



Technical Specification

Unless otherwise specified all Luminaire to comply with following:

- All lighting fixtures shall be supplied complete with associated LED lamp and driver and shall be of latest energy efficient type.
- LED fixture shall be provided with 3 nos. cable entries for loop-in, loop-out and associated wiring to fixture suitable for 3/4" ET type double compression cable gland. Cable entry into the fixture shall not be from top side.
- Cable Glands: Two (2) Nos. double compression brass- nickel FLP cable gland suitable for CU cable size 3C X 2.5 sq.mm.
- Stopper Plugs: Two (2) Nos. FLP stopper plug suitable for CU cable size 3C X 2.5 mm².
- Earthing: one internal and two external earthing terminals of M6 dimensions with screw/bolt and shall be located at a place easy to approach and carry out maintenance.
- The LED driver is to be housed in a separate flameproof compartment from the LEDs for field maintenance without disturbing the factory-sealed LED board. Each compartment shall be individually IP 65 rated.
- LED lamps and Drivers shall be provided with min. 5 years warranty period. Driver shall have valid BIS certification and copy of same shall be furnished.
- View Angel: 120°.
- Colour & Rendering: White LEDs must have a Colour Temperature: 5700K(5665±355 K). The Colour Rendering Index (CRI) must be greater than or equal to 80.
- Working temperature: 0 °C to 60 °C
- Humidity: 10% to 90 % RH.
- Temperature class: T6
- Housing of luminaire: Pressure Die cast LM6/ADC12/LM24 housing.
- Surge Protection Minimum 5kV Internal and 10kV External.
- Luminaire rating as per IP 65 IS/IEC 60529
- Enclosure type: Ex-D as per IS:2148-2004 with up-to-date amendments, Temp Class T6
- Flat Heat Resistant Clear Toughened Glass.
- Gasket Material Certificate: Verification that gaskets are made of Neoprene or Silicone (as per the PESO certificate) to ensure heat resistance.
- Shade: 631 IS-5 in matt finish
- All lighting fixtures shall be supplied with fixture mounting nuts and bolts of stainless-steel SS-304. Fixture mounting bolts & nuts for mounting the light fittings on already installed clamps/brackets.
- Supplied luminaire suitable for Zone 2 Gas group IIA/ II B or IIC (preferred).
- THD (Total Harmonic Distortion) < 10%.
- Overall power factor of luminaire > 0.9
- Impact resistance for outdoor fittings (minimum) IK-05



GENERAL SPECIFICATION FOR LED Luminaire M&I, RHQ

For Luminaire:

- i. The vendor shall submit valid & complete CIMFR and CCOE/PESO certificates giving complete details and validity dates along with the offer for the Flameproof fitting as well as the FLP gland.
- ii. LM79/ IS:16106 test report from a NABL accredited laboratory/ International Testing Laboratories.
- iii. Minimum system Luminaire efficacy of 120 lumens/ watt.
- iv. Potted drivers are mandatory

For LED:

- i. LED Efficacy >120 Lumens/ watt irrespective of wattage.
- ii. LM 80/ IS: 16105 test report proving L70 > 50,000 hrs
- iii. TM 21 life projection calculations.
- iv. Certificate for Compliance to Photo biological Safety norms as per IEC 62471/ EN62471/ IS:16108.

For driver:

- i. Driver Efficiency: 87 % Minimum
- ii. Certificate for Compliance to safety requirements laid down in IEC: 61347-2-13/ EN: 61347-2-13/IS: 15885-2-13
- iii. Compliance with performance requirement laid down in IEC:62384/ IS:16104.
- iv. EMI/EMC Compliance:
 - a. CISPR 15/IS: 6873 or Compliance to equivalent EN standard.
 - b. IEC: 61547
 - c. -IEC 61000-

Safety & Compliance:

Lighting fixtures shall comply to the latest codes and standards.

LEDs must meet photobiological safety norms as per IEC 62471/ EN 62471/IS: 16108.

IS 16101, IS 16102, IS 16103 Part-1, IS 16103 Part-2, IS 16106, IS 16107-Part-1 and IS 16107-Part-2 Sec-1 and IS/IEC 60079-0 & 60079-1 and other applicable standards

Technical Specification (Specific)

SL. No.	Short Text	Specification
1	FLP LED WELL GLASS 45W	Power: 45 W Gas Group IIA/IIB/IIC
2	FLP LED WELL GLASS (BLUE) 45W 230V AC	Power: 45 W Blue colour (dominant wavelength)-450nm Gas Group II C
3	FLP LED WELL GLASS (RED) 45W 230V AC	Power: 45 W Red colour (dominant wavelength)- 620nm Gas Group II C

