



ORISSA POWER TRANSMISSION CORPORATION LIMITED

TECHNICAL SPECIFICATION

FOR

YARD AC KIOSK

Prefabricated KIOSK.

The air conditioned Kiosks shall be provided for housing of panels having control and protection IEDs for performing sub-station automation and protection functions generally conform to relevant IS codes as detailed in section GTR. These kiosks shall be placed in the switchyard area generally unmanned; therefore, the air-conditioning system shall be rugged, reliable, maintenance free and designed for long life.

** The kiosk shall be erected at least 300 mm above the finished ground level with suitable pedestal to avoid any entry of water.

General Technical Requirement of YARD KIOSK

1. Internal Dimension

4500 (L) x 3500 (W) x 3300(H) (Single Side Tapered)
4500 (L) x 4000 (W) x 3500(H) (Single Side Tapered)
5000 (L) x 4000 (W) x 3300(H) (Single Side Tapered)
6000 (L) x 4500 (W) x 3300(H) (Single Side Tapered)

2. Environmental Conditions

| | | |
|-------------------|---|---|
| Temperature Range | : | -15 °C to 95 °C |
| Humidity | : | 100% RH |
| Resistance to - | | 1. All volumes of rain dust and sand impinging from all directions at different duration at different speeds. |
| - | | 2. Corrosion against water, Industrial air & saline air |
| - | | 3. Decomposing, vegetation, Rodents, termites and Microorganisms |

3. Walls

| | |
|--------------------|--|
| Panel Thickness - | 80 mm |
| Cladding - Inner - | 0.8mm Polyester Precoated Steel Sheet |
| - Outer - | 0.6mm Polyester Precoated Steel Sheet |
| Wall size - | Appropriate wall size as per kiosk heights, ensuring a slope of 1: 50 for the roof |

4. Floor

| | |
|--------------------|--|
| Thickness - | 80mm |
| Cladding - Outer - | 1.0 mm Galvanized Steel Sheet |
| - Inner - | 0.8 mm Polyester Precoated Steel Sheet |
| Additional Floor - | 19mm Marine Ply covered with antistatic PVC flooring (<i>not less than 2 mm</i>) over it. False floor will be made with the particle board at a height of min 250 mm. False floor will be made with Sq. tubes 50x50x2.9mm grid structure <i>with 130X5 mm MS plate at base</i> to accommodate Marine Plywood. <i>False floor shall be suitably joined with wall panels for strength and support.</i> |

All the panel cabling can be done under the false floor.

- MS square tube joints shall be with ISA 30 30 3

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| Floor reinforcements - | Floor <i>sub frame</i> made of ISMC/ISMB sections appropriately support the Kiosk floor evenly and throughout the area. <i>Reinforcement shall be through 78X38X2.9 mm MS tube in floor panels.</i> |
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| Designed Floor Load - | 700 Kg/m ² |
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| Cut outs & support structure for the Panel & Equipment - | Cut outs & support structure shall be done by supplier as per the approved drawings and requirement of the panels & equipments. |
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5. Roof

| | |
|-------------------------|--|
| Panel Thickness - | 80 mm |
| Cladding - Inner - | 0.8 mm Polyester Precoated Steel Sheet |
| - Outer - | 0.6 mm Polyester Precoated Steel Sheet |
| Secondary roof - | <i>It shall be provided on Kioks roof panel.</i> <i>- It shall be profiled sheet of PPGI having thickness not less than 0.6 mm and suitably covered with PPCI flashing.</i> |
| Roof Slope - | 1 in 50 along the width of the kiosk. |
| - | <i>Roof slope shall be formed with C-Channels of GI having thickness not less than 1.6 mm.</i> |
| Direction of Slope - | Single side sloping along the width |
| Over Hang - | 100mm on all sides, 500mm projection on rear side. |
| Designed Roof load - | 200 Kg/m ² |
| Roof joints - | <i>Shall be with self-drilling screws and covered with suitable stiffeners.</i> |

