


EXPRESSION OF INTEREST

		EOI NUMBER: SPNM900013	Due Date/Day: 10.06.2015 WED
MMI:PU:RF:003	BHARAT HEAVY ELECTRICALS LIMITED Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	EOI DATE : 16.05.2015	Time : 13:00 HRS Tender Box : Reception Area Opening Venue: NEW ENGG. BLDG

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Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	MOSAIC BASED PANELS SPECIFICATION : PS4152244 FOR EXPRESSION OF INTEREST	26	NO	26	AS REQUIRED

Total Number of Items - 1

NOTE: REFER SPECIFICATION PS4152244 AND ANNEXURE 1 FOR DETAILS.

TWO PART BID - SUBMIT TECHNICAL AND PRICE BID IN
SEPARATE SEALED COVERS

NOTES :

1.This EOI is Governed by :

a)INSTRUCTIONS TO BIDDERS/SELLERS(Doc No :BHEL:EDN:ITB-SHOP) available at

www.bheledn.com (RFQ-PO Terms & Conditions)


b)GENERAL CONDITIONS OF CONTRACT FOR PURCHASE(Doc no :BHEL:EDN:GCC-SHOP) available at www.bheledn.com (RFQ-PO Terms & Conditions)


c)Any other specific Terms and Conditions mentioned.


2. Bidders / Representatives who would like to be present during opening of offers are required to furnish authorization letter for the same.


For and On behalf of BHEL.


SUDHA PARIMALA N
Control Equipment
1 OF 1


		<div><div><div>बि एच ई एल</div><div></div><div>A4 - 10</div></div></div>		<div>PS 4152244</div> <div>REV.NO. 00</div> <div>PAGE 01 OF 09</div>						
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		<div>SPECIFICATION FOR</div> <div>MOSAIC-BASED CONTROL PANELS</div> <div>(FOR EXPRESSION OF INTEREST)</div>								
			<div>REVISIONS:</div>	<div>APPROVED</div> <div>(A. GANGULY)</div> <table><tr><td>PREPARED</td><td>ISSUED</td><td>DATE</td></tr><tr><td></td><td>415</td><td>12.11.2014</td></tr></table>		PREPARED	ISSUED	DATE		415
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	415	12.11.2014								


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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.			<p><u>1.00 GENERAL</u></p> <p>1.01 Organisations desirous of undertaking manufacture of mosaic-based panels for BHEL are required to be reputed and of proven ability to manufacture such panels. The manufacturer should have manufactured and supplied such mosaic-based panels of at least 750 mm width, or more, prior to the date of response. They should have all necessary resources of facilities, systems, processes and skilled manpower for undertaking such job. Experience of handling mosaic system products, assembling them on to a panel and wiring is a must.</p> <p>1.02 In case the vendor is not an approved vendor of BHEL for such panels, Expression Of Interest shall be followed by a qualification procedure of evaluating the short-listed vendor's facilities, resources and experiences. Further, the vendor shall also has to be subsequently approved by BHEL's customers for various projects, before any purchase orders can be released.</p> <p>1.03 This specification covers the requirements of a mosaic-based control panel for power plant applications. The panel shall be located in the central Control Room and shall house any of the various mosaic-type control operating tiles, moving coil indicators, meters, LED indicating tiles, receiver or bar-graph type indicators, recorders, mosaic-type annunciation windows or box-type annunciation facia, mimic diagrams, and such other control components as may be required for control and monitoring of the power plant. Being the central location in the plant and considering operational ease, the construction of the panel shall be aesthetically appealing, based on sound ergonomic considerations, and shall be such as to enhance concentration, visibility and comfort on the part of the operator.</p> <p><u>2.00 CONSTRUCTION</u></p> <p>2.01 The panel shall be a free-standing vertical panel of bolted or welded construction. If of bolted construction, the panel frame members shall be constructed out of folded CRCA sheets. For welded construction, the panel frame members shall be of suitable angles, like L-angles. The front width of each frame member, after erection of the frame, shall be specified by the vendor (say, X mm). The overall height of the panel, including base and bottom frames, shall be between 2295 and 2355 mm. The actual height shall be project-specific, and shall be specified separately for each project requirement. This minor band of height dimension shall not be considered for any price implications. The depth of the panel shall be 1000 mm. The width of the panel shall be calculated taking into account the subsequent clauses of this specification.</p> <p>If panels are of welded construction, they shall be of sufficient strength to bear the loads of front panel mosaic grids and rear doors as may be required for each individual panel. Method of welding of different joints (e.g., frame to frame, frame to sheet) shall have to be mentioned. After welding, the joints have to be mended, without foregoing any joint strength, such that welding bubbles or gaps are not visible. Further, welding shall be performed by welders qualified by recognized agencies.</p>	
			<p>2.02 The panel front shall consist of the following parts:</p> <p>a) From bottom, a certain height which shall be separately specified for each project, including base and bottom frames as per cl. 2.08 of this specification, shall be of sheet steel construction. No items are envisaged to be mounted on this part. Exact dimension of this area shall be determined by the vendor as per his construction.</p> <p>b) Above the sheet steel portion as in (a), a metallic Mosaic Grid structure shall be housed. The mosaic grid shall have a certain number of rows and columns, variable, and to be</p>	