**GENERAL SPECIFICATION FOR LED Luminaire M&I, RHQ**

4	FLP LED WELL GLASS (YELLOW) 45W 230V AC	Power: 45 W Yellow colour (dominant wavelength)- 580 nm Gas Group II C
5	FLP LED WELL GLASS (ORANGE) 45W 230V AC	Power: 45 W Orange (dominant wavelength)- 610nm Gas Group IIC
6	FLP LED WELL GLASS (GREEN) 45W 230V AC	Power: 45 W Green Colour (dominant wavelength)- 540nm Gas Group IIC
7	FLP LED WELL GLASS 75W 230V AC	Power: 75 W Gas Group: IIA/IIB/IIC
8	FLP LED WELL GLASS 100W 230V AC	Power: 100 W Gas Group: IIA/IIB/IIC
9	LED FLOOD LIGHT 100W 230V AC	Power: 100 W Gas Group: IIA/IIB/IIC
10	LED FLOOD LIGHT 150W 230V AC	Power: 150 W Gas Group IIA/IIB/IIC
11	LED FLOOD LIGHT 200W 230V AC	Power: 200 W Gas Group: IIA/IIB/IIC
12	LED FLOOD LIGHT 100W 24V AC	Power: 100 W Rated Voltage: 24 V AC. Gas Group IIA/IIB/IIC
13	LED FLOOD LIGHT 50W 24V AC	Power: 50 W Rated Voltage: 24 V AC. Gas Group: IIA/IIB/IIC
14	Hand Lamp 24V,12W	Flameproof & WP portable LED type hand lamp Min. 12W LED, Driver Mounting Bracket suitable for 24V AC 50Hz Power: 12 W Rated Voltage: 24 V AC. Gas Group: IIA/IIB/IIC Cable Entry: 1 no. ET cable entry Cable Glands: 1 no. ET
15	Aviation lighting (RED) 2*15 W	Power: 2*15 W Gas Group: IIB/ IIC Red colour (dominant wavelength)- 620nm View angel: 360 °
16	FLP LED WELL GLASS 45W 220V DC	Power: 45 W Rated Voltage: 220V DC. Gas Group: IIC
17	FLP LED WELL GLASS 45W 110V DC	Power: 45 W Rated Voltage: 110V DC. Gas Group: IIC



TYPE, ROUTINE AND ACCEPTANCE TESTS

1. After completion of the manufacture of Luminaire and prior to dispatch, Luminaire shall be subjected to type test, routine tests and acceptance tests as detailed below and as per relevant standards.
2. Type test should have been carried out from CPRI/NABL accredited Lab. Type test report shall be reviewed by TPI/IOCL.

S No	Test	Remarks	As per IS
1	Purity, physical and chemical properties, Dimensions, surface finishing etc		IS:210: 1608/97 etc/ IEC/IEE standards as applicable
2	Static hydraulic test		
3	Visual & Dimensional check and checking of threads		IS 2148; 9765/03;12063/87
4	Workmanship		and other relevant IS/ IEC/IEE standards as applicable
5	Paint shade and thickness		
6	Gaps, Flame paths, clearance		
7	Marking on each piece for suitability of are classification, Tag no and other details as per relevant IS standards		
8	Lighting fixtures		
9	Impact test		IS 2206
10	Thermal Shock test		IS 2206
11	Electrical operation		IS 2148; 9765/03;12063/87
12	Power factor		and other relevant IS/ IEC/IEE standards as applicable
13	IR test before and after HV test		
14	HV test		
15	Temperature rise test		IS 2206
16	Test for suspension of Div-2 fittings		IS 2148; 9765/03;
17	Test for enclosed break lamp holder for Div-2 fittings		12063/87 and other relevant IS/ IEC/IEE standards as applicable
18	Internal test reports		IS: 13947 and other relevant IS/ IEC/IEE standards as applicable



- 3. IOCL shall send the supplied luminaires (minimum 2 Nos. and upto 10 % of total quantities in supplied lot) to get tested from any NABL accredited like Intertek, Karandikar Lab or CIMFR lab prior to acceptance of luminaires. The selection of test sample shall be done on random selection basis from one lot or any one lot (in case of multiple lot supplies) by a unit consignee/ Refinery in each year of PO period as per the discretion of the Unit Consignee/ Refinery. Cost of test will be borne by the vendor.**
- 4. IOCL shall send the supplied luminaires (minimum 2 Nos. and upto 10 % of total quantities in supplied lot) for conducting explosion test from test lab like Intertek, Karandikar Lab or CIMFR lab prior to acceptance of luminaires. The selection of test sample shall be done on random selection basis from one lot or any one lot (in case of multiple lot supplies) by a unit consignee/ Refinery in each year of PO period as per the discretion of the Unit Consignee/ Refinery. Cost of test will be borne by the vendor.**

