DM,CW & ETP PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE – 1) AT NAMRUP, AASAM.

DOCUMENMT CONTROL SHEET

CLIENT : NTPC BHEL POWER PROJECT PVT. LTD.
DOCUMENT TITLE : DESIGN BASIS FOR DM PLANT & POTABLE WATER TREATMENT PLANT.
WIPRO DOC NO : A4-JWL-2194-DB-DM
REV. NO. : 01

ENDORSEMENTS :

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad
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Rev no	Date	Description	Prepared by Initials	Prepared by Sign	Reviewed by Initials	Reviewed by Sign	Approved by Initials	Approved by Sign	Issue Authorisation Initials	Issue Authorisation Sign
1	31.10.2011	Incorporating comments	AG		AG		MB			
0	10.10.2011	For Approval	AG		AG		MB		SR	

	CUSTOMER : **ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI , ASSAM.**
	CONSULTANT: **DEVELOPMENT CONSULTANTS PRIVATE LIMITED. 24 – B, PARK STREET, KOLKATA – 700016.**
	EPC CONTRACTOR: **BHARAT HEAVY ELECTRICALS LTD. RAMACHANDRAPURAM, HYDERABAD, T.N – 502 032**
	EPC SUB CONTRACTOR: **NTPC BHEL POWER PROJECT PVT. LTD., 6TH FLOOR, LOBE-4, TOWER-B, THE CORENTHUM, PLOT A/41, SEC-62, NOIDA – 201309.**
	CONTRACTOR **WIPRO WATER, Serene Properties, S.E.Z., 3rd Floor, Building No. 7, Plot No.3,TTC Industrial Area, Thane Belapur Road, Airoli, Navi Mumbai- 400708.**

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I: ANALYSIS OF CLARIFIED WATER TO DM PLANT

SR. NO.	DESCRIPTION	UNIT	VALUE
1	Calcium Hardness	ppm as CaCO3	18
2	Magnesium Hardness	ppm as CaCO3	18
3	Sodium	ppm as CaCO3	11
4	Potassium	ppm as CaCO3	-
	TOTAL CATION	**ppm as CaCO3**	**47**
5	Bi-carbonate	ppm as CaCO3	20
6	Suphate	ppm as CaCO3	19
7	chloride	ppm as CaCO3	8
8	Nitrate	ppm as CaCO3	-
	TOTAL ANION	**ppm as CaCO3**	**47**
9	Total Silica R1	ppm as SiO2	7
10	Iron	ppm as Fe	0.5 R1
11	pH value at 25 deg.C	-	7.1
12	Turbidity	NTU	10
13	TSS	ppm	25
14	Conductivity	Micro Seimens/cm @ 25 deg.C	60
15	TDS	ppm	40
16	CO2	As CO2	4

II: OUTLET QUALITY

SR. NO.	DESCRIPTION	UNIT	VALUE
A.	**PRESSURE SAND FILTER (DM)**		R1
1	Net Capacity	m3/hr	8.5
2	Quantity of treated water between two (2) successive regeneration		
a	Net	Cum	170
b	Gross	Cum	186.4
3	Quality of treated water		

a.	Turbidity	NTU	< 2
B.	**ACTIVATED CARBON FILTER**		
1	Net Capacity	m3/hr	8.5 R1
2	Quantity of treated water between two (2) successive regeneration		
a	Net	Cum	170
b	Gross	Cum	182.5
3	Quality of treated water		
a.	Turbidity	NTU	Not detectable
b.	Chloride Content	ppm as Cl	Not detectable
C	**DEGASSER TOWER**		
1	Capacity		
a.	maxium	m3/hr	9.8
b.	Minimum	m3/hr	8.5
2	Carbon di oxide content in treated water	ppm as CO2 at 25 deg.C	≤ 5.0 R1
D	**MIXED BED EXCHANGER**		
1	Net Capacity	m3/hr	8.5 R1
2	Quantity of treated water between two (2) successive regeneration		
a	Net	Cum	1190
b	Gross	Cum	1200
.	Quality of treated water		
a.	Total electrolyte	ppm as CaCO3	< 0.1
b.	Total hardness	ppm as CaCO3	NIL
c.	Reactive Silica	ppm as SiO2	<0.01
d.	Conductivity	Micro Siemens/cm at 25 deg C	< 0.1
e.	Chloride		NIL
f.	Iron	ppm as Fe	<0.005
g.	Total copper	ppm as Cu	<0.005
h.	Permanganate		NIL R1
i.	pH at 25 deg.C	-	6.8-7.2

j.	Turbidity	NTU	NIL

III: OUTLET QUALITY (POTABLE WATER)

SR. NO.	DESCRIPTION	UNIT	VALUE
A.	PRESSURE SAND FILTER (POTABLE)		
1	Net Capacity	m3/hr	8 R1
2	Quantity of treated water between two (2) successive regeneration		
a	Net	Cum	160
b	Gross	Cum	164
3	Quality of treated water		
a.	Turbidity	NTU	< 2

IV: PROCESS DESCRIPTION

Pressure Sand Filter (PSF)

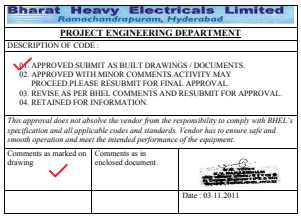
Water will be fed to Pressure Sand Filter (PSF). PSF shall comprise of Sand and Gravels, which removes suspended solids

The unit is backwashed when the unit has delivered its specified output or when the treated water quality is not satisfactory whichever is earlier. Backwash will be done with Filtered water

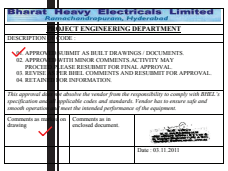
Activated Carbon Filter (ACF)

Filtered water will pass through Activated carbon filter (ACF). ACF contains activated carbon as filter media, which removes the organisms, chlorine from filtered water.

The unit is backwashed when the unit has delivered its specified output or when the treated water quality is not satisfactory whichever is earlier.



Strong Acid Cation Exchanger (SAC)



The filtered water is fed to the Strong Acid Cation unit. The unit is designed on counter-current regeneration mode to have the better efficiency and uniform treated water quality with economical chemical consumption.

Then vessel is charged with strongly acidic Cation exchange resin polystyrene based .The cations in water are exchanged with hydrogen ions from the regenerated resin. When the resin is saturated with cations such as calcium, magnesium, sodium etc. and cannot further exchange hydrogen ions and when the quality of the outlet water deteriorates, the unit requires regeneration with Hydrochloric Acid. The strength of acid regenerate at cation bed inlet 5%. During regeneration, the reverse action take place, hydrogen ions from the acid replace unwanted calcium, magnesium, and sodium ions absorbed by the resin during service cycle. The unit after regeneration is ready for next treatment run. The unit is designed for a specific Cation load. While normal service flow is from top to bottom, the flow of regenerate is from bottom to top. This ensures that the bottom bed is fully regenerated and helps in reducing the sodium slip from the unit.

The countercurrent mode of regeneration also ensures the best utilization of Regenerate i.e. it provides higher regeneration efficiency and lower chemical consumption (operating cost). The decationised water is then passed to the Degasser Tower.

Degasser System (DGT)

The degasser tower is a packed column (Pall Rings) where water sprayed from top of the packing, breaks into fine droplets, thereby increasing the surface area for contact. These droplets come in contact with a countercurrent flow of air supplied by degasser fans. In the scrubbing action, therefore, the unstable carbonic acid is broken into water and carbon which removes alkalinity from the water. Air blowers of centrifugal type will be provided. Degassed water pumps will be provided to feed the water from Degassed Water Storage tank to SBA.

Air blowers installed at the side of degassed tower to provide low-pressure air for degassing water rich in carbon dioxide. One blower is normally in service, other being a standby for each stream of DM plant

STRONG BASE ANION EXCHANGER (SBA)

The dealkalised water from DG tower will come into the SBA. Strong Base Anion Exchanger is charged with anion exchange resin (OH- base).SBA resin will absorb EMA, silica and carbon dioxide thus producing demineralised water substantially free from dissolved solids.

When the resin is saturated with anions and cannot further exchange hydroxyl ions and when the quality of the outlet water deteriorates the unit requires regeneration with Caustic. The unit is regenerated with NaOH. The strength of alkali is 5%. During regeneration of SBA the reverse action takes place, hydroxyl ions from the caustic replaces unwanted anions absorbed by the resin during service cycle. The unit after regeneration is ready for next treatment run.

Mixed Bed Exchanger (MB)

The water from SBA will feed to the MB containing mixture of strong acid cation exchange resin and strong base anion exchange resin.

Mixed Bed Exchanger contains mixture of Cation Exchange Resin and Anion Exchange Resin. Cations and anions will be exchanged in mixed bed unit to insure the desired treated water quality at the outlet.

The regeneration of the exchanger will be performed with Hydrochloric acid & Caustic soda solution. Regeneration will be sequentional type i.e. first with alkali followed by acid. Chemical dilution will be performed with de-mineralized water. Regeneration sequence will be completed automatically the water coming from the Demineralization package will be sent to DM Water Storage Tank.

R1

The effluents from the Mixed Bed will be conveyed by gravity through channel to Neutralization pit.

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DM Water Storage Tank

DM water shall be stored in two Nos. of DM water storage tanks.

CHEMICAL HANDLING SYSTEM

Acid Unloading Pumps

Two acid unloading pumps each sized for filling the storage tank in one hour shall be provided. The pumps shall be designed for handling 30-33% hydrochloric acid.

Bulk Acid Storage Tank (BAST)

One No. of acid storage tank common for both streams shall be supplied.

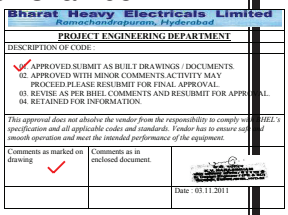
Acid Measuring Tank

Five (5) nos. of Acid measuring tank; regeneration two for each of SAC & MB cation resins and one to meet the requirements for the neutralization of excess alkali present in regeneration waste from the DM plant in the N. pit

From the measuring tanks, acid shall be injected to the SAC & Cation MB units by means of water ejectors. Pressurized water for ejector for MB shall be taken from the DM water storage tank. Pressurized water for ejector for SAC shall be taken from the Degassed water storage tank. The ejectors including the nozzles shall be specially designed for acid service and for the specified dilution ratio of acid to water.

Caustic Unloading Pumps

Two caustic unloading pumps each sized for filling the storage tank in one hour shall be provided. The pumps shall be designed for handling 40-48% Caustic Lye.



Bulk Caustic Storage Tank (BCST)

One No. of caustic storage tank common for both the streams shall be supplied.

Caustic Measuring Tank

Five (5) nos. of Caustic measuring tank; two for regeneration of each of SBA & MB and one to meet the requirements for the neutralization of excess acid present in regeneration waste from the DM plant in the N. pit

From the measuring tank, alkali shall be injected to anion exchanger by means of water jet ejectors. Pressurized water for ejectors shall be taken from DM Water Storage Tank. The ejectors including nozzles shall be suitably designed for alkali service and for the specified dilution ratio of alkali to water.

Effluent Disposal System

The drain of Acid & Alkali regeneration tank, SAC, SBA & MB effluent will be collected in the Neutralization Pit. The neutralizing system shall be suitable to neutralize the alkaline/Acidic effluent of DM plant. The effluent neutralizing system consists of one number acid & one number alkali measuring tank. The acid will be of commercial grade of 30-33% & alkali will be of commercial grade of 40-48% strength. The capacity of the tanks shall be suitable to hold chemicals for neutralization of effluent generated from regeneration of one complete cycle. Two nos. (1W+1S) of Horizontal Centrifugal pumps shall be supplied for re-circulation and disposal of effluents.

DM,CW & ETP PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE – 1) AT NAMRUP, AASAM.

DOCUMENMT CONTROL SHEET

CLIENT	:	NTPC BHEL POWER PROJECT PVT. LTD.
DOCUMENT TITLE	:	CONTROL PHILOSOPHY FOR DM & POTABLE WATER TREATMENT PLANT.
WIPRO DOC NO	:	A4-JWL-2194-CP-DM
REV. NO.	:	0

ENDORSEMENTS :

0	26.06.2013	For Approval	AL		SK		MB			
Rev no	Date	Description	Initials	Sign	Initials	Sign	Initials	Sign	Initials	Sign
			Prepared by		Reviewed by		Approved by		Issue Authorisation	

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WIPRO WATER			
CLIENT	NTPC BHEL POWER PROJECT PVT. LTD.	Job No.	JWL 2194
CONSULTANT	DEVELOPMENT CONSULTANTS PRIVATE LIMITED	DATE	26.06.2013
PROJECT	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE – 1) AT NAMRUP, ASSAM.		
Title	CONTROL PHILOSOPHY FOR DM PLANT, POTABLE WATER SYSTEM & REGENERATION SYSTEM.		
Doc. Ref. No.	A4-JWL-2194-CP-DM	REV	00

Note: Read this document in conjunction with the following documents:

P & ID for DM System – A0-JWL-2194-201-01
P & ID for Potable water System – A0-JWL-2194-201-02
P & ID for Regeneration System – A0-JWL-2194-201-03

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GENERAL DESCRIPTION:

The De-mineralization plant is a two-stream plant having a net output capacity of 8.5 m3/hr of DM quality water. Each de-mineralizing chain comprises of following units.

PSF - ACF- SAC - DGT& DGWST – SBA – MB - DMWST

Each filter & exchanger is mounted with various instruments for local and/or PC based SCADA indication, interlocking thro' the PLC & alarm annunciation on PC based SCADA screens to monitor the various parameters for smooth running of plant. Pressure gauges are provided at each ion exchanger inlet & outlet.

Each filter (PSF-A/B) is provided with Flow transmitter FT 5404A /5404B at service inlet. Pressure gauge is provided at inlet & outlet of filter (PSF-A/B & ACF-A/B). Pressure Differential switch PDS 5404A/5404B/5405A/5405B is provided across the filter to monitor & annunciate for high differential pressure. ACF service discharge is provided with flow indicator FI 5407A/5407B.

Over and above other instruments are also provided to individual ion exchanger as mentioned vessel wise.

Cation exchanger (SAC – A/B) is provided with conductivity analyzer (AE 5404A/5404B) at drain line to monitor the conductivity during regeneration & FT-5405A/5405B to monitor the flow in each exchanger for high alarm & interlock for isolation purpose from service. Single channel sodium analyzer (AE-5404A/ AE-5404B) is provided for monitoring, high alarm & interlock for isolation purpose from service.

Strong base anion exchanger (SBA-A/B) is provided with conductivity analyzer (AE -5405A/ 5405B) & FT-5406A/5406B to monitor the conductivity and flow in each exchanger for high alarm & interlock for isolation purpose from service. Single channel Silica analyzer (AE- 5404A/ 5404B) is provided to measure reactive silica at outlet of SBA unit.

Mixed bed unit is provided with conductivity analyzer AE 5406A/ 5406B and FT-5406A/5406B to monitor the conductivity and flow in each exchanger for high alarm & interlock for isolation purpose from service. Single channel Silica analyzer AE 5405A/ 5405B is provided for measurement of reactive silica at outlet of each MB unit.

Pneumatic diaphragm type control valves GLXV5429A/ GLXV5429B provided at inlet of DG tower A /B to control the level in the degassed water tank, by level transmitter LT-5404A/5404B

& opening position of control valve is provided in PLC by means of position transmitter. Control valve operation & monitoring shall be in auto mode however manual override is provided for manual operation.

Each Degassed water storage tank (DGWST-A/B) mounted with Level switches LS-5404A/ 5404B for alarm & Interlock with DMFP-A/B (High level) & DGWTP A/B/C/D (Low level). Level transmitter LT-5404A/5404B is provided for local & remote indication as well as to control the level by control valve through PLC. Level gauges LG-5405A/5406A/5405B/5406B are provided for local indication.

