sqmm flexible copper wire
xiii)	Cable entry	- 3 Nos ¾" ET (2 Nos on Socket & 1 No on Plug)
xiv)	Cable Gland	- 3 Nos Double Compression Ex-d (See Cl. No. 4 also)
xv)	Stopper Plug	- Nil
xvi)	Hardware	- Metric. All external hardware of SS only.
xvii)	Socket Flap / Cover	- Suitable arrangement for socket to remain covered when plug is not inserted should be provided.
xviii)	Interlocking	- Suitable Rotary switch for mechanical/Electrical interlock arrangement to be provided so as to break the electrical circuit before plug is completely withdrawn & make the circuit after the plug is fully inserted.
xix)	Weight	- Not to exceed 3.5 kg
xx)	Mounting	- Wall mount with 2 holes suitable for M8/M10 hardware
xxi)	Dimensions	- Not to exceed 170mm(L) x 280mm(H) x 300mm(D) with plug inserted but without glands
xxii)	Labeling	- Rating details, Certification Nos & Manufacturer details

2.2 SWITCH SOCKET 16A,415V AC , 5PIN (3P+N+E)

i)	Rating	- 16 A, 415VAC, 50Hz Supply
ii)	No. of Pins	- 5 Pin (3P+N+E)
iii)	Enclosure Material	- Cast Aluminum alloy
iv)	Enclosure type	- Ex-d as per IS/IEC 60079-1(2007) & IS/IEC 60079-0(2004)
v)	Area	- Zone-1&2 of Haz. area as per IS-5572
vi)	Gas Group	- IIA & IIB
vii)	Protection	- IP-65 / IP-66 as per IS-12063
viii)	Temperature Class	- T6
ix)	Gasket	- End less Neoprene Gasket
x)	Earthing	- 1 inside, 2 outside M6
xi)	Finish	- Epoxy coated light grey shade 631 of IS-5



xii)	Connections	-	TB/Stud type suitable for 2.5sqmm flexible copper wire
xiii)	Cable entry	-	3 Nos 3/4" ET (2 Nos on Socket & 1 No on Plug)
xiv)	Cable Gland	-	3 Nos Double Compression Ex-d (See Cl. No. 4 also)
xv)	Stopper Plug	-	Nil
xvi)	Hardware	-	Metric. All external hardware of SS only.
xvii)	Socket Flap / Cover	-	Suitable arrangement for socket to remain covered when plug is not inserted should be provided.
xviii)	Interlocking	-	Suitable Rotary switch for mechanical/Electrical interlock arrangement to be provided so as to break the electrical circuit before plug is completely withdrawn & make the circuit after the plug is fully inserted.
xix)	Weight	-	Not to exceed 3.5 kg
xx)	Mounting	-	Wall mount with 2 holes suitable for M8/M10 hardware
xxi)	Dimensions	-	Not to exceed 170mm(L) x 280mm(H) x 300mm(D) with plug inserted but without glands
xxii)	Labeling	-	Rating details, Certification Nos & Manufacturer details

2.3 SWITCH SOCKET 32A,415V AC , 5PIN (3P+N+E)

i)	Rating	-	32 A, 415VAC, 50Hz Supply
ii)	No. of Pins	-	5 Pin (3P+N+E)
iii)	Enclosure Material	-	Cast Aluminum alloy
iv)	Enclosure type	-	Ex-d as per IS/IEC 60079-1(2007) & IS/IEC 60079-0(2004)
v)	Area	-	Zone-1&2 of Haz. area as per IS-5572
vi)	Gas Group	-	IIA & IIB
vii)	Protection	-	IP-65 / IP-66 as per IS-12063
viii)	Temperature Class	-	T6
ix)	Gasket	-	End less Neoprene Gasket
x)	Earthing	-	1 inside, 2 outside M6
xi)	Finish	-	Epoxy coated light grey shade 631 of IS-5
xii)	Connections	-	TB/Stud type suitable for 2.5sqmm flexible copper wire
xiii)	Cable entry	-	3 Nos 3/4" ET (2 Nos on Socket & 1 No on Plug)
xiv)	Cable Gland	-	3 Nos Double Compression Ex-d (See Cl. No. 4 also)
xv)	Stopper Plug	-	Nil
xvi)	Hardware	-	Metric. All external hardware of SS only.
xvii)	Socket Flap / Cover	-	Suitable arrangement for socket to remain covered when plug is not inserted should be provided.
xviii)	Interlocking	-	Suitable Rotary switch for mechanical/Electrical interlock arrangement to be provided so as to break the electrical circuit before plug is completely withdrawn & make the circuit after the plug is fully inserted.
xix)	Weight	-	Not to exceed 3.5 kg
xx)	Mounting	-	Wall mount with 2 holes suitable for M8/M10 hardware
xxi)	Dimensions	-	Not to exceed 170mm(L) x 280mm(H) x 300mm(D) with plug inserted but without glands
xxii)	Labeling	-	Rating details, Certification Nos & Manufacturer details

