



An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY	Phone: +91 431 257 79 38 Fax : +91 431 252 07 19 Email : tvenkat@bheltry.co.in Web : www.bhel.com
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	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
	2620900077	20.03.2009	20.04.2009

You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order

Item	Description	Quantity	Delivery (Item required at BHEL on)
10	Supply, Installation and Commissioning of Fibre Optic Network as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	1 Set.	25.06.2009

BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats along with technical specifications can be downloaded from BHEL web site <http://www.bhel.com> or from the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference “2620900077”.

Tenders should reach us before 14:00 hours on the due date
Tenders will be opened at 14:30 hours on the due date
Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

Manager / Capital Equipment / MM

Campus-wide Networking Specification

Revision History:

Rev 00 Issued on 12 03 2009

Prepared	S. Thyagarajan		Dt.
Checked	K V Seetharaman		Dt.
Approved	K V Seetharaman		Dt.

1.0 General

BHEL – Trichy, proposes to extend the campus LAN through fibre optic cable to Phase I & Phase II expansion locations and augment existing data / voice network of HPBP plant to enhance availability. The scope covers the following

1. Supply and laying of fibre optic cables/ copper cables and cable terminations.
2. Supply and Installation of Racks, LIU's, IO's, Jack panels etc
3. Termination of fibre / UTP cables at Racks, LIU's, IO's and Jack panels.
4. Establishment of connectivity, testing, commissioning and data/voice

2.0 Itemwise details

2.1 Outdoor Single mode Fibreoptic cable: (Krone/Molex/Nordex/AMP/Avaya make)

12 core single-mode (9/125 micron) fibre optic cable, suitable for outdoor deployment in Ethernet (upto 10Gbps) data network. The fibres shall be in a central tube filled with water-blocking compound and with standard colour code index. The cable shall have steel armour to provide rodent and lightning protection. The outer sheath shall be water-resistant, UV-resistant and Fungus-resistant and shall provide maximum environmental protection. The cable shall conform to TIA / EIA-568B standard. The minimum bending radius of the cable shall be 20 x cable diameter under load. Attenuation shall be max 0.4db/Km at 1310 nm and max 0.3db/Km at 1550 nm.

The cable shall be laid underground at a depth of 1metre, in 1" diameter HDPE pipe. Each run of cable shall be run through separate HDPE pipe. The pipes shall be covered with half round concrete trough of 4" dia, and the soil shall be refilled. Cable route markers shall be used at intervals of 50 meters and at turning points.

Underground cable laying involves laying in soft soil, hard soil and along cable trenches. Road cutting is estimated to be around 500m. Road cutting should be refilled and finished by cementing.

2.2 Indoor Single mode Fibreoptic cable: (Krone/Molex/Nordex/AMP/Avaya make)

12 core single-mode (9/125 micron) fibreoptic cable, suitable for indoor deployment in Ethernet (upto 10Gbps) data network. The cable shall conform to TIA/EIA-568B standard. The minimum bending radius of the cable shall be 20 x cable diameter under load. Attenuation shall be max 0.4db/Km at 1310 nm and max 0.3db/Km at 1550 nm.

The cable shall be laid in 1" diameter PVC pipe. The pipe shall be securely fixed to brick wall or steel girders using clamps.

2.3 12 U wall mount Rack: (Vero President/Rittel/Valrack make)

- o 19"X12U wall mount rack of depth 500 mm
- o Both Side panels shall be hinged and access-protected with lock and key.
- o Full length Glass Front door with lock and key
- o Mounting hardware - 24 Nos
- o Power strip with 5 nos of 5A, 3 pin socket
- o 230V AC 90CFM fan at the top - 1 No
- o Horizontal cable manager - 2 Nos

The rack shall be mounted on brick walls by grouting or on steel girders using suitable clamps.

2.4 24 U Rack: (Vero President/Rittel/Valrack make)

- o 19"X24U rack of depth 500 mm
- o Both Side panels shall be of removable type and access-protected with lock and key.
- o Back panel and full length Glass Front door, both hinged type and with lock and key
- o Mounting hardware - 48 Nos
- o Power strip with 8 nos of 5A, 3 pin socket
- o 230V AC 90 CFM fan at the top - 2 Nos
- o Horizontal cable manager - 12 Nos

2.5 24 Port Patch panel: (Krone/Molex/Nordex/AMP/Avaya make)

Installation of patch panel in rack involves mounting of patch panel, punching UTP cable in the patch panel, ferruling the cable, dressing, labeling and testing connectivity.