6. Doors

| | |
|----------------------|---|
| Size - | Main Door - 1200(W) x 2400 (H) |
| - | Outer to outer – 1 No. |
| - | Emergency Door -750(W) x 2400 (H) |
| - | Outer to outer – 1No. |
| Thickness of Panel - | 80mm |
| Cladding - | Inner 0.6mm Pre Coated Steel |
| - | Outer - 0.6mm Pre Coated Steel |
| Door Profiles - | Steel Extruded sections |
| Door Lock - | Standard Dorset Type door-lock integrated in the door. Door Lock provided with 3 keys |
| Weather Strip - | Mounted above the doors |
| Door Opening - | Opening outward Hinged to the right |
| Gasketing - | Replaceable neoprene based rubber gaskets. It shall be as per type test – IP55. |

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| 7. Openings | - For Air-conditioning, cables, lighting, luminaries, fire detectors etc – as per requirement. |
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| 8. Survival speed | - 260 KMPH |
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| 9. Load Capacity | - Floor - 700 Kg/m ² uniformly distributed load |
| - Roof - | 200 Kg/m ² uniformly distributed load (<i>Supported by load bearing calculations in STAAD model</i>) |

10. Insulation

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| A. Foam - | CFC Free, High Pressure Injected, Rigid PU Foam |
| B. Density - | 42 +/- 2Kg/m ³ |
| C. K value - | FOAM - 0.02 W/m ² deg K per Hour (of foam) |
| D. K value - | SHELTER - =< 0.3 W/m ² deg K per Hour |
| E. Fire Resistance - | As Per BS-4735 Horizontal Burn <125mm |
| - | Self extinguishing (<i>Supported by relevant test reports</i>) |

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| 11. Joints | - Panels shall be joined using eccentric cam-locks, Sealed with sealant |
| Angles - | External super structure shall be made of press break GI sheets. Inside full MS frame of 75x75x1.6 shall be provided at all corners. Internal mid frame will be made of 50x50x2.9 mm |

Sq.tube with 130X5 mm MS plate at base shall be provided for the kiosk.

- 12. Sealant** - Silicon based "Natural Cure "Sealant
- 13. Sub frame** - Sub frame made with hot dipped galvanized ISMB – 200/250 and ISMC – 200 / 150 sections shall be based on the pedestal foundation. The sections receiving the Kiosk are anchored to the base grid with appropriate corner anchoring elements.
- *Size and Nos. of ISMC/ISMB subframe structures shall be as per load bearing calculation in STAAD model).*
 - *ISMB/ ISMC sub frame joints shall be done with suitable clits (150x75 Flat/L-Clits, 200X100 mm flat, 250x100 mm flats etc.) with M10 bolts.*
 - *Anchoring in foundation shall be done with suitable anchoring clit and M10X250 mm anchor fasteners.*
- 14. Foundation** - Shall be done by the supplier. Drawing from OEM for the same shall be submitted by the supplier & get approved from the purchaser.
- 15. Electrical Conductivity** - All the metal parts shall be interconnected for good Electrical conductivity *and earthed suitably with Kioks earthing.*
- 16. Drawings** - Detailed kiosk drawings from OEM shall be submitted and get approved from the purchaser.
- 17. Polyurethane Foam Properties**
- Density - 40 +/- 2 Kgs/M3 "CFC-FREE"
 - Compressive strength - 2.1 Kg/cm2
 - Tensile Strength - 3.7 Kg/cm2
 - Bending Strength - 4.0 Kg/cm2
 - Adhesion Strength - 2.9 Kg/cm2
 - Thermal Conductivity - 0.02 W/m2/Hr/m/°K
- 18. Steel Work**
- All steel works shall conform to IS-2062 and IS-2262.
 - Structural MS pipes shall correspond to IS-1239 Part 2.
 - All steel work shall be galvanized as per IS-4759.
 - Minimum coating thickness as per IS standards.
 - All welding as per IS-816
- 19. Tolerances** - Post installation will have an overall dimensional tolerance of +/- 10mm (Max).