3.0 TEST REPORTS AND CERTIFICATION :

Item should be having relevant certifications for testing as per relevant IS from reputed & accepted testing and certifying agencies names as CIMFR/ERTL/CCE/BIS.
Test reports / Certifications from above agency(s) to be submitted with offer.



4.0 TECHNICAL SPECIFICATIONS CABLE GLANDS :

- | | | |
|-------|--------------------------|---|
| i) | Type of Gland | - Flameproof, weather proof double compression cable gland |
| ii) | Application | - Ex-d, GAS Gr. IIA & IIB as per IS/IEC 60079-1 : 2007 |
| iii) | Protection | - IP-65 / IP-66 as per IS-12063 |
| iv) | Area Classification | - Zone-1&2 of Haz. Area as per IS-5572 |
| v) | Material of construction | - Brass with nickel plating |
| vi) | Nipple size | - 3/4" ET must be suitable for cable entry |
| vii) | Cable size | - 4 x 2.5 sqmm screened elastomeric insulated cable of OD over sheath is 15 to 18 mm range. |
| viii) | Grommet | - Oil resisting endless neoprene rubber grommets. |

Note : 3 Nos Glands to be supplied duly fitted with each plug-socket assy.

5.1 DOCUMENTS ALONGWITH OFFER:

Following documents / information must be enclosed by the supplier along with the offer.

1. Catalogs / Drgs indicating general arrangement, overall size, specifications & weight
2. Make / Model / type of Plug and socket assembly.
3. Test certificates/reports from test agencies as specified in Clause No. 3.0

6.1 RECOMMENDED MODELS NOS FOR PLUG & SOCKET :

A. For Sl. No. 2.1

- i) Type No PB31254 (Drg No GAA3500/06) of M/s FCG Flameproof Controlgears Pvt Ltd Mumbai.
- ii) Type No. MFSS/900/11/IIC-IEC (Drg No. MFPB/203/11) of M/s Flexpro Electricals Navasari (Gujarat).

B. For Sl. No. 2.2

- i) Type No RS51325 (Drg No GAA3502/06) of M/s FCG Flameproof Controlgears Pvt Ltd Mumbai.
- ii) Type No. MFSS/900/6/I-IEC of M/s Flexpro Electricals Navasari (Gujarat).

C. For Sl. No. 2.3

- i) Type No RS51325 (Drg No GAA3502/06) of M/s FCG Flameproof Controlgears Pvt Ltd Mumbai.
- ii) Type No. MFSS/900/6/I-IEC of M/s Flexpro Electricals Navasari (Gujarat).


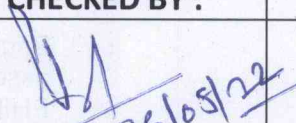
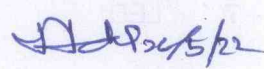
Bidder can also quote any other make and model equivalent to above model nos. meeting technical specifications as mentioned in this document. In such case bidder to furnish complete information with the offer.