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		<p>specified, for each project. The number of rows and columns of the mosaic grid shall determine its overall dimensions including its frame members. The mosaic grid, to be issued free to the panel vendor by BHEL, shall be any of the reputed makes, such as:</p> <ul style="list-style-type: none"> - Tew, Germany - ProPlan, Gemany - Symo, Switzerland - Werner, Germany - Saco, Canada <p>or any other reputed make. The actual make and details of mosaic grid shall be made known before actual purchase orders. The panels shall be suitable for accommodating any mosaic grid irrespective of the make. Unless there are any other project-specific variation of construction, it is, in general, to be followed that the width of the mosaic grid, added to the width of the panel frame members as mentioned under 2.01 shall give the total width of the panel, and shall be considered as one of the determinant factors for pricing of the panel.</p> <p>Width of the panels shall thus be: $W = [n \times (48 \text{ or } 50)] + [2 \times Y] + [2 \times X] \text{ mm}$ Where, n = no. of columns in the mosaic grid; 48 or 50 mm = width of each column depending upon mosaic vendor; Y = width of mosaic framework; X = width of panel frame.</p> <p>c) Normally, (a) and (b) as above shall cover the front of the panel. There may, however, be requirements in some projects that a certain height above the mosaic grid shall also be of sheet steel construction to facilitate mounting of box-type annunciation facia, or such other components, or due to design or operational reasons. The total height of sheet steel on the front panel, taken as a percentage of the overall height of the panel, can be taken as another determining factor for variation of panel prices.</p>	
		<p>2.03 The fixing of the Mosaic Grid structure to the front panel is in the scope of the vendor and is to be carried out at BHEL works. For this, the assembled grid of the specific size with the framework will be made available to the vendor as a free-issue item at BHEL works. However, any other small components/hardware required for fixing the above Mosaic Grid to the panel will be arranged by the supplier. Normally, a Mosaic Grid shall require C-channels for reinforcements from the rear, which shall be in the scope of the vendor as per cl. 2.05 below.</p> <p>The Mosaic Grid should be mounted on the front panel in such a way that after positioning in the cutout, Mosaic Grid is flush with the adjacent sheet steel.</p> <p>2.04 It may be required in certain projects, from the point of view of ease of manufacture and dispatch, or due to customer requirements, to construct the panel in more than one shipping section. In such cases, the mosaic grids shall also be provided in matching sections. The individual sections are to be joined to one another in such a way that, after joining of the sections along with their respective grid structures, and alignment of the sections, the front panel mosaic grids give a seamless, continuous look, without any break, gap or unevenness on the front surface, and provide the look of one complete, continuous grid spread over the sections. Therefore, the individual sections have to be constructed accordingly. The right end of one section and the left end of the adjacent section shall be without the regular side covers, but provided with partial depth-wise, full height, separation, without obstructing the continuity of the front panel mosaic grid.</p> <p>The joining and alignment of the individual shipping sections of the panel shall be carried out at site. Sufficient provisions should be given for supporting the semi-open ends of the shipping</p>	