Material Description - RHQMM25214		
SL. No.	Short Description	Purchase Order Text
1	FLP LED WELL GLASS (COOL WHITE) 45W 230V AC, and as per Technical Specification	FLP WELL GLASS (COOL WHITE) Power: 45 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group II A/ II B/ IIC Rated Voltage: 230V AC. TEMPERATURE CLASS : T6
2	FLP LED WELL GLASS (BLUE) 45W 230V AC, and as per Technical Specification	FLP WELL GLASS (BLUE) Power: 45 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group IIC Rated Voltage: 230V AC. TEMPERATURE CLASS : T6 Blue colour (dominant wavelength)-450 nm
3	FLP LED WELL GLASS (RED) 45W 230V AC, and as per Technical Specification	FLP WELL GLASS (RED) Power: 45 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group IIC Rated Voltage: 230V AC. TEMPERATURE CLASS : T6 Red colour (dominant wavelength)- 620nm
4	FLP LED WELL GLASS (YELLOW) 45W 230V AC, and as per Technical Specification	FLP WELL GLASS (YELLOW) Power: 45 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group II C Rated Voltage: 230V AC. TEMPERATURE CLASS : T6 Yellow colour (dominant wavelength)- 580 nm Gas Group II C
5	FLP LED WELL GLASS (ORANGE) 45W 230V AC, and as per Technical Specification	FLP WELL GLASS (ORANGE) Power: 45 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group II C Rated Voltage: 230V AC. TEMPERATURE CLASS : T6 Orange (dominant wavelength)- 610nm
6	FLP LED WELL GLASS (GREEN) 45W 230V AC, and as per Technical Specification	FLP WELL GLASS (GREEN) Power: 45 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group II C Rated Voltage: 230V AC. TEMPERATURE CLASS : T6 Green Colour (dominant wavelength)- 540nm
7	FLP LED WELL GLASS (COOL WHITE) 75W 230V AC, and as per Technical Specification	FLP WELL GLASS Power: 75 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group: IIA/IIB/IIC Rated Voltage: 230V AC. TEMPERATURE CLASS : T6
8	FLP LED WELL GLASS (COOL WHITE) 100W 230V AC, and as per Technical Specification	FLP WELL GLASS Power: 100 WATT Min Lumens/Watt: 120 ZONE:-2 AREA: IIA/IIB/IIC Rated Voltage: 230V AC. TEMPERATURE CLASS : T6

Material Description - RHQMM25214		
SL. No.	Short Description	Purchase Order Text
9	LED FLOOD LIGHT (COOL WHITE) 100W 230V AC, and as per Technical Specification	LED FLOOD LIGHT Power: 100 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group: IIA/IIB/IIC Rated Voltage: 230V AC. TEMPERATURE CLASS : T6
10	LED FLOOD LIGHT (COOL WHITE) 150W 230V AC, and as per Technical Specification	LED FLOOD LIGHT Power: 150 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group: IIA/IIB/IIC Rated Voltage: 230V AC. TEMPERATURE CLASS : T6
11	LED FLOOD LIGHT (COOL WHITE) 200W 230V AC, and as per Technical Specification	LED FLOOD LIGHT Power: 200 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group: IIA/IIB/IIC Rated Voltage: 230V AC. TEMPERATURE CLASS : T6
12	LED FLOOD LIGHT (COOL WHITE) 100W 24V AC, and as per Technical Specification	LED FLOOD LIGHT Power: 100 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group: IIA/IIB/IIC Rated Voltage: 24V AC. TEMPERATURE CLASS : T6
13	LED FLOOD LIGHT (COOL WHITE) 50W 24V AC, and as per Technical Specification	LED FLOOD LIGHT Power: 50 WATT Min Lumens/Watt: 120 ZONE:-2 Gas Group: IIA/IIB/IIC Rated Voltage: 24V AC. TEMPERATURE CLASS : T6
14	FLP,24V,12W,LED HAND LAMP,IIC, and as per Technical Specification	Flameproof & WP portable LED type hand lamp Min. 12W LED, Driver Mounting Bracket suitable for 24V AC 50Hz Power: 12 W Rated Voltage: 24 V AC. Gas Group: IIA/IIB/IIC Cable Entry: 1 no. ET cable entry Cable Glands: 1 no. ET Min Lumens/Watt: 120 ZONE:-2 TEMPERATURE CLASS : T6
15	Aviation lighting(RED) 2*15 W 230 V AC, and as per Technical Specification	Aviation lighting(RED) Power: 2*15 WATT Min Lumens/Watt: 120 ZONE:-2 AREA: Gas Group: IIB/IIC Rated Voltage: 230V AC. TEMPERATURE CLASS : T6 Red colour (dominant wavelength)- 620nm View angel: 360 deg
16	FLP LED WELL GLASS (COOL WHITE) 45W 220V DC, and as per Technical Specification	FLP WELL GLASS (COOL WHITE) Power: 45 WATT Min Lumens/Watt: 120 ZONE:-2 AREA: IIC Rated Voltage: 220V DC. TEMPERATURE CLASS : T6
17	FLP LED WELL GLASS (COOL WHITE) 45W 110V DC, and as per Technical Specification	FLP WELL GLASS (COOL WHITE) Power: 45 WATT Min Lumens/Watt: 120 ZONE:-2 AREA: IIC Rated Voltage: 110V DC. TEMPERATURE CLASS : T6