Spec No OR12716 Rev00

SPECIFICATION
FOR
45W LED LIGHT WELL GLASS LIGHT
FITTINGS AND JUNCTION BOX FOR HAZ.
AREA
FOR
OIL RIGS



SPECIFICATION NO :	OR12716
REVISION NO :	00
DATE OF REV :	16.05.2022

PREPARED BY :	CHECKED BY :	APPROVED BY :
 26.05.22	 26/05/22	 26/05/22
(Praveen Shah)	(Rohit Verma)	(S. Mandal)
Mgr - CEE	Sr Mgr - CEE	Sr. DGM-CEE

ISSUED BY:

CONTROL EQUIPMENT ENGINEERING DIVISION
BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL-462022 (INDIA)

Spec No OR12716 Rev00

GENERAL SPECIFICATIONS FOR RIG LIGHT FITTINGS FOR HAZARDUOS AREA FOR OIL RIG APPLICATION

1. SCOPE:

This specification applies to General area and hazardous area rig lighting fittings and accessories primarily intended for outdoor drilling rig use in humid, dusty, oily, hazardous area at an ambient of max. 50 deg C. During submission of offer Bidder must take care of test certificate, inspection & packing etc. requirements furnished after technical details.

2. TECHNICAL DETAILS OF RIG LIGHT FITTINGS

2.1 FLAME PROOF 45 W LED INTEGRAL WELL GLASS LIGHT FITTING :-

S. No	Parameter	:	Description
1	Enclosure	:	Ex-d, GAS Gr. IIA & IIB as per IS/IEC 60079-1:2007 & IS/IEC 60079-0:2004
2	Protection	:	IP-65 as per IS/ IEC 60529:2001 or better
3	Area Classification	:	Class-1, Zone -1
4	Material of construction	:	Pressure Die cast aluminum alloy, LM-6
5	Rating & temperature classification	:	45W ,240 VAC 50 Hz,T6
6	Transparent part	:	Clear, heat & impact resistant borosilicate toughened type 'A' glass dome as per IS2206 Part-I
7	LED	:	Bright White light Discrete LED / SMD PCB assembly or LED COB assy. LED make PHILIPS / CREE / OSRAM/FULHAM complying to IEC62471 & ANSI C78.377A
8	LED Engine/Driver	:	High Efficiency Electronic Driver of reputed make MEANWELL / PHILIPS / OSRAM complying to BIS/ENEC/CE
9	LED Driver type	:	Potted
10	LED Driver Protection	:	Short Circuit, Open Load, Over Voltage & Reverse Polarity, Auto-start
11	Driver PF & THD	:	PF >0.95 and THD <10% at 240VAC

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- | | | | |
|-----------|--|---|--|
| 12 | Surge Protection | : | SERIES Connected SPD 10KV,10KA. Make PHILIPS / LITTLE FUSE / MERSEN |
| 13 | Input voltage range | : | 140VAC – 270VAC |
| 14 | Internal reflector | : | Anodized mirror polished aluminum (For SMD LED not applicable) |
| 15 | Wire Guard | : | M.S. wire gaurd Galvanized / White epoxy painted / White powder coated |
| 16 | Finish | : | Anti-corrosive epoxy powder coated to light grey as per shade no 631 of IS 5. |
| 17 | Hardware | : | Stainless steel SS 304 |
| 18 | Earthing terminals | : | 01 no inside and 2 no's outside |
| 19 | Cable entry | : | M20 x 2 no.
Party to supply Well glass suitable for M20 cable glands.
Party to supply both cable entries in block condition with suitable metallic blocking plug. |
| 20 | Gasket | : | Endless neoprene / Silicon gaskets to be provided wherever required for proper sealing. |
| 21 | Mounting & accessories | : | Blind Mounting hole at top of size M12 /M 16 to be provided and duly fitted with an eye bolt of ID 26mm and OD 48mm for suspension of fittings from top. The eye bolt should be locked with the help of split pin/screw perpendicularly to prevent the loosening of the same during vibrations.
Eye bolt & J- hook are in supplier scope. |
| 22 | Terminals | : | Stud type/Screw type Micro terminals for termination of 3 x 1.5 mm ² cable.
Each Terminal should be provided 2 No's solder-less crimping type Dowell make copper cable terminals also |
| 23 | Documents to be submitted with the offer | : | 1. Test certificate by CIMFR (CMRI)
2. OGA drawing
3. Product datasheet |

Note: The fitting should be tested & certified by CIMFR (central institute of mining & fuel research) Dhanbad as per IS/IEC60079-1:2007 for Gas group II B and Zone 1 & Zone 2 oil mine application.