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		<p>2.10 The panel shall have buff finished stainless steel kickplates of thickness 2 mm and sufficient height, not less than 100 mm., to cover the base and bottom frames as mentioned in cl. 2.08.</p> <p>2.11 The protection class of the panel shall be IP X0, where X can be 2, 3 or 4, depending upon the requirement of a specific project, and shall be specified for each project. No separate price implication shall be considered for this variation.</p> <p>For some panels, second digit of protection class of 1 (protection against vertically falling droplets of water particles) may be required. This may be achieved by extending the top cover of the panel in the front over the mosaic grid, or by a separate canopy, within the specified overall height. No separate price implication shall be considered for this variation.</p> <p>2.12 The panel shall be mounted on wooden pallets using suitable size bolts, along with anti-vibration pads of part no. 17/355-1 MN 70, Dunlop-make. Pallets shall be rectangular in dimensions extended by 75 mm on all sides over the extreme overall dimensions of the panel. Wood used shall be of good quality (neem or babool) to withstand impacts during handling and transport. The top planks of the pallet shall be as close to each other as possible to eliminate gaps between them. To achieve this, the planks should either be joined by tongue-and grove joints, or the top surface of the pallet, after nailing of the planks, shall be totally covered with a plywood of 2 mm thickness.</p> <p>Pallets shall conform to BHEL EDN Drg. No. 3-659-41-00225. This drawing also refers to our Plant Standard ED 0490097 which shall generally be followed for fabricating the pallet. However, if there are any differences between this specification and the standard, the requirements as per this specification shall be over-riding.</p> <p>2.13 Eye bolts to be provided for lifting the panel.</p> <p>2.14 Vendor is required to submit for each project, necessary specific Overall General Arrangement (OGA) and other manufacturing drawings for approval, clearly mentioning the width and other dimensions, but without altering the height and depth as shall be specified for each project. Vendor should submit for approval a detailed manufacturing Quality Pan for the panel.</p> <p><u>3.00 SURFACE PREPARATION & POWDER COATING</u></p> <p>3.01 Finished panel surfaces shall be free from waves, bellies or other imperfections. All welds on the exposed panel surfaces shall be ground smooth. Suitable filler shall be applied to all pits, blemishes and voids in the surface. The filler shall be sanded so that surfaces are level and flat, corners are smooth and even. Exposed raw metal edges shall be ground burr-free. The entire Panel shall be sanded to remove rust and scale and all other residue due to fabrication operation. Oil grease and salt etc. shall be removed from the surface by one or more solvent cleaning methods.</p> <p>3.02 Final finish colour (<u>epoxy based powder coating</u>) shall be applied to all surfaces. The final finished thickness of paint film on sheet shall not be less than 60 micron. The finish colours for exterior and interior surfaces shall be project-specific, and shall be separately specified for each project. Generally, the exterior surfaces shall be of semi-glossy finish, and the interior surfaces shall be of glossy finish, and the shades of paint for these surfaces shall be different. There may also be certain project-specific requirements of the exterior surfaces of the folded end covers being of a different shade than the rear doors, top cover and the front panel sheet exterior surfaces.</p>	