Low pressure switches (PS 5404 A/B) are provided at common discharge header of pumps for each service for alarm & interlock.

Ball valves are used for flow transmitter isolation, analyzer isolation, pressure indicator isolation drain & sampling etc.

BRIEF DESCRIPTION OF PLANT / VARIOUS UNITS IS AS BELOW:

The plant is consisting of two parallel de-mineralizing streams. Only one stream is normally in operation to produce net rated flow rate of each is 8.5 m3/hr of DM water, with the other stream is in stand-by mode. At any particular point of time, the operator shall take up only one stream for the regeneration. Any unit shall be brought into service by operator only after the unit is regenerated (the same shall not be put automatically,). Service operation shall be initiated by the operator from the SCADA control scheme for that particular unit.
Filter / Ion exchange unit shall be isolated from the system as follows –

Pressure Sand Filter: On reaching high pressure differential across bed or on passing of pre-determine volume of water through the unit.

Activated carbon filter - On reaching high-pressure differential across bed or on passing of pre-determine volume of water i.e. high throughput.

Strong Acid Cation – If sodium value exceeds the preset value or on passing of pre-determine volume of water i.e. high throughput.

Strong base Anion– If silica value exceeds the preset value or on reaching higher conductivity at outlet or on passing of pre-determines volume of water i.e. high throughput.

Mixed Bed Unit– On reaching higher conductivity at outlet or on passing of pre-determines volume of water i.e. high throughput or high silica contains at the outlet.

The plant is designed for semi-automatic operation. This is achieved through a PLC based control system which is manually initiated automatic sequential control.

Following functions as a minimum shall be available.

1. Display of plant graphics.
2. Display of analog values & status.
3. Display of annunciation and acknowledgement.
4. Control faceplate for plant/ equipment operation.
5. Adjustment of timer / counter.
6. Display of history & current trends.
7. Selected history data & Cumulative running hour.
8. Logging of data.
9. Printing of alarms, reports, logs and screen.


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Status of drives and valves shall be indicated on SCADA as follows:

Drive running	:	Continuous RED
Drive Stop	:	Continuous GREEN
Drive disturbed	:	Flashing YELLOW
Valve open	:	Continuous RED
Valve closed	:	Continuous GREEN

The operator will initiate the operation of backwashing/regeneration/rinsing of a particular filter/ion-exchange unit, and the change from one step of the sequence to the next will be automatic. The system will employ a logical system, which will link the various steps such as closing/opening of different valves, starting/stopping of various pumps, which make a sequence. The logical system will adhere to the correct sequence of operation and the pre-determined (adjustable) time-intervals. The system will be interlocked so that the necessary pre-requisite for each step, are completed prior to proceeding to the next step. The automatic sequence of operations shall be interruptible at any time and the operator shall be able to take over the control to manual from that step onwards.

During regeneration, the progress of different sequence/sub-process shall be displayed to the operator in the form of step description, which is in progress, the set time & elapsed time for each step, the elapsed time for that step etc. Failure in any operation will also be indicated. Once a filter/exchanger has been regenerated it will not be put back into service automatically, but operator will have to manually put back into service through a selection switch.
Apart from complete automatic regeneration which includes fixed time rinsing facility, separate rinsing facility shall also be provided for each of the exchanger units to carry out rinsing remote manually, which will be required in cases:

a) When a regenerated unit had been off the service for long time.
b) When additional rinsing during the regeneration operation apart from the fixed automatic regeneration process is required to be carried out.

During automatic progress of the sequence the opening and closing of different valves shall also be indicated to the operator. To provide additional manual over-ride facility for individual type of filter or exchanger, each of them shall be provided with “Auto-Off-Manual” Key. Automatic sequential operations shall be carried out with individual A/M key in Auto position only.For cation and anion exchangers a separate key shall be provided for backwash, which is an

optional step in a regeneration sequence. All the above functions shall be carried out by A/M keys and selection keys pertinent to interlock & sequence logic.

All the above mentioned keys are realized through SCADA soft buttons/selector switches on the operator station.

On exhaustion of unit, the particular filter/exchanger will be completely isolated from the system automatically and an alarm status will be displayed on the SCADA.

In semi-auto mode, the starting of a service / regeneration will be through Operator station to be initiated by operator. Once operator initiates the operation of regeneration, the sequence of operation shall be automatic. Upon completion of complete regeneration, the service cycle will proceed after initiation of the same by the operator.

Under remote – manual mode (Selector switch on SCADA screen), each step / sequence of regeneration will be initiated by the operator from SCADA. In local manual mode, the individual valves/ pumps etc. can be operated locally through Field push button (applicable only for drives in manual mode in MCC) and the operator can also decide duration of each step.
Interlocking / Protection (Start permissive, trips etc.) of all pumps and equipment will be carried out in the PLC; Unloading of acid/alkali will be manual operation from the field.

All drive status (including Pumps, Agitators) will be available on the PLC by means of ON/OFF/TRIP indication configured on the SCADA. Soft selector switches shall be configured on the SCADA station for selecting particular Filter/Ion Exchanger units.

Each solenoid – operated valve status will be provided on the SCADA.

The sequential operation of the plant is broadly based on the valve sequence chart, which explains the status of valves & rotary equipment at stages of service or regeneration operation.
The SCADA dynamic graphic screens shall indicate status of all filters, exchanger units rotary equipments in the plant, open / close condition of all auto valves during service, regeneration process or stand-by mode of the unit. Moreover display of analog values for all the flow / quantity parameters in the plant are available on these screens.


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OPERATION PHILOSOPHY

DM PLANT:

When unit is brought into service the sequence of opening & closing of the valves shall be as per the valve sequence charts.

DM plant feed pump DMFP-A/B transfer the water from the Clarified water reservoir, located at pre-treatment plant.
The selected pump(s) in operation shall trip as mentioned below:

1) When the level in Degassed water storage tank goes high.

Flow transmitter (FT 5405A/5405B) mounted at the service outlet of each SAC unit provides input to PLC regarding the instantaneous flow through the exchanger unit. This flow is totalized in the PLC & an alarm signal is generated when the preset throughput is achieved. When the unit is operating in auto mode the control system automatically isolates the particular exchanger stream under the said condition.

The SAC unit shall be isolated in case of high sodium value and high throughput (located at the outlet of SAC unit) when in manual mode of operation only a “Throughput High” / “sodium value high” alarm shall be sounded in case of the above parameter going high. Operator shall have the flexibility of terminating or retaining the service mode of operation.

Opening and closing of the control valve, located at inlet of the De-gasser Tower, is controlled in proportion to the level in the DGWT by means of level transmitter (LT- 5404A/5404B). This control is fully automatic and is achieved by means of a software-based PID level loop in the PLC.

There are two De-gasified Water transfer Pumps (DGWTP-A/B) for each stream. At discharge header of degassed water transfer pump low pressure switch (PS-5404A/5404B) is provided to maintain header pressure by starting standby pump on low pressure and re-circulation by auto valve on high pressure.

On high pressure in the discharge header, re circulation valve (DFV5425A/B) shall be opened and will remain open till the pressure drops below the set high pressure.
Water from these pumps is passed through SBA and MB exchangers to the DM Water storage tank (DMWST A/B)

Conductivity instruments are mounted at the service outlet of SBA and MB exchangers. Silica analyzer is provided at service outlet of SBA (Single channel) & MB (Single channel). When the

conductivity & silica in the service outlet line exceeds a preset value, high alarm is generated and the stream is isolated from the system.

Flow-transmitters mounted at the service outlet of each SBA and MB unit provide input to the PLC regarding the instantaneous flow through the exchanger unit. This flow is totalised in the PLC and an alarm signal is generated when the preset throughput is achieved.

When the unit is in auto mode of operation and a preset throughput is achieved through the respective exchanger a throughput high alarm is generated and the unit is isolated from the system. When the unit is operating in manual mode and throughput is achieved, only throughput high alarm shall be generated by the system. Operator shall have the flexibility of terminating or retaining the service mode of operation of the said exchangers if other parameters are favorable.

De-mineralized water will be stored in DM Water storage tank (DMWST A/B) & level of DM Water storage tank will be controlled through level transmitter (LT 5405A/B) and its inlet control valve (DFXV5459A/B)

Opening and closing of the control valve, located at inlet of the DMWST, is controlled in proportion to the level in the DMWST A/B by means of level transmitter (LT 5405A/5405B). This control is fully automatic and is achieved by means of a software-based PID level loop in the PLC.

DM Water storage tank (2 Nos.) are provided with one low level switch & one high level switch in each tank , also Float & Board type level indicator & level transmitter is provided in each tank.

REGENERANT UNLOADING & STORAGE:

SAC exchangers are regenerated by hydrochloric acid and SBA exchangers are regenerated simultaneously by sodium hydroxide solution. As the MB exchanger contains Anion as, well as Cation resin, both the regenerants are passed through the unit during regeneration.
For unloading of hydrochloric acid into Bulk Acid Tank (BAST-A) and sodium hydroxide into Bulk Caustic Tank (BCST-A), Acid unloading pump AUP-A/B & Caustic unloading pump CUP-A/B are provided, Unloading operation is controlled manually through local push button station, Subsequent filling operation of the bulk tanks to measuring tanks is by gravity. Level gauges are provided on each tank for local monitoring & level switch for remote monitoring, alarm & tripping Level Switch (LS 5409 & LS 5407) are provided on BAST-A & BCST- A to trip the Unloading pump at High level.

Hydrochloric acid is transferred from the Bulk acid storage tank to the acid measuring tanks (2 Nos. for SAC, 2 Nos. for MB & 1 No. for N- pit) by means of gravity. From the measuring tanks (AMT–A/B/C/D) the HCl is transferred by ejector to get mixed, with water and used as regenerant. Flow indicator (FI 5408A/5408B/5408C) is provided to know the power water flow to ejector. Auto valves are provided at inlet of each measuring tank for filling the tanks based on the level switch in each tank and high, low alarm will be generated in PLC for monitoring purpose. However in case of acid measuring tank for N-pit (AMT-E) the outlet valve will be operated manually as required.

For regeneration of SBA and MB, caustic is required of concentration 30 % in caustic measuring tanks (CMTA/B, CMT C/D). Dilution of caustic from 48 % to 30% is performed in Caustic Measuring Tanks (CMT).

Dilution in Caustic measuring tank for SBA & MB regeneration is manual / automatic. Operator has to open and close the valve sequentially depending upon level. Agitator will stop if low level signal of level switch is read through PLC only. Auto valves are provided at the inlet of CMT A/B/C/D for filling the tanks based on the status of level switch. In each tank and high, low, alarm will be generated in PLC for monitoring purpose.
Before taking up regeneration of a stream or an exchanger, it has to be ensured by the operator that the respective measuring tanks are filled with required quantity of regenerants.
In case the regeneration tanks are not filled, regeneration sequence shall not proceed further.

REGENERATION

When a filter or exchanger unit is exhausted and isolated from the system, operator selects the same along with the drives and associated tanks for regeneration operation, in either auto or in Manual mode. The unit to be regenerated will be selected by the operator by the regeneration command on SCADA graphics. All exchangers are provided with a Manual operation facility in the SCADA command screen, through which the operator may carry operations like Backwash, Regeneration, and Rinse etc. in a step-wise manner.

During the semi-auto mode of operation, the operator shall initiate regeneration process, after that all consecutive steps shall be executed through PLC. The automatic sequence shall be interruptible at any time by the operator and can be manually controlled from that step onwards. Moreover, operator shall be able to prolong a given step by inputting revised timing data in the field locations provided for the purpose. The operator shall also' be able to' Hold, Advance or Reset a step as and when desired by means of soft-keys provided on the SCADA command screens.

Additional selection keys are provided on the command screen for optional Backwash of the SAC and SBA units. Regeneration shall not be able to proceed till there is high level in the selected regenerant tanks. The steps of regeneration shall be time-based.

During the chemical injection steps of regeneration, sequence shall proceed to slow rinse only if level in the corresponding dosing tank goes low.

Backwashing & Air Scoring of PSF:

On reaching high differential pressure across the bed the system will automatically stopped. Operator has to initiate from SCADA for air scouring by the blower (ABL–01 A/B). On initiation of air scoring, air blower will start and air scoring will take place as per pre-set time and auto valve get closed after that. Next step automatically will come for backwash through to overhead tank and backwashing will take place as per pre-set time. Operator has option to repeat the activity through to PLC/ SCADA by auto or manual to get the desired filter cleaning.

Backwashing of ACF:

On reaching high differential pressure across the bed the system will be automatically stopped. Operator has to initiate from SCADA for ACF backwash mode and backwash will take place as per pre-set time. Operator has option to repeat the activity through to PLC/ SCADA by auto or manual to get the desired filter cleaning.

NEUTRALISING PIT:

Wastewater generated during the course of regeneration is collected in the Neutralizing Pit (NP) comprising of two sections, each capable of handling wastewater from regeneration of one stream at a time. Waste water recirculation is provided by means of auto valve depending upon the pH value. Operator initiates disposal of neutralized water by starting the Effluent Disposal Pumps NPITP A/B.

pH transmitter (AE-5405) is mounted on the discharge header of NPIT pumps- A/B for continuous monitoring or the waste water pH. An alarm is given when the pH value deviates from a certain pre-set range i.e. 6.8- 7.5. If the pH value does not fall within the pre-specified limits during disposal mode, the operator suspends disposal mode and opening the re-circulation valve manually re-circulates water.

In order to maintain the pH of the re-circulated water, 48% NaOH or 30% HCL solution is manually added to the pit. This step of waste water re-circulation and dosing must continue till pH in the tank is maintainable within the specified disposal limits. Low Level switches in neutralization pit are provided for tripping pump NPITP-A/B and high level is to start the pump.

VALVE SEQUENCE FOR POTABLE WATER PLANT

Pressure Sand Filter (PSF-C/D)

Pressure sand Filters will remain in service till occurrence of following conditions mentioned below;

1. Differential Pressure across filter bed increases beyond the set point.
2. Working hours i.e. 20 hrs. is completed.

Operation of PSF C/D is completely manual


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The sequence of valve operation for Pressure sand Filter shall be as follows:

Tag No.	Description	Valve Position				
Type of Operation		Service Mode	Back wash mode			
			Drain Down	Air Scouring	B/W	Final Rinse
DFV5444A/B	PSF- C/D Inlet	**Open**	Close	Close	Close	**Open**
DFV5445A/B	PSF- C/D Outlet	**Open**	Close	Close	Close	Close
DFV5446A/B	PSF- C/D Backwash Inlet	Close	Close	Close	**Open**	Close
DFV5447A/B	PSF - C/D Backwash Outlet	Close	**Open**	Close	**Open**	Close
DFV5448A/B	PSF - C/D Air vent	**Open #**	**Open**	**Open**	**Open #**	Close
DFV5449A/B	PSF - C/D Final rinse outlet	Close $	Close	Close	Close	**Open**
DFV5450A/B	PSF - C/D Air Inlet	Close	Close	**Open**	Close	Close
PWFP- A/B	Potable water feed Pump - A/B	**ON**	OFF	OFF	OFF	**ON**
ABL-01A/B	PSF Air Blower	OFF	OFF	**ON**	OFF	OFF
Duration (settable)		**20 hrs**	**5 mins**	**10 mins**	**10 mins**	**5 mins**

Notes:

1. Backwash mode is operator initiated.
2. #: PSF Air vent valve will have a settable time for normal operation/ backwash.
3. $: PSF Rinse valve will open for a settable time during the startup operation. After the settable time PSF rinse valve will take open feedback from PSF outlet valve & the PSF rinse valve will close.
4. During backwash operation, Valves of running operation for corresponding steps will open first & then after 5 sec. Valves of previous step will close.