20. Air Conditioning - The air conditionings system shall be provided in the Kiosks to be used for housing panels having control and protection IEDs for performing sub-station automation and protection functions generally confirm to relevant IS codes as detailed ins section GTR. These kiosks shall be placed in the switchyard area generally unmanned; therefore, the air-conditioning system shall be rugged, reliable, maintenance free and designed for long life.

| Sr. No. | Parameter | Specification |
|---------|----------------------|--|
| 1 | Power Supply | 1 –Ø 230 V -50 Hz AC |
| 2 | A/C Package contains | Twin A/C Machines |
| 3 | Capacity in Ton | 1.5 T/ 2.0 T (considering size of the Kiosk) |
| 4 | Operation | LCD Remote |

| | | |
|---|-------------------------|---|
| 5 | Refrigerant | R- 22 |
| 6 | Compressor type | Rotary |
| 7 | Features: | Auto change over in case of one m/c faulty. Special feature narrated in detailed spec. |
| 8 | Potential free contacts | 4 C/O required for ON/OFF status for SCADA. |
| 9 | Warranty | 3 years on site 7 years compressor replacement |

20.1 Operation:

The air conditioning is required for critical application i.e. for maintaining the temperature for critical sub-station control and protection equipment. To provide redundancy for such critical applications, each kiosk shall be installed with environment control system comprising of two units of air conditioners working in conjunction through a micro processor based controller for desired operation. The system shall be designed for 24 Hours, 365 Days of the year to maintain the inside kiosk temperature for proper operation of the critical equipment. One of the air conditioner shall be running at a time and on failure of the same or as described hereunder, the other unit shall start automatically. To ensure longer life of the system, the redundant units shall also be running in cyclic operation through the controller. However, during running of one air-conditioner unit, if inside temperature of the shelter reaches to a predefined (i.e. 30°C), the other unit shall start running to maintain the temperature to specified value (i.e. 23°+2°C) and gives alarm for such situation. After achieving this temperature, the other unit shall again shut off.

20.ii. Sequence of Operation of the Unit:

Suitable arrangement shall be made to operate the unit in the following order. However, the actual operation arrangement shall be finalized during detailed engineering.

1. Evaporator Fan
2. Condenser Fan
3. Compressor

20.iii. Construction:

The air conditioning unit shall be completely self-contained. All components of the units shall be enclosed in a powder coated cabinet and colour of same shall be matched with kiosk colour. The unit shall be assembled, wired, piped, charged with refrigerant and fully factory tested as a system to ensure trouble free installation and start up. Suitable isolation or other by passing arrangement shall be provided such that any unit/component could be maintained/repared without affecting the running standby unit. The maintenance of unit shall be possible from outside the kiosk.

20.iv. Required Features of Various Components:

The compressor shall be very reliable, trouble free and long life i.e. hermitically sealed Scroll type of reputed make suitable for operation. Compressor should be installed on vibration isolated mountings or manufacturer's recommended approved mounting. Valve shall be provided for charging/topping up of refrigerant. The bidder shall furnish details of their compressor indicating the MTBF, life of compressor and continuous run time of compressor without failure. The contractor shall also furnish details of all accessories i.e. refrigeration system, evaporator coil, condenser coil, evaporator blower filter, cabinet, indoor supply and return grill etc.

Temperature transducers (4-20 m A) with sensors, suitable to SCADA shall also be supplied along with A/C machine package.

21. Illumination

- Illumination design shall be submitted by the supplier & get approved from the purchaser.

22. Smoke detectors -

- Adequate smoke detectors shall be provided. It shall be with output contacts so as to integrate it with purchaser's SCADA system.

- 23. Type Test** - IP 55 test from NABL accredited laboratory
- 24. Colour Shade** - RAL 7032
- 25. Steps** - Suitable robust steps of GI Flats / Channels / Angels with sufficient height and stepping shall be provided.
- 26. Tie Rod** - 12 mm Dia through Tie Rod in corner panels from Floor, Side wall to Roof & connected to ISMB shall be provided.
- 27. Wiring** - Wiring shall be industrial grade high quality with 1.1 KV FRLS cables of appropriate rating.
 - Wiring for all the accessories (Illumination, Smoke detectors, Air conditioning system etc.) supplied with Kioks shall be considered in scope of Kiosk supply.