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		<p>No price implication shall, however, be accepted for any difference in paint shade pattern for different projects.</p> <p>The surface shall be uniform throughout and free from defects such as uncovered areas, wrinkles, orange peel effects, blistering etc.</p> <p>The colour of the painted surface shall be matched with specified shade card.</p>	
COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		<p>4.00 OTHER COMPONENTS IN VENDOR'S SCOPE</p> <p>4.01 Door switches having shrouded terminals shall be supplied duly mounted on the panel. The number of door switches shall be determined by the number of doors. The quantity of door switches shall not implicate the overall price of the panel.</p> <p>4.02 The vendor is also required to fabricate and supply suitable frames for mounting of non-DIN size instruments on to the mosaic grid of each of the panels, quantity of which shall be specified separately for each project. The frames shall be fabricated from aluminium sheet. Fixing arrangement to the mosaic grid shall ensure rigidity and shall be such as to sit in alignment with adjacent mosaic surfaces. The frames shall be painted to applicable RAL shade as of the mosaic surface, and shall be intimated separately. A unit price for each frame can be quoted, which shall be taken into account for arriving at the cost for the total requirements for any project. Necessary drawings for fabricating the frames shall be given for each project after detailed engineering.</p> <p>5.00 GROUNDING</p> <p>5.01 The panel shall be provided with a continuous copper bus of minimum 6mm x 25mm cross-section. The bus-bar shall be mounted on insulators at location to be shown in GA drawing. The bus bar shall be connected to M8 Earthing Bolts to be provided outside the panel on both sides of the bottom frame through 4 sq. mm. cross section green-yellow cable. For panels with multiple shipping sections but continuous mosaic, earthing bolts shall be provided on the sides of the extreme sections only.</p> <p>5.02 For panels with multiple shipping sections, strips for interconnecting the bus bars between different sections shall also be supplied.</p> <p>5.03 In case there is any requirement in any particular project for the earthing bus bar to be of a different dimension and/or of aluminium instead of copper, same shall be specified. This has to be complied with without any additional price implication.</p>	
		<p>6.00 COMPONENT MOUNTING AT BHEL WORKS</p> <p>6.01 The mosaic grid structure as per clause 2.02(b) shall have to be mounted on to the front panel of the panel.</p>	
		<p>6.02 Components to be mounted inside the panel shall be arranged as per the internal General Arrangement (GA) drawings to be provided by BHEL. All necessary brackets and hardware required for mounting various components inside the panel are in the scope of the vendor. Locations of such components will be as per GA.</p> <p>6.03 All mosaic mountable components and other items supplied as free-issue by BHEL or the customer shall also be located on the panel as per front panel layout drawings at BHEL works.</p>	

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		<p>However, components, which shall be available only at site, shall be mounted at site.</p> <p>6.04 The list of components supplied by BHEL as free of cost shall be furnished by BHEL in Device Lists after detailed engineering.</p> <p>6.05 In order to establish the component of labour cost at BHEL works for the scope of this section, the following information shall be provided for each panel, and shall be taken as variants for price computation:</p> <ol style="list-style-type: none"> The total area of mosaic grid to be mounted on the panel, for which a rate per unit area may be quoted. The width of each shipping section wherein all components as in 6.02 and 6.03 shall have to be mounted. Lumpsum rates for mounting of all components in each shipping section shall be considered for five slabs of section widths, starting from 750 mm and up to 3000 mm. For panels/shipping sections, the width of which exceed the width of any of these slabs by up to 150 mm, the rates shall be taken same as for the slab immediately preceding. Further, for panels manufactured in more than one shipping section, the cost shall be computed as a total of individual costs for the slab under which each shipping section width belongs. <p><u>7.00 WIRING OF THE PANEL AT BHEL WORKS</u></p> <p>7.01 All wiring shall be carried out as per the wiring table provided by BHEL. Wire size shall be as indicated on wiring table.</p> <p>7.02 Preliminary tentative estimation of number of wiring connections shall be specified against each project. The connections/interconnections shall normally be with 0.5, 0.75, 1.5 or 2.5sq. mm cables. Each connection/interconnection shall normally involve two terminations of either crimp, cage clamp or screw type. This estimation of wiring connections shall be purely tentative and may increase/decrease, based on detailed engineering, and will finally be reflected in the wiring table mentioned in cl. 7.01.</p> <p>Dependent upon the number of wiring connections, a reasonable variation in pricing for the work to be carried out at EDN for different projects may be considered. For this purpose, a unit rate for wiring connections shall be considered for arriving at the total cost for panel wiring.</p> <p>7.03 All cables, cabling and termination materials for wiring shall be supplied by BHEL.</p> <p>7.04 Wires shall not be tapped or spliced between terminal points.</p> <p>7.05 Wiring shall be arranged to enable instruments or devices to be removed and/or serviced without unduly disturbing the wiring. No wire shall be routed across the face or rear of any device in a manner which may restrict the opening of covers or obstruct access to leads, terminals or devices.</p> <p>7.06 Low level signal wiring shall be separately bundled from wiring carrying high level voltage (110/240V) and shall be maintained at 300mm minimum spacing from high level voltage wiring. When such spacing cannot be maintained, low level wiring bundles shall be kept at right angles to others or shall be enclosed in ferrous conduits.</p> <p>7.07 All required tools for wiring/crimping shall be provided by BHEL.</p>	