VALVE SEQUENCE FOR DM PLANT

Pressure Sand Filter (PSF-A/B)

Pressure Sand Filters will remain in service till occurrence of following conditions mentioned below;

1. Differential Pressure across filter bed increases beyond the set point.
2. Working hours i.e. 20 hrs. is completed.
3. High water level in both DGWST tank

The sequence of valve operation for Pressure sand Filter (PSF-A/B) shall be as follows:

Tag No.	Description	Valve Position				
		Service Mode	Back wash mode			
Type of Operation			Drain Down	Air Scouring	B/W	Final Rinse
DFXV5404A/B	PSF- A/B Inlet	**Open**	Close	Close	Close	**Open**
DFXV5405A/B	PSF- A/B Outlet	**Open**	Close	Close	Close	Close
DFXV5406A/B	PSF- A/B Backwash Inlet	Close	Close	Close	**Open**	Close
DFXV5407A/B	PSF - A/B Backwash Outlet	Close	**Open**	Close	**Open**	Close
DFXV5408A/B	PSF - A/B Air vent	**Open #**	**Open**	**Open**	**Open #**	Close
DFXV5409A/B	PSF - A/B Final rinse outlet	**Open $**	Close	Close	Close	**Open**
DFXV5410A/B	PSF - A/B Air Inlet	Close	Close	**Open**	Close	Close
DMFP- A/B	DM Feed Pump - A/B	**ON**	OFF	OFF	OFF	**ON**

ABL-01A/B	PSF Air Blower	OFF	OFF	**ON**	OFF	OFF
Duration (settable)		**20 hrs**	**5 mins**	**10 mins**	**10 mins**	**5 mins**

Notes:

1. Backwash mode is operator initiated.
2. #: PSF Air vent valve will have a settable time for normal operation/ backwash.
3. $: PSF Rinse valve will open for a settable time during the startup operation. After the settable time PSF rinse valve will take open feedback from PSF outlet valve & the PSF rinse valve will close.
5. During backwash operation, Valves of running operation for corresponding steps will open first & then after 5 sec. Valves of previous step will close.

Activated carbon filter (ACF)

Activated Carbon filter will remain in service till occurrence of following conditions mentioned below;

1. Differential Pressure across filter bed increases beyond the set point.
2. Working hours i.e. 20 hrs is completed.

The sequence of valve operation for Activated Carbon Filter shall be as follows:

Tag No.	Description	Valve Position			
Type of Operation		**Service Mode**	**Back wash mode**		
			Drain Down	**B/W**	**Final Rinse**
DFXV5404A/B	PSF- A/B Inlet	**Open**	Close	**Open**	**Open**
DFXV5405A/B	PSF- A/B Outlet	**Open**	Close	**Open**	**Open**
DFXV5411A/B	ACF- A/B Inlet	**Open**	Close	Close	**Open**
DFXV5412A/B	ACF- A/B Outlet	**Open**	Close	Close	Close
DFXV5413A/B	ACF- A/B Backwash Inlet	Close	Close	**Open**	Close
DFXV5414A/B	ACF- A/B Backwash Outlet	Close	**Open**	**Open**	Close
DFXV5415A/B	ACF- A/B Air vent	**Open #**	**Open**	**Open #**	Close
DFXV5416A/B	ACF- A/B Final rinse outlet	**Open $**	Close	Close	**Open**
DMFP- A/B	DM Feed Pump - A/B	**ON**	OFF	**ON**	**ON**

Duration (settable)	**20 hrs**	**5 mins**	**10 mins**	**10 mins**

Notes:

1. Backwash mode is operator initiated.
2. #: ACF Air vent valve will have a settable time for normal operation/ backwash.
3. $: ACF Rinse valve will open for a settable time during the startup operation. After the settable time PSF rinse valve will take open feedback from PSF outlet valve & the PSF rinse valve will close.
4. During Backwash Mode, Valves of running operation for corresponding steps will open first & then after 5 sec. Valves of previous step will close.

Strong Acid Cation (SAC) Exchanger

SAC unit will remain in service till occurrence of following conditions mentioned below;

1. Sodium value at the outlet of SAC unit exceeds from preset value.
2. A preset quantity of water has passed through the unit (i.e. OBR Achieved).
3. Working hours i.e. 20 hrs. are completed.


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An alarm shall be set for the above referred conditions.

Regeneration steps will proceed automatically if the following conditions are satisfied:

1. Water level in DG water storage tank is not low.
2. DG water transfer pumps are in working condition.
3. Water level in both compartments of Neutralization tank is not high.
4. Level in acid measuring tank is not low.

On completion of regeneration, all valves of the unit shall be closed. Completion of regeneration will be followed by message of "SAC-A/B Unit ready for Normal operation" and the system can be re-inducted into Normal operation mode.

The sequence of valve operation for SAC exchanger (SAC-A/B) shall be as follows.

Tag No.	**Description**	**Valve Position**								
Type of Operation		**Service mode**	**Backwash Mode**			**Regeneration Mode**				
			M/C Flush	**B/W**	**Settle Bed**	**Power Water**	**Acid Inject.**	**Acid Rinse**	**Settle Bed**	**Final Rinse**
			I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**

DFXV5404A/B	PSF- A/B Inlet	**Open**	**Open**	**Open**	Close	Close	Close	Close	Close	**Open**
DFXV5405A/B	PSF- A/B Outlet	**Open**	**Open**	**Open**	Close	Close	Close	Close	Close	**Open**
DFXV5411A/B	ACF- A/B Inlet	**Open**	**Open**	**Open**	Close	Close	Close	Close	Close	**Open**
DFXV5412A/B	ACF- A/B Outlet	**Open**	**Open**	**Open**	Close	Close	Close	Close	Close	**Open**
DFXV5417A/B	SAC- A/B Inlet	**Open**	Close	Close	Close	Close	Close	Close	Close	**Open**
DFXV5418A/B	SAC- A/B Outlet	**Open**	Close	Close	Close	Close	Close	Close	Close	Close
DFXV5419A/B	SAC- A/B B/W Inlet	Close	Close	**Open**	Close	Close	Close	Close	Close	Close
DFXV5420A/B	SAC- A/B B/W Outlet	**Close**	**Open**	**Open**	Close	Close	Close	Close	Close	Close
DFXV5421A/B	SAC- A/B Air vent	**Open #**	Close	**Open #**	Close	Close	Close	Close	Close	Close
DFXV5422A/B	SAC- A/B Final rinse outlet	Close $	Close	Close	Close	Close	Close	Close	Close	**Open**
DFXV5423A/B	SAC- A/B Mid collector inlet	**Close**	**Open**	Close	Close	Close	Close	Close	Close	Close
DFXV5424A/B	SAC- A/B Mid collector outlet	Close	Close	Close	Close	**Open**	**Open**	Open	Close	Close
DFXV5427A/B	SAC- A/B Acid injection	Close	Close	Close	Close	**Open**	**Open**	Open	Close	Close
DFXV5426A/B	SAC- A/B Acid injection block	Close	Close	Close	Close	**Open**	**Open**	Open	Close	Close
DFXV5428A/B	SAC- A/B Acid injection Bleed	**Open**	**Open**	**Open**	**Open**	Close	Close	Close	Open	Open
DFXV5425A/B	SAC- A/B Down flow	Close	Close	Close	Close	Close	**Open**	Open	Close	Close
DFXV5467A/B	AMT-A outlet	Close	Close	Close	Close	Close	**Open**	Close	Close	Close
DFXV5468A/B	Power water for SAC regeneration	Close	Close	**Close**	Close	**Open**	**Open**	Open	Close	Close
DMFP-A/B	DM Feed pump	**ON**	**ON**	**ON**	OFF	OFF	OFF	OFF	OFF	**ON**
DGWTP-A/B	Degassed Water Transfer Pump	OFF	OFF	OFF	OFF	**ON**	**ON**	ON	OFF	OFF
Duration (Settable)		**20 hrs**	**2 mins**	**5 mins**	**2mins**	**2 mins**	**20 mins**	**60 mins**	**2 mins**	**20 mins**

Notes:

1. Backwash mode / regeneration mode is operator initiated.
2. #: SAC Air vent valve will have a settable time for normal operation/ backwash.

3. $: SAC Rinse valve will open for a settable time during the startup operation. After the settable time rinse valve will take open feedback from SAC outlet valve & the rinse valve will close.
4. During backwash/ regeneration operation, Valves of running operation for corresponding steps will open first & then after 5 sec. Valves of previous step will close.

For Strong Base Anion (SBA) Exchanger

SBA Exchanger will remain in service till occurrence of following conditions mentioned below;

1. A preset quantity of water has passed through the SBA A/B unit (i.e. OBR Achieved).
2. Silica value at outlet of SBA unit deviates from preset value.
3. Conductivity at the outlet of the SBA unit deviates from a preset value.
4. Working hours i.e. 20 hr. are completed.
5. Low water level in both DGWST tank

The unit will remain in normal operation mode till the occurrence of any of the following three conditions mentioned below, then the inlet and outlet valves of the unit will be closed automatically and the unit will be ready for regeneration.

Regeneration steps will proceed automatically if the following conditions are satisfied:

1. Regeneration pumps are in working condition.
2. Water level in DMWST is not high (both tank)
3. Water level in both compartments of Neutralization tank is not high.
4. Level in caustic measuring tank level is high.

On completion of regeneration, all valves of the unit shall be closed. Completion of regeneration will be followed by message of "SBA-A/B Unit ready for Normal operation" and the system can be re-inducted into Normal operation mode.


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The sequence of valve operation for SBA-A/B exchanger shall be as follows:

Tag No.	Description	Valve Position			
Type of Operation		Service mode	Backwash Mode		
			SBA M/C Flush	SBA B/W	Settle Bed
			I	II	III
DFXV5430A/B	SBA-A/B Inlet	**Open**	Close	Close	Close
DFXV5431A/B	SBA-A/B Outlet	**Open**	Close	Close	Close
DFXV5432A/B	SBA-A/B B/W Inlet	Close	Close	**Open**	Close
DFXV5433A/B	SBA-A/B B/W Outlet	Close	**Open**	**Open**	Close
DFXV5434A/B	SBA-A/B Air vent	**Open #**	Close	**Open #**	Close
DFXV5435A/B	SBA-A/B Final rinse outlet	Close $	Close	Close	Close
DFXV5436A/B	SBA-A/B M/C inlet	Close	**Open**	Close	Close
DFXV5437A/B	SBA-A/B M/C outlet	Close	Close	Close	Close
DFXV5440A/B	SBA-A/B caustic injection	Close	Close	Close	Close
DFXV5439A/B	SBA-A/B Caustic injection block	Close	Close	Close	Close
DFXV5441A/B	SBA-A/B Caustic injection Bleed	**Open**	**Open**	**Open**	**Open**
DFXV5438A/B	SBA-A/B Down flow	Close	Close	Close	Close
DFXV5463A/B	CMT-A outlet	Close	**Close**	Close	Close
DFXV5464A/B	Power water for SBA Regeneration	Close	**Close**	Close	Close
DGWTP-A/B	DG water transfer pump	**ON**	**ON**	**ON**	OFF
DMRP-A/B	DM Regeneration pump	OFF	OFF	OFF	OFF
Duration (Settable)		**20 hrs**	**5 min.**	**2 min.**	**2 min.**

Continue……..

Tag No.	Description	Valve Position				
Type of Operation		Regeneration Mode				
		Power water	Alkali Inject.	Alkali Rinse	Settle Bed	Final Rinse - SBA
		IV	V	VI	VII	VIII
DFXV5430A/B	SBA-A/B Inlet	Close	Close	Close	Close	**Open**
DFXV5431A/B	SBA-A/B Outlet	Close	Close	Close	Close	Close
DFXV5432A/B	SBA-A/B B/W Inlet	Close	Close	Close	Close	Close
DFXV5433A/B	SBA-A/B B/W Outlet	Close	Close	Close	Close	Close
DFXV5434A/B	SBA-A/B Air vent	Close	Close	Close	Close	Close
DFXV5435A/B	SBA-A/B Final rinse outlet	Close	Close	Close	Close	**Open**

DFXV5436A/B	SBA-A/B M/C inlet	Close	Close	Close	Close	Close
DFXV5437A/B	SBA-A/B M/C outlet	**Open**	**Open**	**Open**	Close	Close
DFXV5440A/B	SBA-A/B caustic injection	**Open**	**Open**	**Open**	Close	Close
DFXV5439A/B	SBA-A/B Caustic injection block	**Open**	**Open**	**Open**	Close	Close
DFXV5441A/B	SBA-A/B Caustic injection Bleed	Close	Close	Close	**Open**	**Open**
DFXV5438A/B	SBA-A/B Down flow	Close	**Open**	**Open**	Close	Close
DFXV5463A/B	CMT-A outlet	Close	**Open**	Close	Close	Close
DFXV5464A/B	Power water for SBA Regeneration	**Open**	**Open**	**Open**	Close	Close
DGWTP-A/B	DG water transfer pump	OFF	OFF	OFF	OFF	**ON**
DMRP-A/B	DM Regeneration pump	**ON**	**ON**	**ON**	OFF	OFF
Duration (Settable)		**2 mins**	**30 mins**	**35 mins**	**5 mins**	**5 mins**

Notes:

1. Backwash mode / regeneration mode is operator initiated.
2. #: SBA Air vent valve will have a settable time for normal operation/ backwash.
3. $: SBA Rinse valve will open for a settable time during the startup operation. After the settable time rinse valve will take open feedback from SBA outlet valve & the rinse valve will close.
4. During backwash/ regeneration operation, Valves of running operation for corresponding steps will open first & then after 5 sec. Valves of previous step will close.

For Mixed Bed Exchanger

Mixed Bed Exchanger will remain in service till occurrence of following conditions mentioned below;

1. A preset quantity of water has passed through the unit (i.e. OBR Achieved).
2. Conductivity at the outlet of the MB unit deviates from a preset value.
3. Silica at the outlet of the MB unit deviates from a preset value.
4. Working hours i.e. 140 hr. are completed.

Regeneration steps will proceed automatically if the following conditions are satisfied:

1. Regeneration pumps are in working condition.
2. Water level in both compartments of Neutralization tank is not high.
3. Level in caustic measuring tank & Acid measuring tank level is high.

On completion of regeneration, all valves of the unit shall be closed. Completion of regeneration will be followed by message of "MB-A/B Unit ready for Normal operation" and the system can be re-inducted into Normal operation mode.