28. Proto Testing:

One kiosk meeting the specified requirement as described above, shall be constructed at the site and offered for proto inspection at the factory. This proto shall be equipped with all required accessories like air-conditioning system, fire and smoke detector, lighting, various cut outs etc. The offered kiosk shall be inspected for finish, all fittings and accessories, opening including doors and locks. The kiosk shall be tested for dust and rain protection to check out any leakage and air tightness. The following main tests shall be carried out:

- (a) Illumination inside the kiosk shall be switched off and it shall be checked that no light enters through panel joints, holes and other joints in the kiosk.
 - (b) Water Leakage Test (with a water pipe with suitable pressure from all sides for one hour.)
 - (c) Working and functional tests of all accessories like air-conditioning system, fire and smoke detector, lighting arrangements as per technical specification
 - (d) Start up test for air conditioner
 - (e) Satisfactory operation of air conditioner installed on Kiosk.
 - (f) The total heat load for panels and devices to be placed inside the kiosk including all IEDs etc. shall be calculated and equivalent calculated heating load (maximum value from among the calculated values for various kiosk) shall be placed inside the kiosk and the kiosk shall be made operational for four hours with all accessories and inside & outside temperature of kiosk shall be recorded. On successful completion of proto testing, all other system shall be manufactured after incorporation of all alteration/modifications observed/suggested during/after proto testing.
- The detail test procedure shall be submitted by the contractor and get it approved from the owner before commencement of proto testing.

- GTP of Yard Kioks is attached here with same is to be filled up in all respect.

| GTP - YARD KIOSK | | | | |
|-------------------------|--------------------------------|--|----------------------------|----------------|
| Sr. No. | Description | Design Data | Verification status | Remarks |
| 1 | Manufacturer | | | |
| 2 | Type & Designation | | | |
| 3 | Internal Dimensions | | | |
| | (a) | | | |
| | (b) | | | |
| 3 | Environmental Condition | | | |
| | Temp. Range | -15 to 95 Deg. C | | |
| | Humidity | 100% RH | | |
| | Resistance to | 1.All volumes of Rain, Sand and Dust impinging from all directions at different duration with different speed. 2. Corrosion against industrial air, Saline air and water. 3. Decomposing, Vegetation, Rodents, Termites and Microorganisms | | |
| 4 | Walls | | | |
| | Panel Thickness | 80mm | | |
| | Cladding | Inner - 0.8 mm Polyester Pre coated Sheet Outer - 0.6 mm Polyester Pre coated Sheet | | |
| | Wall size | Appropriate as per Kioks height ensuring slope of 1:50 for roof | | |
| 5 | Floor | | | |
| | Panel Thickness | 80mm | | |
| | Cladding | Inner - 0.8 mm Polyester Pre coated Sheet steel Outer - 1.0. mm GI sheet steel | | |
| | Additional Floor | 19 mm marine ply covered with anti static PVC flooring over it. 2 mm Thick Anti static PVC Flooring | | |
| | False floor | Particle board at 250mm height; with grid structure of square tubes 50x50x2.9 mm with 130X5 mm MS plate at base. Joining of False floor with wall panel MS square tune joints with ISA 30 30 3 | | |

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|----------|--|--|--|--|
| | Cabling provision | Under false floor | | |
| | Floor reinforcement | MS tube 78X38X2.9 | | |
| | Designed Floor load | 700 Kg/ Sq.m | | |
| | Cutout and support structure for panel and equipment | As per panel arrangement and equipment approvals | | |
| 6 | ROOF | | | |
| | Panel Thickness | 80mm | | |
| | Cladding | Inner - 0.8 mm Polyester Pre coated Sheet Outer - 0.6 mm Polyester Pre coated Sheet | | |
| | <i>Secondary roof</i> | <i>0.6 mm PPGI profiled sheet with PPCI flashing</i> | | |
| | <i>Roof slope</i> | <i>With 1.6 mm GI C-Channel</i> | | |
| | <i>Secondary roof Joints</i> | <i>With self drilling screws</i> | | |
| | Slope | 1 to 50 along width of Kiosk | | |
| | Direction of slope | Single side sloping along with width | | |
| | Over hang | 100 mm all sides, 500 mm projection on rear side | | |
| | Designed Roof load | 200 Kg/ Sq.m | | |
| 7 | DOOR | | | |
| | Main Door size | 1200 mm (W) x 2400 mm (H) - Outer to Outer | | |
| | Emergency Door size | 750 mm (W) x 2400 mm (H) - Outer to Outer Panel Thickness 80mm | | |
| | Cladding | Inner - 0.6 mm Pre coated steel Outer - 0.6 mm Pre coated steel | | |
| | Door profile | Steel extruded sections | | |
| | Door Locks | Standard door set type door locks integrated in door with 3 sets of keys | | |
| | Weather strip | Weather strip | | |
| | Opening | Opening outward hinged to the right | | |
| | Gasket | Replaceable neoprene base rubber gasket as per IP-55 test | | |
| 8 | Insulation | | | |
| | Foam | High pressure injected, CFC free, Rigid PU | | |
| | Density | 42 +/- 2 Kg/m ³ | | |