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2.2 INDUSTRIAL FLAMEPROOF, WEATHER PROOF JUNCTION BOX:

S. No	Parameter	:	Description
1	Enclosure protection	:	Weather proof IP-65 as per IS/IEC 60529:2001
2	Type of cover	:	Bolted
3	Mounting	:	04 Nos mounting hole of M8 /M10 at four corners.
4	Area Classification	:	Hazardous
5	Material of construction	:	Die cast aluminum alloy LM-6
6	Terminals	:	Screw type crimpless as per table 2.10 below.
7	Cable through gland	:	Refer table 2.10 B (below)
8	Gasket	:	Neoprene / silicon gasket
9	Finish	:	Anti-corrosive epoxy powder coated as per OEM standard shade.
10	Hardware	:	Stainless steel SS304
11	Earthing	:	01 no inside & 2 nos outside ,
12	Cable entry	:	As per table 2.10 A (below).
Glands to be supplied fitted with junction box.			
13	Accessories to be supplied	:	Flameproof Nickel plated brass Cable glands suitable for cable entry to be supplied with junction box
14	Approx. dimension	:	As per OEM design, however vendor to get approval from BHEL before manufacturing.
15	Name plate & warning	:	Stainless steel
16	Terminal block make	:	Elemex / Connectwell /Wago/ Phoenix of polyamide material
17	Terminal block arrangement	:	Refer table 2.10 B
18	Inspection	:	During inspection compatibility of the gland and gland size may be checked. Make of the terminal may be checked by BHEL.

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- 19 Documents to be submitted with the offer

1. Test certificate by independent laboratory.

2. OGA drawing

3. Product catalogue

TABLE 2.10.A (NO OF CABLE ENTRIES, SIZES AND TERMINAL SIZES SHALL BE AS PER TABLES):-

Nominal Cable OD	No. of cable entries required	Cable entry side
12 to 16 mm	2	<div>a. First Cable Entry: For main power cable connection.</div> <div>b. Second Cable entry /Gland: Power looping from one socket to another socket</div>

Hub size of gland & respective hole in junction should be of matching size. Glands are in scope of supply with junction box and to be supplied fitted with box.

TABLE 2.10. B (DETAILS OF TERMINALS):-

Terminal size	No. of Terminals
1.5-4 sqmm	15 Nos

Note: The fitting should be tested & certified by CIMFR (central institute of mining & fuel research) Dhanbad as per IS/IEC60079-1:2007 for Gas group II B and Zone 1 & Zone 2 oil mine application for meeting requirements of degree of protection i.e. IP 65 as per IS/IEC 60529:2001.

3.0 DOCUMENTS ALONGWITH OFFER:

Following documents / information must be enclosed by the supplier along with the offer.

1. Catalogs / Drgs indicating general arrangement, overall size, specifications & weight

2. Make / Model / type items offered.

3. Test certificates/reports from test agencies as specified in relevant clauses.

4.0 GENERAL CONDITIONS:

- i. Offer to be submitted in two bid system i.e. Part-1 (Techno-commercial unpriced bid) and Part-2 (Price bid) in separate sealed as per procedure mentioned in BHEL Tender General terms and conditions BP200102 as attached with tender enquiry.

ii. Detailed name plate & rating plate along with warning inscription label as per relevant IS to be fixed on equipment wherever required. CIMFR & other approval no. & date may also be mentioned wherever applicable.

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- iii. Guarantee/warranty for the offered items for 12 months from date of commissioning or 18 months from date of supply which ever is earlier. Supplier to confirm the same in the offer.

5.0 SPECIAL CONDITION:

Party to confirm in the offer that valid CIMFR test certificates shall be made available at the time of inspection of the items also and a copy shall be provided to BHEL inspector.