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The sequence of valve operation for MB exchanger shall be as follows:

Tag No.	Description	Valve Position						
Type of Operation		Service Mode	Regeneration Mode					
			M/C Flush	B/W	Settle bed	Power water	Alkali inject.	Alkali Rinse
			I	II	III	IV	V	VI
DFXV5430A/B	SBA-A/B Inlet	**Open**	**Open**	**Open**	Close	Close	Close	Close
DFXV5431A/B	SBA-A/B Outlet	**Open**	**Open**	**Open**	Close	Close	Close	Close
DFXV5442A/B	MB-A/B Inlet	**Open**	Close	Close	Close	Close	Close	Close
DFXV5443A/B	MB-A/B Outlet	**Open**	Close	Close	Close	Close	Close	Close
DFXV5444A/B	MB-A/B B/W Inlet	Close	Close	**Open**	Close	Close	Close	Close
DFXV5445A/B	MB-A/B B/W Outlet	Close	**Open**	**Open**	Close	Close	Close	Close
DFXV5446A/B	MB-A/B Air vent	**Open #**	Close	**Open #**	Close	Close	Close	Close
DFXV5447A/B	MB-A/B Final rinse outlet	Close $	Close	Close	Close	Close	Close	Close
DFXV5448A/B	MB-A/B air inlet	Close	Close	Close	Close	Close	Close	Close
DFXV5449A/B	MB-A/B M/C inlet	Close	**Open**	Close	Close	Close	Close	Close
DFXV5450A/B	MB-A/B M/C outlet	Close	Close	Close	Close	**Open**	**Open**	**Open**
DFXV5454A/B	MB-A/B caustic injection	Close	Close	Close	Close	**Open**	**Open**	**Open**
DFXV5453A/B	MB-A/B Caustic injection block	Close	Close	Close	Close	**Open**	**Open**	**Open**
DFXV5455A/B	MB-A/B Caustic injection Bleed	**Open**	**Open**	**Open**	**Open**	Close	Close	Close
DFXV5451A/B	MB-A/B Up flow	Close	Close	Close	Close	Close	**Open**	**Open**
DFXV5457A/B	MB-A/B Acid injection	Close	Close	Close	Close	Close	Close	Close
DFXV5456A/B	MB-A/B acid injection block	Close	Close	Close	Close	Close	Close	Close
DFXV5458A/B	MB-A/B Acid injection Bleed	**Open**	**Open**	**Open**	**Open**	**Open**	**Open**	Open

DFXV5400A/B	MB-A/B Down flow	Close	Close	Close	Close	Close	Close	Close
DFXV5463C/D	CMT-B outlet	Close	Close	Close	Close	Close	**Open**	Close
DFXV5464C/D	Power water for MB-Anion Reg.	Close	Close	Close	Close	**Open**	**Open**	**Open**
DFXV5467C/D	AMT-B outlet	Close	Close	Close	Close	Close	Close	Close
DFXV5468C/D	Power water for MB-Cation Reg.	Close	Close	Close	Close	Close	Close	Close
DGWTP-A/B/C #	DG water transfer pump	**ON**	**ON**	**ON**	OFF	OFF	OFF	OFF
DMRP-A/B	DM Regeneration pump	OFF	OFF	OFF	OFF	**ON**	**ON**	**ON**
ABL- 03A/B	MB Blower	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Duration (Settable)		**140 hrs**	**2 min.**	**5 min.**	**2 min.**	**2 min.**	**30 min.**	**75 min.**

Continue…..

Tag No.	Description	Valve Position						
Type of Operation		Regeneration mode						
		Settle Bed	Power water	Acid Inject.	Acid Rinse	Drain Down	Air Mixing	Final Rinse
		VII	VIII	IX	X	XI	XII	XIII
DFXV5430A/B	SBA-A/B Inlet	Close	Close	Close	Close	Close	Close	**Open**
DFXV5431A/B	SBA-A/B Outlet	Close	Close	Close	Close	Close	Close	**Open**
DFXV5442A/B	MB-A/B Inlet	Close	Close	Close	Close	Close	Close	**Open**
DFXV5443A/B	MB-A/B Outlet	Close	Close	Close	Close	Close	Close	Close
DFXV5444A/B	MB-A/B B/W Inlet	Close	Close	Close	Close	Close	Close	Close
DFXV5445A/B	MB-A/B B/W Outlet	Close	Close	Close	Close	Close	Close	Close
DFXV5446A/B	MB-A/B Air vent	Close	Close	Close	Close	**Open**	**Open**	Close
DFXV5447A/B	MB-A/B Final rinse outlet	Close	**Open**	**Open**	**Open**	Close	Close	**Open**
DFXV5448A/B	MB-A/B air inlet	Close	Close	Close	Close	Close	**Open**	Close
DFXV5449A/B	MB-A/B M/C inlet	Close	Close	Close	Close	Close	Close	Close
DFXV5450A/B	MB-A/B M/C outlet	Close	Close	Close	Close	**Open**	Close	Close
DFXV5454A/B	MB-A/B caustic injection	Close	Close	Close	Close	Close	Close	Close
DFXV5453A/B	MB-A/B Caustic injection block	Close	Close	Close	Close	Close	Close	Close
DFXV5455A/B	MB-A/B Caustic injection Bleed	**Open**	**Open**	**Open**	**Open**	**Open**	**Open**	**Open**
DFXV5451A/B	MB-A/B Up flow	Close	Close	Close	Close	Close	Close	Close
DFXV5457A/B	MB-A/B Acid injection	Close	**Open**	**Open**	**Open**	Close	Close	Close

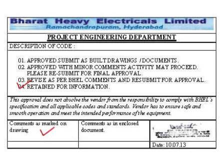
DFXV5456A/B	MB-A/B acid injection block	Close	**Open**	**Open**	**Open**	Close	Close	Close
DFXV5458A/B	MB-A/B Acid injection Bleed	**Open**	Close	Close	Close	**Open**	**Open**	**Open**
DFXV5400A/B	MB-A/B Down flow	Close	Close	**Open**	**Open**	Close	Close	Close
DFXV5463C/D	CMT-B outlet	Close	Close	Close	Close	Close	Close	Close
DFXV5464C/D	Power water for MB-Anion Reg.	Close	Close	Close	Close	Close	Close	Close
DFXV5467C/D	AMT-B outlet	Close	Close	**Open**	Close	Close	Close	Close
DFXV5468C/D	Power water for MB-Cation Reg.	Close	**Open**	**Open**	**Open**	Close	Close	Close
DGWTP-A/B/C #	DG water transfer pump	OFF	OFF	**ON**	**ON**	OFF	OFF	**ON**
DMRP-A/B	DM Regeneration pump	OFF	**ON**	**ON**	**ON**	OFF	OFF	OFF
ABL- 03A/B	MB Blower	OFF	OFF	OFF	OFF	OFF	**ON**	OFF
Duration (Settable)		**2 min.**	**2 min.**	**30 min.**	**75 min.**	**5 min**	**10 min**	**5 min**

Notes:

1. Regeneration mode is operator initiated.
2. #: MB Air vent valve will have a settable time for normal operation/ backwash.
3. $: MB final rinse valve will open for a settable time during the startup operation. After the settable time rinse valve will take open feedback from MB outlet valve & the rinse valve will close.
4. During backwash/ regeneration operation, Valves of running operation for corresponding steps will open first & then after 5 sec. Valves of previous step will close.

Notes:

1. In auto mode any vessel can be selected in any sequence for operation. But operator has to ensure corresponding valves are open for that particular vessel.


Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad
PROJECT ENGINEERING DEPARTMENT
DESCRIPTION OF CODE :
01. APPROVED.SUBMIT AS BUILT DRAWINGS /DOCUMENTS.
02. APPROVED WITH MINOR COMMENTS ACTIVITY MAY PROCEED. PLEASE RE-SUBMIT FOR FINAL APPROVAL.
03. REVISE AS PER BHEL COMMENTS AND RESUBMIT FOR APPROVAL.
04. RETAINED FOR INFORMATION.
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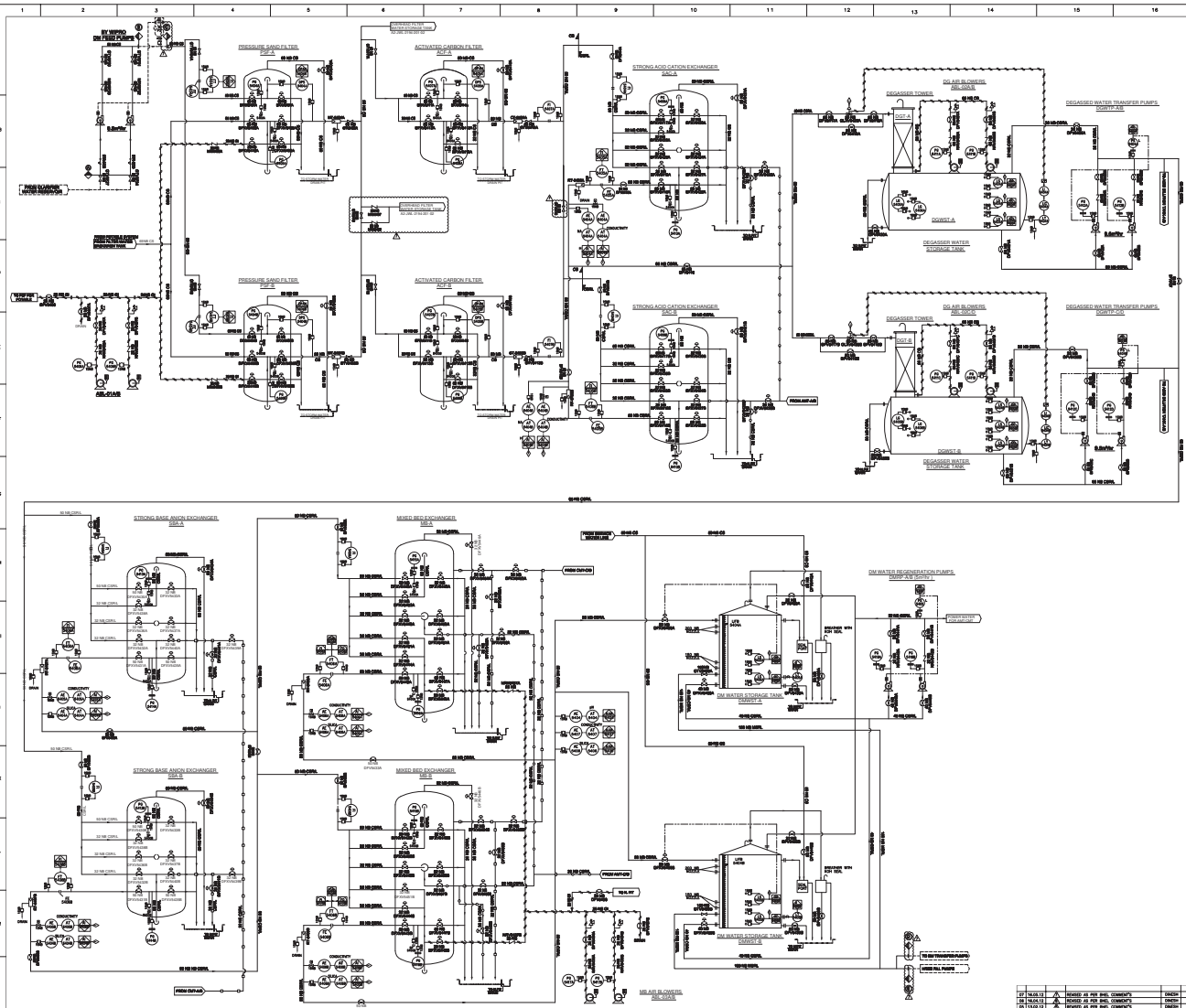
Comments as marked on drawing
Comments as in enclosed document.
Date: 10.07.13



NOTES :

1) P&id SHALL BE READ IN CONJUNCTION WITH INTERLOCK LIST.
2) THE FOLLOWING CRITICAL ALARMS WILL BE PROVIDED WITH POTENTIONAL FREE CONTACTS IN THE DM PLANT PLC FOR FURTHER ROUTING TO DCS BY BHEL.
a) HIGH/LOW LEVEL IN THE DM STORAGE TANK.
b) CONDUCTIVITY pH & SILICA IN THE MIXED BED OUTLET HEADER.
3) PLC INDICATIONS ARE INDICATED AS
4) DM FEED PUMPS SHALL BE TRIPPED ON LOW LOW LEVEL OF CLARIFIED WATER STORAGE TANK.
5) ADDITIONAL VENT AT HIGH POINTS & DRAIN AT LOW POINT SHALL BE PROVIDED AS PER FINAL LAYOUT.
6) ALL HEADERS SHALL BE DESIGNED TO INCLUDE FLOW CAPACITY OF STANDBY SYSTEM.
7) AT TERMINAL POINTS COUNTER FLANGES, GASKETS, STUD & NUTS SHALL BE IN THE SCOPE OF WIPRO WATER.

TERMINATION POINTS

MARK NO.	DESCRIPTION	SIZE	FLOW m³/hr	PRESSURE kg/cm²	END CONNECTION
A	AT THE INLET OF SUCTION STRAINER OF DM PLANT FEED PUMPS	80NB	9.5	FLOODED	
B	AT THE DISCHARGE OF DM FEED PUMPS	80NB	9.5	7kg/cm² (APPROX.)	FLANGED AS PER ANSI B 16.5 #150
C	INLET OF PRESSURE SAND FILTER	80NB	9.5	7kg/cm² (APPROX.)	
D	TO DM WATER TRANSFER PUMP	80NB	–	FLOODED	
E	TO HPCU FILL PUMP	150NB	–	FLOODED	

INSTRUMENTS

MARK NO.	DESCRIPTION
PG	PRESSURE GAUGE
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
FE	FLOW ELEMENT
FT	FLOW TRANSMITTER
FI	FLOW INDICATOR
pHE	pH ELEMENT
pHT	pH TRANSMITTER
pHI	pH INDICATOR
LG	LEVEL GAUGE
CE	CONDUCTIVITY ELEMENT
CT	CONDUCTIVITY TRANSMITTER
CI	CONDUCTIVITY INDICATOR
LI	LEVEL INDICATOR
LIT	LEVEL INDICATOR TRANSMITTER
DPS	DIFFERENTIAL PRESSURE SWITCH
PSL	PRESSURE SWITCH LOW
LFB	FLOAT & BOARD LEVEL INDICATOR
SIA	SILICA ANALYZER
NaA	SODIUM ANALYZER

LEGEND

- PNEUMATIC ACTUATED DIAPHRAGM VALVE
- MANUAL DIAPHRAGM VALVE
- MANUAL BALL VALVE
- NON RETURN VALVE
- PRESSURE RELIEF VALVE
- SAMPLING VALVE
- 'Y' TYPE STAINER
- VENT
- RESIN TRAP
- BLOWER
- CENTRIFUGAL PUMP WITH MOTOR
- FLOAT & BOARD LEVEL INDICATOR
- BY WIPRO WATER
- AIR LINE
- CAUSTIC LINE
- ACID LINE
- BY BHEL
- INSTRUMENT SIGNAL
- BHEL SCOPE
- WIPRO WATER SCOPE

CUSTOMER: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT: DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

PROJECT: 1X100MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE-1) AT NAMRUP,ASSAM