2.6 Cat 5E UTP cable: (Krone/Molex/Nordex/AMP/Avaya make)

UTP cable shall be laid in PVC channel (casing and capping) / PVC wire duct / PVC conduit of suitable size or run through frames in modular office furniture. In case of brick walls, the cable shall be laid in PVC channel / PVC wire duct. In case of laying along steel girders, the cable shall be laid in PVC conduit.

PVC casing and capping, PVC wire duct and PVC conduit shall be of durable plastic. Sample should be given before making supply.

Each run of cable shall be ferruled at both the ends.

2.7 Cat 5E UTP Patch cords: (Krone/Molex/Nordex/AMP/Avaya make)

UTP patch cords shall be of 2 different lengths and colours.

1. Rack-end patch cord shall be of 1 m length and of Yellow colour
2. User-end patch cord shall be of 2 m length and of Green colour

2.8 CAT 5E Information Outlet: (Krone/Molex/Nordex/AMP/Avaya make)

- o CAT5E Keystone punch down jack
- o Shuttered single/dual IO face plate
- o Surface mount box with screws

Installation of I/O involves mounting of I/O on wall, punching UTP cable in the I/O jack, ferruling the cable and labeling the I/O.

2.9 RJ45 connector: (Krone/Molex/Nordex/AMP/Avaya make)

8-way modular plug connector

2.10 LIU, Connector and Fibre Patch cord: (Krone/Molex/Nordex/AMP/Avaya make)

All the fibre cores shall be spliced to Singlemode SC pigtail connectors housed in the LIUs. The LIU shall be rack mountable. The fibre patch cords shall be of types SC-SC and SC-LC for providing connectivity between the LIU and the switch port

2.11 General

The quantity given in the BOM are approximate and there may be some variation in the quantities during execution. The vendor shall bill according to the actual quantity supplied.

3.0 Installation, Testing & Commissioning:

The scope of supply includes supply, erection, commissioning, testing and performance proving. The vendor shall install all the items given in the Bill of materials and commission the network. The vendor should ensure that the items supplied by him get properly integrated to the existing setup. The vendor shall test all the cores of Fiber optic cable using cable tester and submit a test report.

The UTP cable laying and terminations, covered under the scope shall be tested and test report shall be submitted.

All installations shall be done by certified technicians and the vendor should submit the certification credentials of the technicians.

The fibre cable plant within the scope of the vendor should be certified for a life span of 20 years by following the standard certification procedures.

4.0 Special Instructions to the bidder

1. The offer shall be submitted in full, covering the total scope referred under section 1.0, with all technical details, specifications, delivery and other commercial terms and conditions.
2. Partial offer will not be accepted and will not be considered for evaluation.
3. Applicable and relevant catalogues for each item, in English, shall be attached with the offer.
4. Point by point confirmation for all the contract specifications shall be provided. Deviations, if any, shall be specified clearly. Offers received without point by point confirmation will be rejected. The point by point confirmation shall indicate the relevant page numbers in the relevant document.
5. The contract will be awarded to a single party for the total scope
6. List of customers for whom similar work has been undertaken, along with performance certificate from such customers, shall be enclosed.

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Supply, Installation and Commissioning of Fibre optic Network

Sl. No	Description	Unit	Quantity
1	SM Fibre cable 12 core outdoor	Mtr	30000
2	SM Fibre cable 12 core indoor	Mtr	3000
3	Armoured multicore (37core 1.5 sq mm) copper cable	Mtr	3000
4	48 way Junction box for the multicore copper cable	Nos	4
5	Wall mount 12 U rack	Nos	40
6	Floor mount 24 U rack	Nos	5
7	UTP CAT-5E cable	Mtr	30000
8	IO Surface mount box	Nos	300
9	Cat5E Dual IO with faceplate	Nos	200
10	Cat5E Single IO with faceplate	Nos	300
11	SM SC Pigtail	Nos	1200
12	Rack mount LIU with accessories	Nos	50
13	UTP Patch panel	Nos	100
14	Cable manager	Nos	100
15	RJ45 connector	Nos	5000
16	SC-LC Fibre Patch cord - 3 m	Nos	100
17	UTP Patch cord - 1 m	Nos	500
18	UTP Patch cord - 2 m	Nos	500
19	HDPE Pipe - 1"	Mtr	20000
20	PVC Pipe - 1"	Mtr	5000
21	Cable route markers	Nos	500
22	PVC Casing and capping 0.75"	Mtr	2000
23	PVC Casing and capping 1.5"	Mtr	1000
24	PVC Wire duct with cover 2"	Mtr	500