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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.		<u>8.00 INSPECTION</u>	
		<p>8.01 Inspection shall be carried out according to mutually agreed and customer approved Quality Plan to be finalised later.</p> <p>8.02 Pre-despatch inspection after painting may be carried out at the supplier's works. However, BHEL reserves the right to carry out or waive off against sufficient documentary evidence this pre-despatch inspection. Customer or their nominated agency may be involved at this stage if desired by them.</p> <p>8.03 Inspection shall be carried out at BHEL works at goods-inwards stage and after final assembly. Customer or their nominated agency shall be involved at the final inspection stage prior to dispatch from BHEL-EDN works.</p> <p>8.04 Vendor's representative shall be associated during inspection and testing of the panels by BHEL, or during customer inspection, at BHEL works, for any changes/modifications/ corrections to be carried out on line.</p> <p><u>9.00 PACKING</u></p> <p>9.01 The packing shall be totally covered type and shall not be a crate. The structure shall be covered with water-proof polythene sheets. Sufficient packing material shall be provided between the structure and the wooden cover for protection against shocks, vibrations and impacts. Also, refer to cl. 2.12 of this specification.</p> <p><u>10.00 ERECTION AT SITE</u></p> <p>10.01 The scope of the supplier's work also includes erecting the panel at site as per his Overall General Arrangement (OGA) drawing and other erection drawings to be made available at site. This shall also involve alignment of different shipping sections, if any.</p> <p>10.02 All free-supply items from BHEL or the customer which shall be available only at site shall be located in their respective locations and wiring termination to be completed by the panel manufacturer. Any item removed before despatch from BHEL works and despatched loose shall also have to be relocated and rewired at site by the panel manufacturer.</p> <p>Apart from above, work at site may also involve making provisions for cut-out for any item which had not been earlier identified, modifications or alterations that may be necessitated in the existing cut-out, and mounting arrangement or wiring necessitated due to unforeseen circumstances or design changes subsequent to despatch. This clause shall be applied on case-to-case basis depending upon the scope of such additional work involved, and the scope of such work under this clause shall be agreed upon mutually between BHEL and the vendor.</p> <p>10.03 Any repairs to minor damages to the panel sustained in transit, or during handling at site, and which are possible to be attended at site, shall also be repaired, and any necessary paint touch-up required at site shall also be carried out.</p> <p>10.04 It is estimated that depending upon the panel size and the number of shipping sections, the total duration of site work shall be of 9, 11, 13 or 15 days' duration for a minimum complement of manpower consisting of a supervisor, electricians and fitters. For this, the following is proposed to be followed:</p>	

ANNEXURE TO PS4152244

A1) PRICE OF PANEL

Sheet Thickness	Sheet Height	PANEL WIDTH										
		Between 750 & 1000 mm	Between 1001 & 1250 mm	Between 1251 & 1500 mm	Between 1501 & 1750 mm	Between 1751 & 2000 mm	Between 2001 & 2250 mm	Between 2251 & 2500 mm	Between 2501 & 2750 mm	Between 2751 & 3000 mm	Between 3001 & 3250 mm	Between 3251 & 3500 mm
All sheets 3 mm CRCA	Front Panel sheet height upto 35% of panel height											
	Front Panel sheet height between 35% & 50% of panel height											
Front panel: 3 mm CRCA Top Cover: 2 mm CRCA Side Covers: 2 mm CRCA Rear Doors: 3 mm CRCA	Front Panel sheet height upto 35% of panel height											
	Front Panel sheet height between 35% & 50% of panel height											
		Between 3501 & 3750 mm	Between 3751 & 4000 mm	Between 4001 & 4250 mm	Between 4251 & 4500 mm	Between 4501 & 4750 mm	Between 4751 & 5000 mm	Between 5001 & 5250 mm	Between 5251 & 5500 mm	Between 5501 & 5750 mm	Between 5751 & 6000 mm	
All sheets 3 mm CRCA	Front Panel sheet height upto 35% of panel height											
	Front Panel sheet height between 35% & 50% of panel height											
Front panel: 3 mm CRCA Top Cover: 2 mm CRCA Side Covers: 2 mm CRCA Rear Doors: 3 mm CRCA	Front Panel sheet height upto 35% of panel height											
	Front Panel sheet height between 35% & 50% of panel height											

B) No. of Non-DIN size instrument frames

Unit Price:	
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Note: 1) No separate pricing pattern is envisaged for panels with more than one shipping sections, but with continuous mosaic.