EPC CONTRACTOR: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

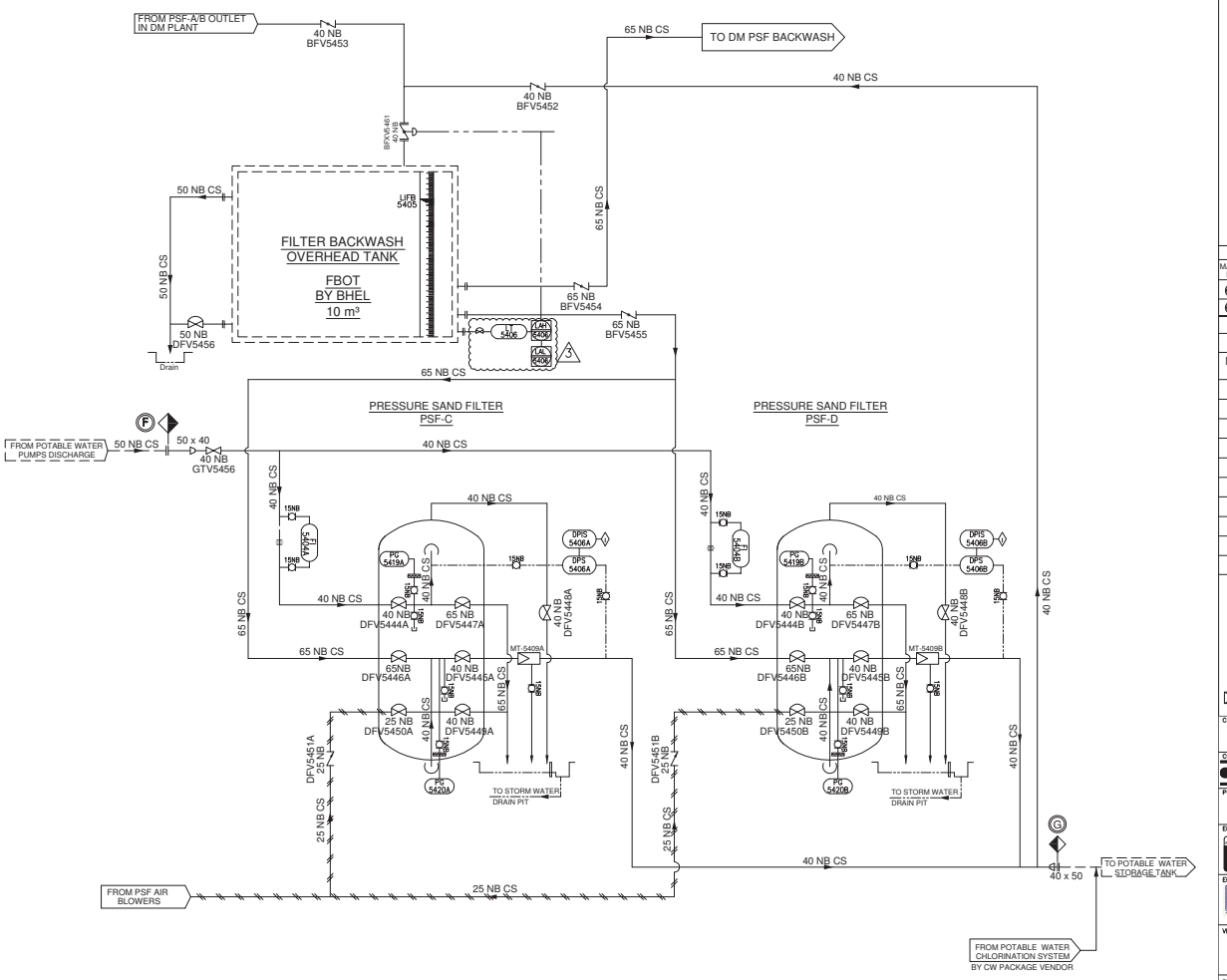
EPC SUB-CONTRACTOR: NTPC BHEL POWER PROJECTS PVT. LTD. (A Joint Venture Company of NTPC & BHEL)

TITLE: PROCESS & INSTRUMENT FOR DM PLANT

REV.	DATE	LOCATION	DESCRIPTION	DRN BY	CHK. BY
07	18.05.13	A	REVISED AS PER BHEL COMMENTS	ENGIN	AL
06	16.05.13	A	REVISED AS PER BHEL COMMENTS	ENGIN	AS
05	13.05.13	A	REVISED AS PER BHEL COMMENTS	ENGIN	AS
04	03.01.13	A	REVISED AS PER BHEL COMMENTS	ENGIN	AS

	CY	ME	EL	C&I
DEPT.				
SIGN				
DATE				

SCALE: NTS | VENDOR DOC NO.: | DOC. NO.: A2-JWL-2104-201-01 | SHEET: 1 OF 3 | REV.: 07



Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad

PROJECT ENGINEERING DEPARTMENT

DESCRIPTION OF CODE :

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Comments as marked on drawing	Comments as in enclosed document.	
✓		

TERMINATION POINTS

MARK NO.	DESCRIPTION	SIZE	FLOW m³/hr	PRESSURE kg/cm²	END CONNECTION
F	AT THE INLET HEADER OF PRESSURE SAND FILTER	50NB	8.2	4.0	FLANGED AS PER ANSI B 16.5 #150
G	AT THE OUTLET HEADER OF PRESSURE SAND FILTER	50NB	8.0	–	

INSTRUMENTS

MARK NO.	DESCRIPTION
PG	PRESSURE GAUGE
DPS	DIFFERENTIAL PRESSURE SWITCH
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FT	FLOW TRANSMITTER
LIFB	FLOAT & BOARD LEVEL INDICATOR
SP	SAMPLING POINT

LEGEND FOR VALVES

MANUAL DIAPHRAGM VALVE	BY WIPRO WATER
PNEUMATIC ACTUATED BUTTERFLY VALVE	BY BHEL
MANUAL BUTTERFLY VALVE	AIR LINE
MANUAL BALL VALVE	INSTRUMENT LINE
MEDIA TRAP	BHEL SCOPE / WIPRO WATER SCOPE

CUSTOMER: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT : DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

PROJECT: 1X100MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE-1) AT NAMRUP,ASSAM

EPC CONTRACTOR: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

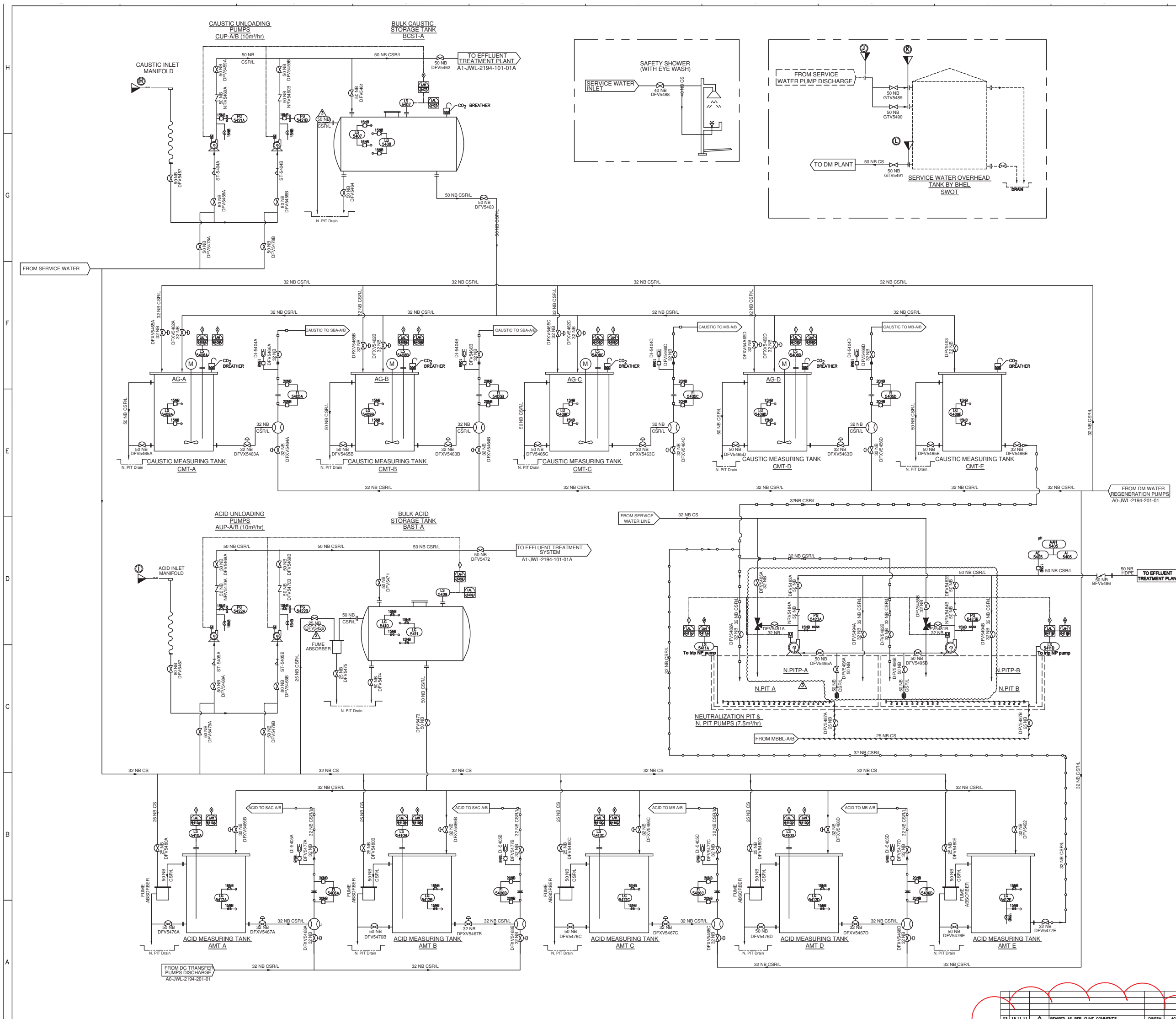
EPC SUB-CONTRACTOR: NTPC BHEL POWER PROJECTS PVT. LTD. (A Joint Venture Company of NTPC & BHEL)

VENDOR: WIPRO WATER, SERENE PROPERTIES PVT LTD., SEZ, AIROLI, NAVI MUMBAI-400708.

TITLE: PROCESS & INSTRUMENT FOR POTABLE SYSTEM

REV.	DATE	LOCATION	DESCRIPTION	DRN BY	CHK. BY
03	16.11.11	⚠	REVISED AS PER CLIENT COMMENT'S	DINESH	AG

CV	ME	EL	C&I		DEPT.	SCALE NTS.	VENDOR DOC. NO.: A2-JWL-2194-201-02
					SIGN		
					DATE	SHT. NO: 2 OF 3	REV: 03



Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad

PROJECT ENGINEERING DEPARTMENT

DESCRIPTION OF CODE :

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Comments as marked on drawing ✓	Comments as in enclosed document.	RADHIKA SISTA Manager (P.E.D.) BHEL, Hyd-32

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TERMINATION POINTS

MARK NO.	DESCRIPTION	SIZE	FLOW m³/hr	PRESSURE kg/cm²	END CONNECTION
H	CAUSTIC INLET MANIFOLD	80NB	10	FLOODED	FLANGED AS PER ANSI B 16.5 #150
I	ACID INLET MANIFOLD	80NB	10	FLOODED	
J	SERVICE WATER INLET AT DM PLANT ~~(MAXIMUM 10m DISTANCE FROM THE SERVICE WATER TANK AT THE TOP OF THE DM BUILDING)~~	50NB	–	–	
K	SERVICE WATER AT THE INLET OF SERVICE WATER STORAGE TANK	50NB	–	–	
L	SERVICE WATER AT THE OUTLET OF SERVICE WATER STORAGE TANK	50NB	–	–	

INSTRUMENTS

MARK NO.	DESCRIPTION
PG	PRESSURE GAUGE
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
FI	FLOW INDICATOR
pHE	pH ELEMENT
pHT	pH TRANSMITTER
pHI	pH INDICATOR
LG	LEVEL GAUGE
DI	DENSITY INDICATOR

LEGEND

- PNEUMATIC ACTUATED BUTTERFLY VALVE
- PNEUMATIC ACTUATED DIAPHRAGM VALVE
- MANUAL BUTTERFLY VALVE
- MANUAL DIAPHRAGM VALVE
- MANUAL BALL VALVE
- MANUAL NEEDLE VALVE
- NON RETURN VALVE
- SAMPLING VALVE
- 'Y' TYPE STAINER
- VENT
- EJECTOR
- FOOT VALVE
- AGITATOR WITH MOTOR
- CENTRIFUGAL PUMP WITH MOTOR
- BY WIPRO WATER
- BY ~~CLIENT~~
- INSTRUMENT SIGNAL
- BHEL SCOPE
- WIPRO WATER SCOPE

CUSTOMER: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT : DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

PROJECT: 1X100MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE-1) AT NAMRUP,ASSAM

EPC ONTRACTOR: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

EPC SUB-CONTRACTOR: NTPC BHEL POWER PROJECTS PVT. LTD. (A Joint Venture Company of NTPC & BHEL)

VENDOR: WIPRO WATER
SERENE PROPERTIES PVT LTD., SEZ, AIROLI, NAVI MUMBAI-400708.

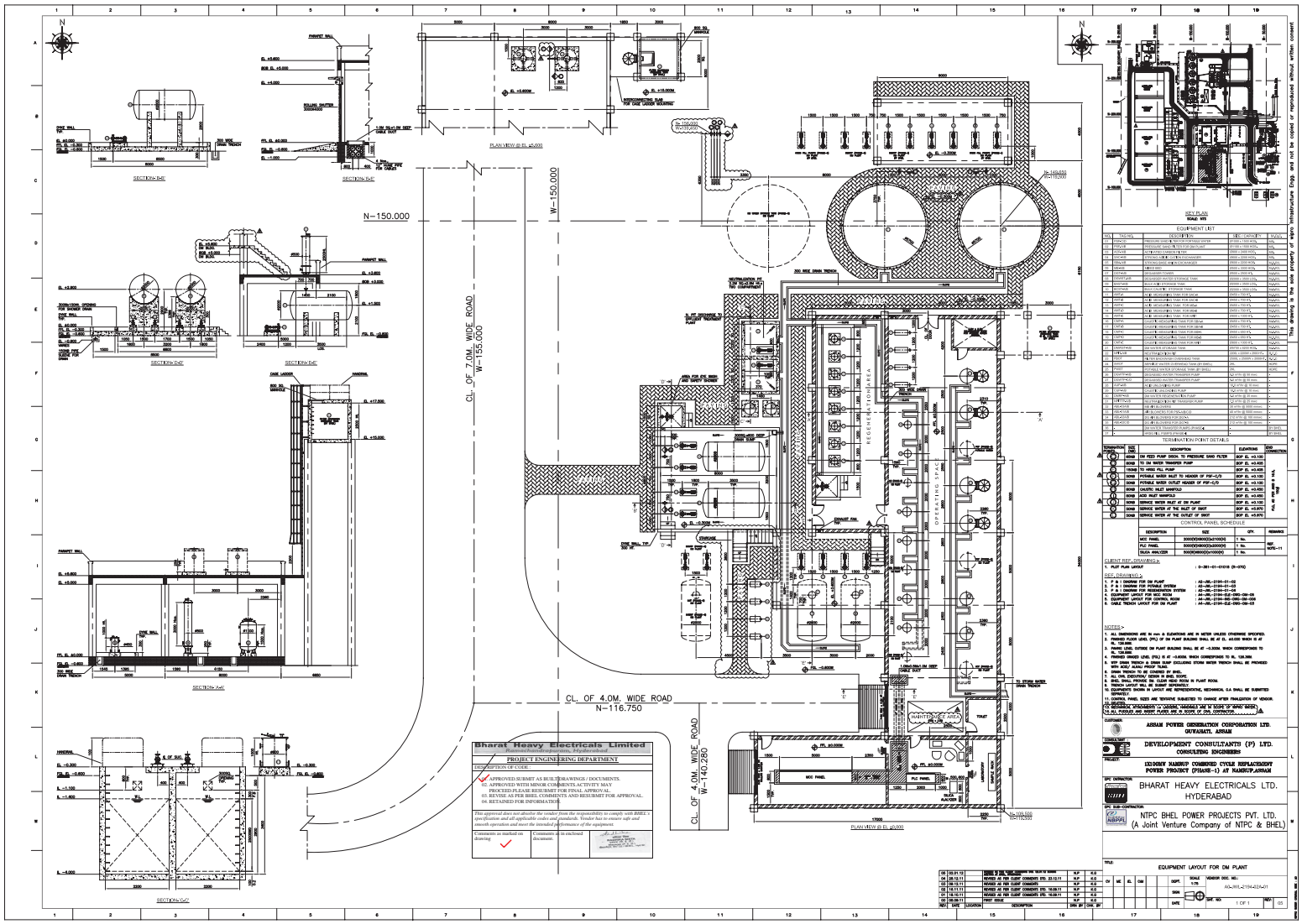
TITLE: PIPING & INSTRUMENT FOR REGENERATION SYSTEM

REV.	DATE	LOCATION	DESCRIPTION	DRN BY	CHK. BY
03	18.11.11	2	REVISED AS PER CLINT COMMENT'S	DINESH	AG.