| | | | | |
|-----------|--------------------------------|--|--|--|
| | K-Value Foam | 0.02 W / m ² per Deg Kelvin Per Hr | | |
| | K-Value Shelter | =< 0.3 W / m ² per Deg Kelvin Per Hr | | |
| | Fire resistance | As per BS-4735, Horizontal Burn < 125 mm Self Extinguishing | | |
| 9 | Joints | With eccentric cam locks, sealed with sealant | | |
| | Angles | External super structure with press break GI sheet. - 150x150x1.6 Inside full MS frame 75X75X1.6 at all corners Internal mid frame 50x50x2.9 square tubes | | |
| 10 | Sealant | Silicon based "Natural Cure Sealant" | | |
| 11 | Sub Frame | Hot dip GI ISMB-200/ 250 & ISMC-150/ 200 based on pedestal foundation. Section receiving Kiosk are to be anchored to base grid with appropriate corner anchoring elements. Nos. of ISMB & ISMC sections Joining by suitable Clits and M10 fastener (type, Nos. and size of clits) Anchoring suitable clit and M10X250 anchor fastener | | |
| 12 | Electrical conductivity | All metal parts shall be inter connected for good electrical conductivity and earthed suitably with Kiosk earthing. | | |
| 13 | PUF Properties | | | |
| | Density | 40 +/- 2 Kg/m ³ CFC free | | |
| | Compressive Strength | 2.1 Kg./ cm ² | | |
| | Tensile strength | 3.7 Kg./ cm ² | | |
| | Bending strength | 4.0 Kg./ cm ² | | |
| | Adhesion strength | 2.9 Kg./ cm ² | | |
| | Thermal conductivity | 0.02 W / m ² / Deg Kelvin / Hr | | |
| | Steel Work | IS 2026, IS 2262 Structure MS pipes - IS 1329 Part 2 Steel work GI - As per IS 4759 Minimum coating thickness | | |

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|-----------|--------------------------|---|--|--|
| | | - As per IS All welding - As per IS 816 | | |
| 14 | Air conditioning | | | |
| | Power Supply | 1 –Ø 230 V -50 Hz AC | | |
| | A/C Package contains | Twin A/C Machines | | |
| | Capacity in Ton | 1.5 T/ 2.0 T | | |
| | Operation | LCD Remote | | |
| | Refrigerant | R- 22 | | |
| | Compressor type | Rotary | | |
| | Features: | Auto change over in case of one m/c faulty. Special feature narrated in detailed spec. | | |
| | Potential free contacts | 4 C/O required for ON/OFF status for SCADA. | | |
| | Warranty | 3 years on site 7 years compressor replacement | | |
| 15 | Illumination | Details to be mentioned by bidder | | |
| 16 | Smoke Detector | | | |
| | Type | Ionization | | |
| | Make | | | |
| | Nos. | 2 / Kiosk | | |
| 17 | Type test | IP-55 test from NABL accredited Lab | | |
| 18 | Colour shade | RAL 7032 | | |
| 19 | Steps | Suitable robust steps of GI Flats / Channels / Angels with sufficient height and stepping shall be provided. | | |
| 20 | Tie Rod | <i>12 mm Dia through Tie Rod in corner panels from Floor, Side wall to Roof & connected to ISMB shall be provided.</i> | | |
| 21 | Wiring | <i>Wiring shall be industrial grade high quality with 1.1 KV FRLS cables of appropriate rating. Wiring for all the accessories (Illumination, Smoke detectors, Air conditioning system etc.)supplied with Kioks shall be considered in scope of Kiosk supply.</i> | | |
| 22 | Other Accessories | | | |
| | | Temperature transducer WITH 4-20 mA output | | |
| | | DC Emergency lamp | | |