2) In case prices are more or less constant for a few variants of the above matrix, the number of variants can be reduced by combining the slabs.

ANNEXURE TO PS4152244

C) COST FOR WORK AT BHEL(EDN) WORKS

C1) MOUNTING CHARGES FOR MOSAIC GRID

UNIT PRICE PER SQ. MTR.	
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C2) MOUNTING CHARGES FOR ALL COMPONENTS

SHIPPING SECTION WIDTH (MM)	750 TO 1000	1001 TO 1500	1501 TO 2000	2001 TO 2500	2501 TO 3000	3001 TO 3500
LUMP SUM PRICE						

C3) WIRING CHARGES

UNIT PRICE PER CONNECTION	
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- NOTES: 1) TOTAL COST FOR WORK AT BHEL SHALL BE: $C = C1 + C2 + C3$
2) FOR SHIPPING SECTION WIDTH EXCEEDING BY UP TO 150 MM OVER ANY OF THE ABOVE DEFINED SLABS OF C2, RATE FOR THE IMMEDIATELY PRECEDING SLAB SHALL APPLY.
3) FOR A PANEL CONTAINING CONTINUOUS MOSAIC AND MORE THAN ONE SHIPPING SECTION, THE RATES FOR INDIVIDUAL SHIPPING SECTIONS AS PER ABOVE SLABS SHALL BE ADDED TO OBTAIN TOAL COST FOR C2.

D) COST FOR WORK AT SITE

Panel Width	No. of Days	Price
Upto 4000	9	
4001 to 6000	11	
6001 to 8000	13	
8001 to 10000	15	

ANNEXURE - I			
SI.NO	ESTIMATE OF PROVISIONAL REQUIREMENT OF PANELS		
A	BARE PANELS		
		Assumption of No. of Panels	Assumption of Panel Width (mm)
	Sheet Thickness: 3 mm; Front Panel sheet height: upto 35% of panel height	1	Between 1001 & 1250
		1	Between 1751 & 2000
	Sheet Thickness: 3 mm; Front Panel sheet height: upto 50% of panel height	1	Between 1251 & 1500
	Sheet Thickness: 3+2 mm; Front Panel sheet height: upto 35% of panel height	2	Between 1001 & 1250
		8	Between 1251 & 1500
		1	Between 1501 & 1750
		1	Between 1751 & 2000
		2	Between 2001 & 2250
		2	Between 2251 & 2500
		4	Between 2501 & 2750
	Sheet Thickness: 3+2 mm; Front Panel sheet height: upto 50% of panel height	1	Between 750 & 1000
		2	Between 1001 & 1250
	SUM TOTAL OF (A)	26	
B	NON-DIN SIZE INSTRUMENT FRAMES		
			Estimation of no. of frames
	SUM TOTAL OF (B)		100
C	WORK AT BHEL(EDN) WORKS		
C1			Estimation of total mosaic grid area (Sq. Mts.)
	Total Mosaic Grid area for Mounting		120.00
C2		Estimation of No. of Panels	Assumption of Panel Width (mm)
	No of Panels for Mounting of components	1	between 750 & 1000
		14	between 1001 & 1500
		3	between 1501 & 2000
		4	between 2001 & 2500
		4	between 2501 & 3000
	TOTAL OF (C2)	26	
C3			Estimation of No. of Connections
	Wiring Connections on Panels		35000
	SUM TOTAL OF (C) [(C1)+(C2)+(C3)]		
D	WORK AT SITES		
		Estimation of No. of Panels	Estimation of No. of Days
	Panel width upto 4000 mm	26	9
	SUM TOTAL OF (D)	26	