CV	ME	EL	C&I			DEPT.	SCALE NTS.	VENDOR DOC. NO.: A1-JWL-2194-201-03
						SIGN		
						DATE		SHT. NO: 03 OF 03 — REV: 03

WIPRO WATER ORIGNAL SIZE : A1

REVISED AT BHEL, HYDERABAD DTD 02.01.12



Bharat Heavy Electricals Limited Ramachandrapuram, Hyderabad	
PROJECT ENGINEERING DEPARTMENT	
DESCRIPTION OF CODE :	
01. APPROVED SUBMIT AS BUILT DRAWINGS /DOCUMENTS. 02. APPROVED WITH MINOR COMMENTS ACTIVITY MAY PROCEED. PLEASE RE-SUBMIT FOR FINAL APPROVAL. 03. REVISE AS PER BHEL COMMENTS AND RESUBMIT FOR APPROVAL. 04. RETAINED FOR INFORMATION.	
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Comments as marked on drawing ✓	Comments as in enclosed document.
	Date:06.08.13

CUSTOMER :- M/s. ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT :- M/s. DEVELOPMENT CONSULTANTS (P) LTD.LTD.

PROJECT :- DM PLANT FOR 1X 100 NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT

TITLE :- GA AND POWER DISTRIBUTION

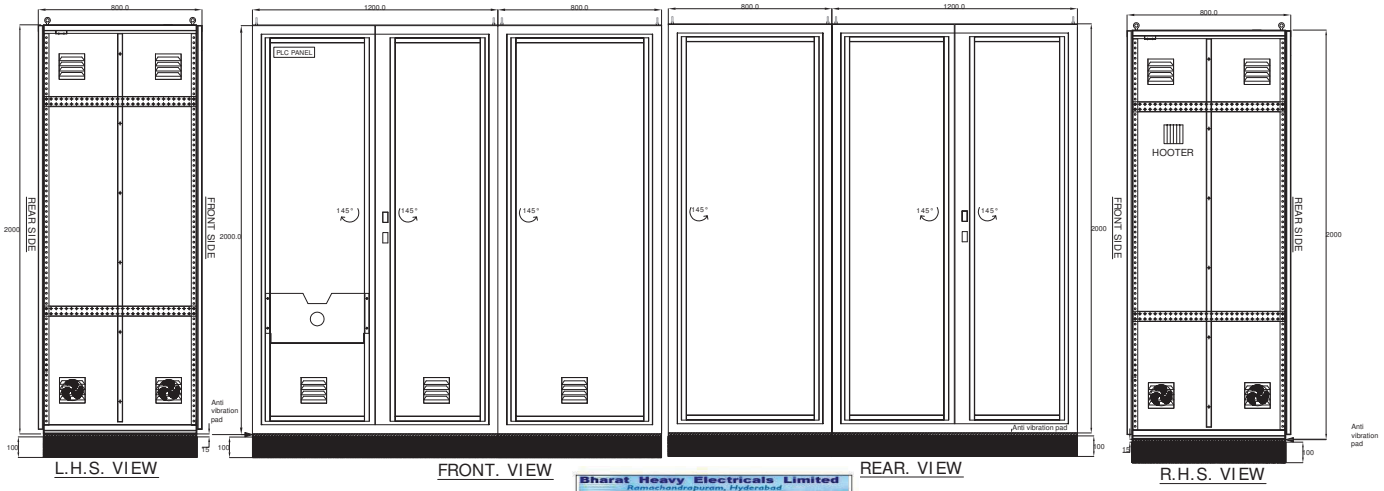
CUSTOMER:	ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM
CONSULTANT :	DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS
PROJECT:	1X100MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE-1) AT NAMRUP,ASSAM
EPC ONTRACTOR:	BHARAT HEAVY ELECTRICALS LTD. HYDERABAD
EPC SUB-CONTRACTOR:	NTPC BHEL POWER PROJECTS PVT. LTD. (A Joint Venture Company of NTPC & BHEL)
VENDOR:	WIPRO WATER SERENE PROPERTIES PVT LTD., SEZ, AIROLI, NAVI MUMBAI-400708.
TITLE:	PLC Panel GA & Power Distribution

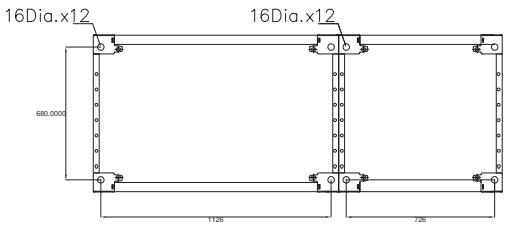
REV.	DATE	LOCATION	DESCRIPTION	DRN BY	CHK. BY
01	12-07-13		As Per Comments	AM	KK
00	12-06-13		Preliminary Submission	AM	KK

CV	ME	EL	C&I			DEPT.	SCALE NTS	DOC. NO.: A4-JWL-2194-INS-DWG-DM-003
						SIGN		
						DATE		SHT. NO: 1 OF 6 REV: 01

WIPRO WATER ORIGINAL SIZE : A

PANEL GA





Bharat Heavy Electricals Limited
Ranachandrapuram, Hyderabad

PROJECT ENGINEERING DEPARTMENT

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Comments as marked on drawing	Comments as in enclosed document
✓	

Date: 06.08.13

PANEL MAKE	RITTAL PANEL
PANEL SIZE	2000H(+100) x 2000W x 800D DULY WIRED UP
PANEL INCLOSURE	IP-55
WIRED UP PANEL	IP-41
COLOUR	RAL 7035
PANEL ACCESS	FRONT & REAR ACCESS
CABLE ENTRY	BOTTOM
APPROX WEIGHT	1500 KGS
SHEET THICKNESS	SIDE PLATES- 1.5, DOOR- 2.0 & MOUNTING PLATE- 3.0
	ALL DIMENSIONS ARE IN MM

CUSTOMER: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT : DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

PROJECT: 1X100MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE-1) AT NAMRUP,ASSAM

EPC ONTRACTOR: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

EPC SUB-CONTRACTOR: NTPC BHEL POWER PROJECTS PVT. LTD. (A Joint Venture Company of NTPC & BHEL)

VENDOR: WIPRO WATER
SERENE PROPERTIES PVT LTD., SEZ,
AIROLI, NAVI MUMBAI-400708.

TITLE: PLC Panel GA & Power Distribution

REV.	DATE	LOCATION	DESCRIPTION	DRN BY	CHK. BY
01	12-07-13		As Per Comments	AM	KK
00	12-06-13		Preliminary Submission	AM	KK

CV | ME | EL | C&I | DEPT. | SCALE NTS | DOC. NO.: A4-JWL-2194-INS-DWG-DM-003
SIGN
DATE
SHT. NO: 2 OF 6 | REV: 01

WIPRO WATER ORIGINAL SIZE : A

INTERNAL LAYOUT

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad
PROJECT ENGINEERING DEPARTMENT
DESCRIPTION OF CODE
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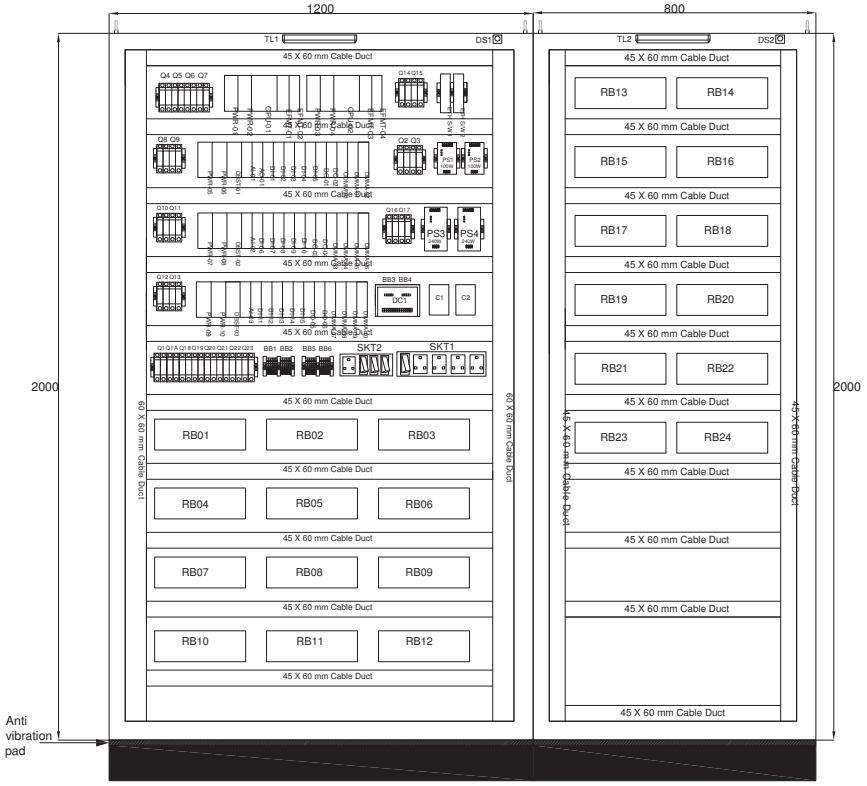
Comments as marked on drawing | Comments as in enclosed document | Date: DD.MM.13



Tag name	Item code	Description	Catalog no.	Qty.
		PLC Hardware		
DBST01-03	2MLI-DBST	I/O Interface Module, TP CAT5	2MLR-DBST	3
PWR01-10	2MLI-DC42	Power Supply Module 24 VDC (7.5A-5VDC)	2MLR-DC42	10
CPU 01-02	2MLI-CPUH/T	Redundant CPU Module	2MLR-CPUH/T	2
EFMT01-04	2ML-EFMT	High Speed Ethernet Communication Card	2MLI-EFMT	4
	2MLI-F201	Synchronization cable for redundant CPU	2MLI-F201	1
BP 01-02	2MLI-M02P	CPU Main Rack - 02 slots	2MLR-M02P	2
AI 01-03	2MLI-AD16A	16 channel AI Module - 4 to 20 mA	2MLI-AD16A	3
AO-01	2MLI-DC8A	08 Channel AO Module - 4 to 20 mA	2MLI-DC8A	1
DI 01-15	2ML-D24A	32 Channel DI Module - 24 VDC	2MLI-D24A	15
DO 01-06	2MLI-TR4B	32 Channel DO Module - 24 VDC	2MLI-TR4B	6
COMM-01	2ML-C42A	02 Channel RS-485 Com. Module	2MLI-C42A	1
I/O RACK 01- 03	2MLI-EI2P	I/O Expansion Racks - 12 Slot	2MLR-EI2P	3
DMMA 01-10	2MLI-DMMA	Cover Plates for Empty slots	2MLI-DMMA	10
RB 01-24	Relay Bases	Relay Bases 8 Channel 4 CO	CONNECTWELL	24
ETHSW01-02	ETHSW 1-2	Industrial Ethenet Switches with 1Fibre optics backbone	SFNETX	2
Q1-23	Q1-23	Circuit Breakers	Schneider	24
SKT1	SKT1	EPNE Guards(4A)	Teknic	1
SKT2	SKT2	UTILITY SOCKETS 4)	Anchor Roma	1
TL01-04	TL01-04	TUBELIGHTS(2L)	Standard	4
F1-4	F1-4	COOLING FANS	Standard	4
DS01-04	DS01-04	DOOR SWITCH	Standard	4
C1-2	LC1025	25A CONTACTOR	Schneider	2
DC1	DC1	DISTRIBUTION CARD	Standard	1

CUSTOMER: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT : DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

PROJECT: 1X100MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE-1) AT NAMRUP,ASSAM

EPC ONTRACTOR: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

EPC SUB-CONTRACTOR: NTPC BHEL POWER PROJECTS PVT. LTD. (A Joint Venture Company of NTPC & BHEL)

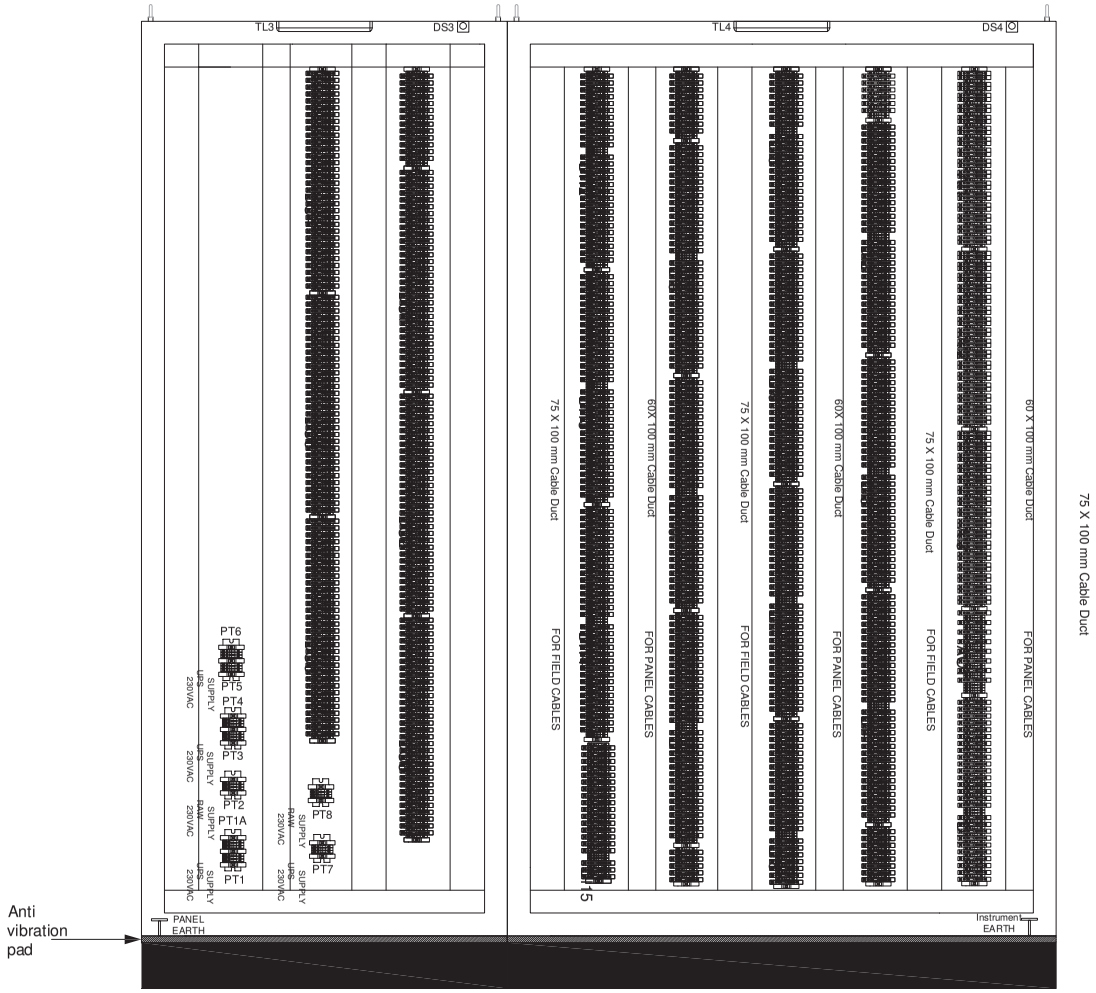
VENDOR: WIPRO WATER
SERENE PROPERTIES PVT LTD., SEZ,
AIROLI, NAVI MUMBAI-400708.

TITLE: PLC Panel GA & Power Distribution

REV.	DATE	LOCATION	DESCRIPTION	DRN BY	CHK. BY
01	12-07-13		As Per Comments	AM	KK
00	12-06-13		Preliminary Submission	AM	KK

CV	ME	EL	C&I	DEPT.	SCALE	DOC. NO.:
				SIGN	NTS	A4-JWL-2194-INS-DWG-DM-003
				DATE		SHT. NO: 3 OF 6 REV: 01

INTERNAL LAYOUT



Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad

PROJECT ENGINEERING DEPARTMENT

DESCRIPTION OF CODE :

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Comments as marked on drawing ✓	Comments as in enclosed document.	
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CONSULTANT : DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

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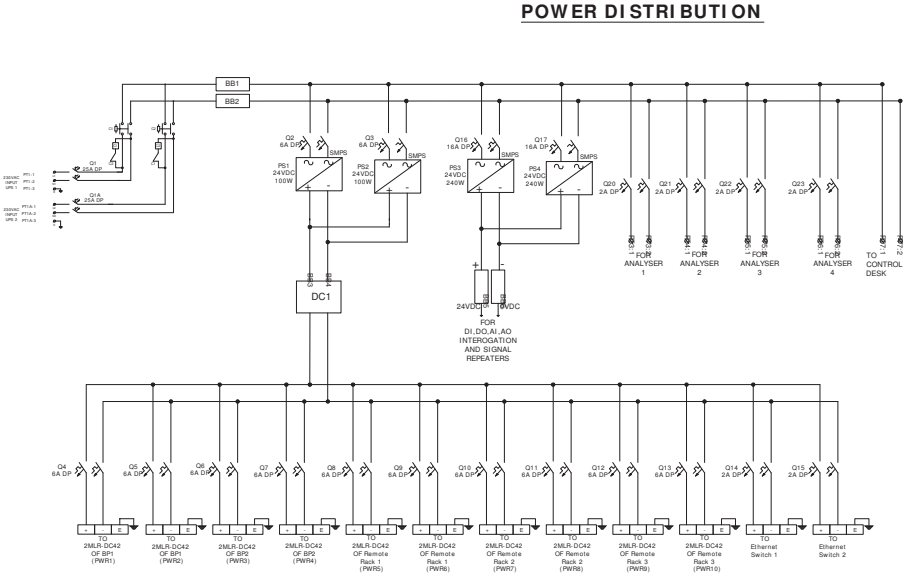
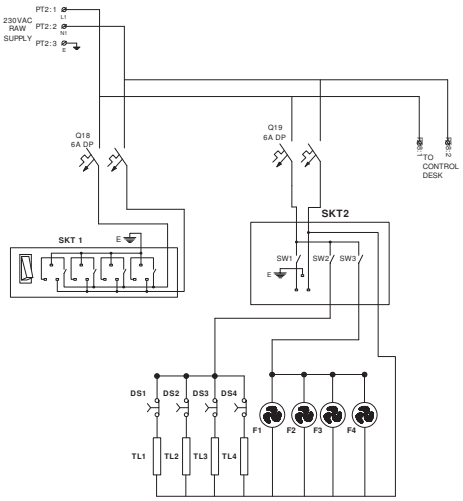
						SIGN		SHT. NO: 4 OF 6 REV: 01
						DATE		

POWER DISTRIBUTION





Wiring Colour Codes and Sizing details	
Power wiring	
230VAC/ 110VAC	1.5-4.0 sq.mm. RED colour
Neutral	1.5-4.0 sq.mm. BLACK colour
Control wiring	
24VDC	0.5 sq.mm. BROWN colour
0VDC	0.5 sq.mm. BLUE colour
Analog Inputs	0.5 sq.mm. WHITE colour
Digital Inputs	0.5 sq.mm. GRAY colour
Digital Outputs	0.5 sq.mm. GRAY colour
Earthing	
Instrument earth	0.75 sq.mm. GREEN colour
Panel earth	2.5 sq.mm. GREEN colour

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CONSULTANT : DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

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VENDOR: WIPRO WATER
SERENE PROPERTIES PVT LTD., SEZ, AIROLI, NAVI MUMBAI-400708.

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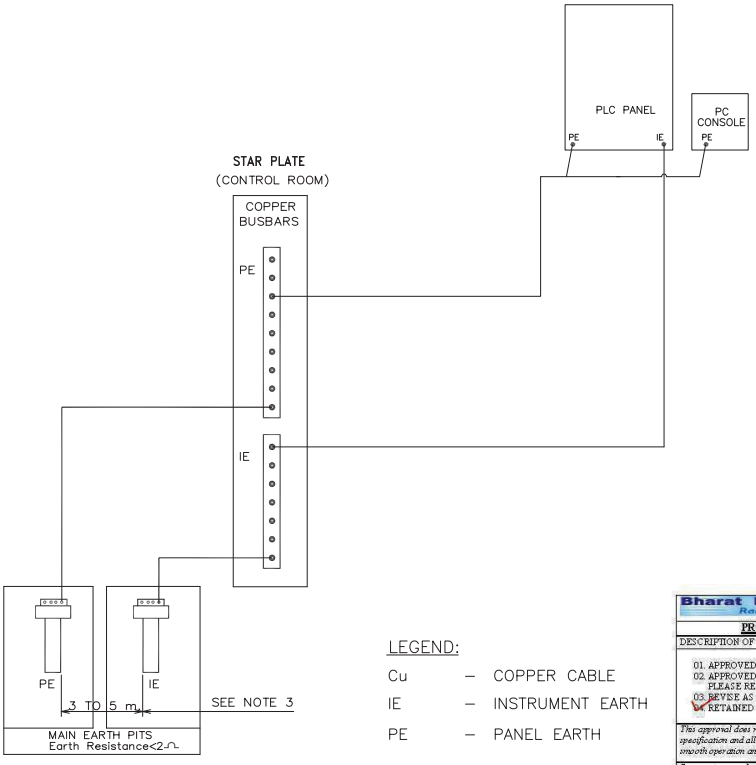
				DATE		SHT. NO: 5 OF 6 REV: 01

WIPRO WATER ORIGINAL SIZE : A

EARTHING SCHEME



LEGEND:

Cu	–	COPPER CABLE
IE	–	INSTRUMENT EARTH
PE	–	PANEL EARTH

NOTES:

1. DISTANCE BETWEEN STAR PLATE IN CONTROL ROOM AND MAIN EARTH PIT SHOULD BE LESS THAN 100 Mtr.
2. EARTHING CABLE FROM STAR PLATE TO EARTH PIT SHALL BE SINGLE RUN ONLY
3. EARTHING DISTRIBUTION BUSBAR SHALL BE PLACED IN CONTROL ROOM.
4. LAYING OF CABLE FROM DISTRIBUTION BUSBAR
5. PE BUSBAR:MOC=ALUMINIUM; CROSS SECTION=50mmx10mm;LENGTH=500mm.
6. EE BUSBAR:MOC=ALUMINIUM; CROSS SECTION=50mmx6mm;LENGTH=500mm.

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CONSULTANT : DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

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SERENE PROPERTIES PVT LTD., SEZ, AIROLI, NAVI MUMBAI–400708.

TITLE: Earthing Scheme

CV	ME	EL	C&I			DEPT.
						SIGN
						DATE

SCALE: NTS

DOC. NO.: A4-JWL-2194-INS-DWG-DM-003

SHT. NO: 6 OF 6 REV: 01

WIPRO WATER ORIGINAL SIZE : A

CUSTOMER :- M/s. ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT :- M/s. DEVELOPMENT CONSULTANTS (P) LTD.LTD.

PROJECT :- DM PLANT FOR 1X 100 NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT

TITLE :- **SYSTEM CONFIGURATION**

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad

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VENDOR: WIPRO WATER
SERENE PROPERTIES PVT LTD., SEZ, AIROLI, NAVI MUMBAI-400708.

TITLE: PLC System Configuration

CV	ME	EL	C&I			DEPT.
						SIGN
						DATE

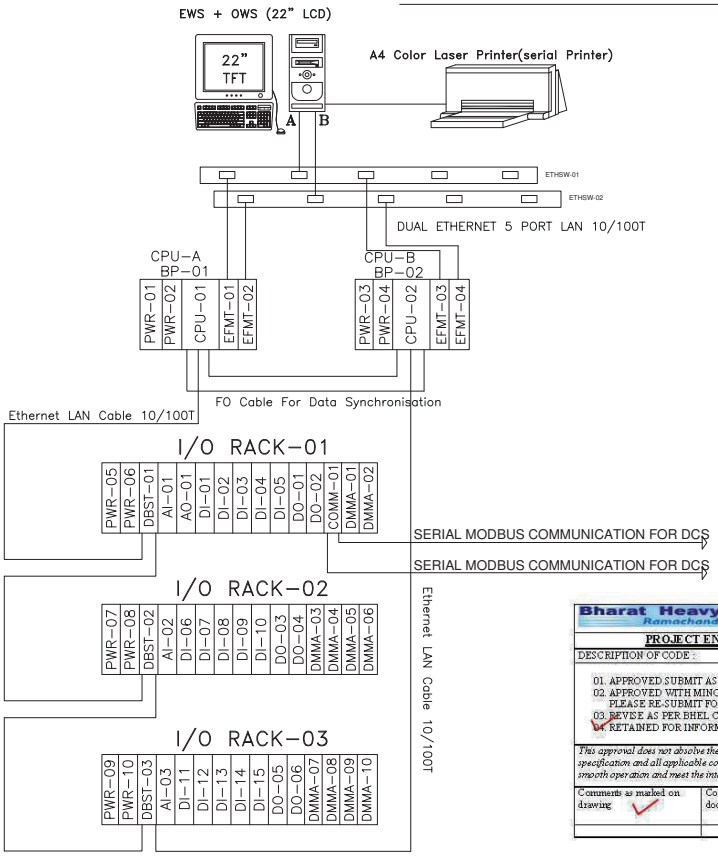
SCALE NTS

DOC. NO.: A4-JWL-2194-INS-DWG-DM-003

SHT. NO: 1 OF 2 REV: 01

WIPRO WATER ORIGINAL SIZE : A

SYSTEM CONFIGURATION



BILL OF MATERIAL

Tag name	PLC Hardware	Catalog No.	PLC-1
CPU 01-02	Redundant CPU Module	2MLR-CPUH/T	2
PWR 01-04	Power Supply Module 24 VDC(7.5A-5VDC	2MLR-DC42	4
EFMT 01-04	High Speed Ethernet Communication Card	2MLL-EFMT	4
	Synchronization cable for redundant CPU	2MLC-F201	1
BP 01-02	CPU Main Rack - 02 slots	2MLR-M02P	2
	I/O Hardware	**Catalog No.**	**PLC-1**
DBST 01-03	I/O Interface Module, TP CAT5	2MLR-DBST	3
PWR 05-10	Power Supply Module 24 VDC(7.5A-5VDC	2MLR-DC42	6
AI 01-03	16 channel AI Module - 4 to 20 mA	2MLF-AD16A	3
AO 01	08 Channel AO Module - 4 to 20 mA	2MLF-DC8A	1
DI 01-15	32 Channel DI Module - 24 VDC	2MLI-D24A	15
DO 01-06	32 Channel DO Module - 24 VDC	2MLQ-TR4B	6
COMM-01	02 Channel RS-485 Com. Module	2MLL-C12A	1
I/O RACK 01-03	I/O Expansion Racks - 12 Slot	2MLR-E12P	3
DMMA 01-10	Cover Plates for Empty slots	2MLT-DMMA	10
	PLC Programming Software Package	**Catalog No.**	**PLC-1**
	Softmaster PLC Programming package	SSS-MLPT	1
	USB Cable for Softmaster	USB-301A	1
	PLC SCADA Software Packages(Runtime+Development)	**Catalog No.**	**PLC-1**
	Experion HS Target System	EP-HROEMT	1
	Microsoft SQL DEV CAL	MZ-SQLCL4	1
	Experion HS Media Kit	EP-HMB400	1

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				SIGN	NTS	A4-JWL-2194-INS-DWG-DM-003
				DATE		SHT. NO: 2 OF 2 REV: 01

WIPRO WATER ORIGINAL SIZE : A

IO LIST-DM PLANT

CUSTOMER	NTPCBHEL POWER PROJECT PVT. LTD	Issued For	Approval
CONSULTANT	DEVELOPMENT CONSULTANT PVT. LTD	Job No.	JWL-2194
CONTRACTOR	WIPRO WATER	Date	25.06.2013
Project	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT	Revision	R1
DOC. NO	A4-JWL-2194-INS-SCH-DM-002		
DOCUMENT:	PLC IO LIST FOR DM PLANT		

SR	TAG NO.	PLC Tag No.	DESCRIPTION	SIGNAL SOURCE	SIGNAL DEST.	SIGNAL TYPE	CONT NO/NC	IO TYPE DI	DO	AI	AO	INST RANGE	ENGG. UNIT	REDUNDANCY	ALARMS HH	H	LL	L	SCALE RANGE	REF. P. & I. D.	Rev No
DIGITAL INPUT																					
1	DMFP-A	XL_DMFP-A_RFB	DM Plant Feed Pump A_Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
2	DMFP-A	XL_DMFP-A_TFB	DM Plant Feed Pumps A_Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
3	DMFP-A	XL_DMFP-A_RTS	DM Plant Feed Pumps A_Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
4	DMFP-A	XL_DMFP-A_STP	DM Plant Feed Pumps A_Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
5	DMFP-B	XL_DMFP-B_RFB	DM Plant Feed Pumps B_Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
6	DMFP-B	XL_DMFP-B_TFB	DM Plant Feed Pumps B_Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
7	DMFP-B	XL_DMFP-B_RTS	DM Plant Feed Pumps B_Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
8	DMFP-B	XL_DMFP-B_STP	DM Plant Feed Pumps B_Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
9	ABL-01-A	XL_ABL-01-A_RFB	PSF Blower -A Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
10	ABL-01-A	XL_ABL-01-A_TFB	PSF Blower -A Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
11	ABL-01-A	XL_ABL-01-A_RTS	PSF Blower -A Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
12	ABL-01-A	XL_ABL-01-A_STP	PSF Blower -A Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
13	ABL-01-B	XL_ABL-01-B_RFB	PSF Blower -B Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
14	ABL-01-B	XL_ABL-01-B_TFB	PSF Blower -B Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
15	ABL-01-B	XL_ABL-01-B_RTS	PSF Blower -B Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
16	ABL-01-B	XL_ABL-01-B_STP	PSF Blower -B Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
17	ABL-02-A	XL_ABL-02-A_RFB	Degasser Blower -A Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
18	ABL-02-A	XL_ABL-02-A_TFB	Degasser Blower -A Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
19	ABL-02-A	XL_ABL-02-A_RTS	Degasser Blower -A Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
20	ABL-02-A	XL_ABL-02-A_STP	Degasser Blower -A Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
21	ABL-02-B	XL_ABL-02-B_RFB	Degasser Blower -B Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
22	ABL-02-B	XL_ABL-02-B_TFB	Degasser Blower -B Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
23	ABL-02-B	XL_ABL-02-B_RTS	Degasser Blower -B Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
24	ABL-02-B	XL_ABL-02-B_STP	Degasser Blower -B Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
25	ABL-02-C	XL_ABL-02-C_RFB	Degasser Blower -C Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
26	ABL-02-C	XL_ABL-02-C_TFB	Degasser Blower -C Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
27	ABL-02-C	XL_ABL-02-C_RTS	Degasser Blower -C Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
28	ABL-02-C	XL_ABL-02-C_STP	Degasser Blower -C Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
29	ABL-02-D	XL_ABL-02-D_RFB	Degasser Blower -D Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
30	ABL-02-D	XL_ABL-02-D_TFB	Degasser Blower -D Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
31	ABL-02-D	XL_ABL-02-D_RTS	Degasser Blower -D Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
32	ABL-02-D	XL_ABL-02-D_STP	Degasser Blower -D Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
33	DGWTP-A	XL_DGWTP-A_RFB	Degassed Water Transfer Pumps-A Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
34	DGWTP-A	XL_DGWTP-A_TFB	Degassed Water Transfer Pumps-A Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
35	DGWTP-A	XL_DGWTP-A_RTS	Degassed Water Transfer Pumps-A Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
36	DGWTP-A	XL_DGWTP-A_STP	Degassed Water Transfer Pumps-A Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
37	DGWTP-B	XL_DGWTP-B_RFB	Degassed Water Transfer Pumps-B Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
38	DGWTP-B	XL_DGWTP-B_TFB	Degassed Water Transfer Pumps-B Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
39	DGWTP-B	XL_DGWTP-B_RTS	Degassed Water Transfer Pumps-B Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
40	DGWTP-B	XL_DGWTP-B_STP	Degassed Water Transfer Pumps-B Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
41	DGWTP-C	XL_DGWTP-C_RFB	Degassed Water Transfer Pumps-C Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
42	DGWTP-C	XL_DGWTP-C_TFB	Degassed Water Transfer Pumps-C Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
43	DGWTP-C	XL_DGWTP-C_RTS	Degassed Water Transfer Pumps-C Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
44	DGWTP-C	XL_DGWTP-C_STP	Degassed Water Transfer Pumps-C Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
45	DGWTP-D	XL_DGWTP-D_RFB	Degassed Water Transfer Pumps-D Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
46	DGWTP-D	XL_DGWTP-D_TFB	Degassed Water Transfer Pumps-D Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
47	DGWTP-D	XL_DGWTP-D_RTS	Degassed Water Transfer Pumps-D Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
48	DGWTP-D	XL_DGWTP-D_STP	Degassed Water Transfer Pumps-D Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
49	ABL-03-A	XL_ABL-03-A_RFB	MB Air Blower ABL-A Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
50	ABL-03-A	XL_ABL-03-A_TFB	MB Air Blower ABL-A Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
51	ABL-03-A	XL_ABL-03-A_RTS	MB Air Blower ABL-A Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
52	ABL-03-A	XL_ABL-03-A_STP	MB Air Blower ABL-A Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
53	ABL-03-B	XL_ABL-03-B_RFB	MB Air Blower ABL-B Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
54	ABL-03-B	XL_ABL-03-B_TFB	MB Air Blower ABL-B Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
55	ABL-03-B	XL_ABL-03-B_RTS	MB Air Blower ABL-B Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
56	ABL-03-B	XL_ABL-03-B_STP	MB Air Blower ABL-B Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
57	DMRP-A	XL_DMRP-A_RFB	DM water Regeneration pump-A Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
58	DMRP-A	XL_DMRP-A_TFB	DM water Regeneration pump-A Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
59	DMRP-A	XL_DMRP-A_RTS	DM water Regeneration pump-A Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
60	DMRP-A	XL_DMRP-A_STP	DM water Regeneration pump-A Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
61	DMRP-B	XL_DMRP-B_RFB	DM water Regeneration pump-B Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
62	DMRP-B	XL_DMRP-B_TFB	DM water Regeneration pump-B Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
63	DMRP-B	XL_DMRP-B_RTS	DM water Regeneration pump-B Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
64	DMRP-B	XL_DMRP-B_STP	DM water Regeneration pump-B Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
65	CUP-A	XL_CUP-A_RFB	Caustic Unloading Pump-A Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
66	CUP-A	XL_CUP-A_TFB	Caustic Unloading Pump-A Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
67	CUP-A	XL_CUP-A_RTS	Caustic Unloading Pump-A Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
68	CUP-A	XL_CUP-A_STP	Caustic Unloading Pump-A Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
69	CUP-B	XL_CUP-B_RFB	Caustic Unloading Pump-B Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
70	CUP-B	XL_CUP-B_TFB	Caustic Unloading Pump-B Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
71	CUP-B	XL_CUP-B_RTS	Caustic Unloading Pump-B Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
72	CUP-B	XL_CUP-B_STP	Caustic Unloading Pump-B Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
73	AG-A	XL_AG-A_RFB	Agitator for Caustic Measuring Tank-A Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
74	AG-A	XL_AG-A_TFB	Agitator for Caustic Measuring Tank-A Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
75	AG-A	XL_AG-A_RTS	Agitator for Caustic Measuring Tank-A Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
76	AG-A	XL_AG-A_STP	Agitator for Caustic Measuring Tank-A Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
77	AG-B	XL_AG-B_RFB	Agitator for Caustic Measuring Tank-B Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
78	AG-B	XL_AG-B_TFB	Agitator for Caustic Measuring Tank-B Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
79	AG-B	XL_AG-B_RTS	Agitator for Caustic Measuring Tank-B Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
80	AG-B	XL_AG-B_STP	Agitator for Caustic Measuring Tank-B Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	

IO LIST-DM PLANT

CUSTOMER	NTPC BHEL POWER PROJECT PVT. LTD	Issued For	Approval
CONSULTANT	DEVELOPMENT CONSULTANT PVT. LTD	Job No.	JWL-2194
CONTRACTOR	WIPRO WATER	Date	25.06.2013
Project	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT	Revision	R1
DOC NO	A4-JWL-2194-INS-SCH-DM-002		
DOCUMENT:	PLC IO LIST FOR DM PLANT		

SR	TAG NO.	PLC Tag No.	DESCRIPTION	SIGNAL SOURCE	SIGNAL DEST.	SIGNAL TYPE	CONT NO/ NC	IO TYPE DI	DO	AI	AO	INST RANGE	ENGG. UNIT	REDUN DANCY	ALARMS HH	H	LL	L	SCALE RANGE	REF. P. & I. D.	Rev No
81	AG-C	XL_AG-C_RFB	Agitator for Caustic Measuring Tank-C Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
82	AG-C	XL_AG-C_TFB	Agitator for Caustic Measuring Tank-C Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
83	AG-C	XL_AG-C_RTS	Agitator for Caustic Measuring Tank-C Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
84	AG-C	XL_AG-C_STP	Agitator for Caustic Measuring Tank-C Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
85	AG-D	XL_AG-D_RFB	Agitator for Caustic Measuring Tank-D Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
86	AG-D	XL_AG-D_TFB	Agitator for Caustic Measuring Tank-D Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
87	AG-D	XL_AG-D_RTS	Agitator for Caustic Measuring Tank-D Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
88	AG-D	XL_AG-D_STP	Agitator for Caustic Measuring Tank-D Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
89	AUP-A	XL_AUP-A_RFB	Acid Unloading Pumps-A Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
90	AUP-A	XL_AUP-A_TFB	Acid Unloading Pumps-A Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
91	AUP-A	XL_AUP-A_RTS	Acid Unloading Pumps-A Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
92	AUP-A	XL_AUP-A_STP	Acid Unloading Pumps-A Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
93	AUP-B	XL_AUP-B_RFB	Acid Unloading Pumps-B Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
94	AUP-B	XL_AUP-B_TFB	Acid Unloading Pumps-B Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
95	AUP-B	XL_AUP-B_RTS	Acid Unloading Pumps-B Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
96	AUP-B	XL_AUP-B_STP	Acid Unloading Pumps-B Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
97	N.PITP-A	XL_N.PITP-A_RFB	N.Pit pumps-A Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
98	N.PITP-A	XL_N.PITP-A_TFB	N.Pit pumps-A Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
99	N.PITP-A	XL_N.PITP-A_RTS	N.Pit pumps-A Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
100	N.PITP-A	XL_N.PITP-A_STP	N.Pit pumps-A Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
101	N.PITP-B	XL_N.PITP-B_RFB	N.Pit pumps-B Run feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
102	N.PITP-B	XL_N.PITP-B_TFB	N.Pit pumps-B Trip feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
103	N.PITP-B	XL_N.PITP-B_RTS	N.Pit pumps-B Ready To Start feedback	MCC	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
104	N.PITP-B	XL_N.PITP-B_STP	N.Pit pumps-B Stop feedback	MCC	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
105	LSH-5404A	LSH-5404A	DGWST-A Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
106	LSL-5404A	LSL-5404A	DGWST-A Level Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
107	LSLL-5404A	LSLL-5404A	DGWST-A Level Low Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	1	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
108	LSH-5404B	LSH-5404B	DGWST-B Level High	Field	PLC	Pot free	NC	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
109	LSL-5404B	LSL-5404B	DGWST-B Level Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
110	LSLL-5404B	LSLL-5404B	DGWST-B Level Low Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	1	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
111	LSH-5405A	LSH-5405A	DMWST-A Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
112	LSL-5405A	LSL-5405A	DMWST-A Level Low	Field	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
113	LSH-5405B	LSH-5405B	DMWST-B Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
114	LSL-5405B	LSL-5405B	DMWST-B Level Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
115	LSH-5407	LSH-5407	BCST-A Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
116	LSL-5407	LSL-5407	BCST-A Level Low	Field	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
117	LSH-5408A	LSH-5408A	CMT-A Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
118	LSL-5408A	LSL-5408A	CMT-A Level Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
119	LSH-5408B	LSH-5408B	CMT-B Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
120	LSL-5408B	LSL-5408B	CMT-B Level Low	Field	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
121	LSH-5408C	LSH-5408C	CMT-C Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
122	LSL-5408C	LSL-5408C	CMT-C Level Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	1	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
123	LSH-5408D	LSH-5408D	CMT-D Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
124	LSL-5408D	LSL-5408D	CMT-D Level Low	Field	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
125	LSH-5409	LSH-5409	BAST-A Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
126	LSL-5409	LSL-5409	BAST-A Level Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
127	LSH-5410A	LSH-5410A	AMT-A Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
128	LSL-5410A	LSL-5410A	AMT-A Level Low	Field	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
129	LSH-5410B	LSH-5410B	AMT-B Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
130	LSL-5410B	LSL-5410B	AMT-B Level Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
131	LSH-5410C	LSH-5410C	AMT-C Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
132	LSL-5410C	LSL-5410C	AMT-C Level Low	Field	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	-1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
133	LSH-5410D	LSH-5410D	AMT-D Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	-1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
134	LSL-5410D	LSL-5410D	AMT-D Level Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
135	LSH-5411A	LSH-5411A	N.PIT-A Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
136	LSL-5411A	LSL-5411A	N.PIT-A Level Low	Field	PLC	Pot free	NC	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
137	LSH-5411B	LSH-5411B	N.PIT-B Level High	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R2	
138	LSL-5411B	LSL-5411B	N.PIT-B Level Low	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	1	---	A0-JWL-2194-201/ 202/ 203-01-R3	
139	DPS-5404A	DPS-5404A	Across PSF-A	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
140	DPS-5404B	DPS-5404B	Across PSF-B	Field	PLC	Pot free	NC	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
141	DPS-5405A	DPS-5405A	Across ACF-A	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
142	DPS-5405B	DPS-5405B	Across ACF-B	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
143	DPS-5406A	DPS-5406A	Across PSF-C	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
144	DPS-5406B	DPS-5406B	Across PSF-D	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
145	PS-5404A	PS-5404A	Pressure Switch at Outlet of DGWTP - AB	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
146	PS-5404B	PS-5404B	Pressure Switch at Outlet of DGWTP - CD	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
147	PS-5405	PS-5405	Pressure Switch at Outlet of DMRP - AB	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	1	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
148	DFXV-5404A	DFXV-5404A-OPN	Service I/ L valve For Pressure Sand Filter PSF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
149	DFXV-5404A	DFXV-5404A-CLS	Service I/ L valve For Pressure Sand Filter PSF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
150	DFXV-5406A	DFXV-5406A-OPN	Backwash I/ L valve For Pressure Sand Filter PSF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
151	DFXV-5406A	DFXV-5406A-CLS	Backwash I/ L valve For Pressure Sand Filter PSF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
152	DFXV-5410A	DFXV-5410A-OPN	Air I/ L valve For Pressure Sand Filter PSF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
153	DFXV-5410A	DFXV-5410A-CLS	Air I/ L valve For Pressure Sand Filter PSF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
154	DFXV-5407A	DFXV-5407A-OPN	Backwash O/ L valve For Pressure Sand Filter PSF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
155	DFXV-5407A	DFXV-5407A-CLS	Backwash O/ L valve For Pressure Sand Filter PSF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
156	DFXV-5405A	DFXV-5405A-OPN	Service O/ L valve For Pressure Sand Filter PSF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
157	DFXV-5405A	DFXV-5405A-CLS	Service O/ L valve For Pressure Sand Filter PSF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
158	DFXV-5409A	DFXV-5409A-OPN	Rinse O/ L valve For Pressure Sand Filter PSF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
159	DFXV-5409A	DFXV-5409A-CLS	Rinse O/ L valve For Pressure Sand Filter PSF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
160	DFXV-5408A	DFXV-5408A-OPN	Air O/ L valve For Pressure Sand Filter PSF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
161	DFXV-5408A	DFXV-5408A-CLS	Air O/ L valve For Pressure Sand Filter PSF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	

	IO LIST-DM PLANT		
CUSTOMER	NTPC BHEL POWER PROJECT PVT. LTD	Issued For	Approval
CONSULTANT	DEVELOPMENT CONSULTANT PVT. LTD	Job No.	JWL-2194
CONTRACTOR	WIPRO WATER	Date	25.06.2013
Project	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT	Revision	R1
DOC. NO	A4-JWL-2194-INS-SCH-DM-002		
DOCUMENT:	PLC IO LIST FOR DM PLANT		

Bharat Heavy Electricals Limited
PROJECT ENGINEERING DEPARTMENT

SR	TAG NO.	PLC Tag No.	DESCRIPTION	SIGNAL SOURCE	SIGNAL DEST.	SIGNAL TYPE	CONT NO/NC	IO TYPE DI	DO	AI	AO	INST RANGE	ENGG. UNIT	REDUNDANCY	ALARMS HH	H	LL	L	SCALE RANGE	REF. P. & I. D.	Rev No
162	DFXV-5404B	DFXV-5404B-OPN	Service I/ L valve For Pressure Sand Filter PSF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
163	DFXV-5404B	DFXV-5404B-CLS	Service I/ L valve For Pressure Sand Filter PSF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
164	DFXV-5406B	DFXV-5406B-OPN	Backwash I/ L valve For Pressure Sand Filter PSF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
165	DFXV-5406B	DFXV-5406B-OPN	Backwash I/ L valve For Pressure Sand Filter PSF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
166	DFXV-5410B	DFXV-5410B-OPN	Air I/ L valve For Pressure Sand Filter PSF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
167	DFXV-5410B	DFXV-5410B-OPN	Air I/ L valve For Pressure Sand Filter PSF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
168	DFXV-5407B	DFXV-5407B-OPN	Backwash O/ L valve For Pressure Sand Filter PSF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
169	DFXV-5407B	DFXV-5407B-OPN	Backwash O/ L valve For Pressure Sand Filter PSF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
170	DFXV-5405B	DFXV-5405B-OPN	Service O/ L valve For Pressure Sand Filter PSF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
171	DFXV-5405B	DFXV-5405B-OPN	Service O/ L valve For Pressure Sand Filter PSF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
172	DFXV-5409B	DFXV-5409B-OPN	Rinse O/ L valve For Pressure Sand Filter PSF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
173	DFXV-5409B	DFXV-5409B-OPN	Rinse O/ L valve For Pressure Sand Filter PSF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
174	DFXV-5408B	DFXV-5408B-OPN	Air O/ L valve For Pressure Sand Filter PSF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
175	DFXV-5408B	DFXV-5408B-OPN	Air O/ L valve For Pressure Sand Filter PSF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
176	DFXV-5411A	DFXV-5411A-OPN	Service I/ L valve For Activated Carbon Filter ACF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
177	DFXV-5411A	DFXV-5411A-CLS	Service I/ L valve For Activated Carbon Filter ACF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
178	DFXV-5413A	DFXV-5413A-OPN	Backwash I/ L valve For Activated Carbon Filter ACF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
179	DFXV-5413A	DFXV-5413A-CLS	Backwash I/ L valve For Activated Carbon Filter ACF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
180	DFXV-5414A	DFXV-5414A-OPN	Backwash O/ L valve For Activated Carbon Filter ACF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
181	DFXV-5414A	DFXV-5414A-CLS	Backwash O/ L valve For Activated Carbon Filter ACF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
182	DFXV-5412A	DFXV-5412A-OPN	Service O/ L valve For Activated Carbon Filter ACF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
183	DFXV-5412A	DFXV-5412A-CLS	Service O/ L valve For Activated Carbon Filter ACF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
184	DFXV-5416A	DFXV-5416A-OPN	Rinse O/ L valve For Activated Carbon Filter ACF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
185	DFXV-5416A	DFXV-5416A-CLS	Rinse O/ L valve For Activated Carbon Filter ACF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
186	DFXV-5415A	DFXV-5415A-OPN	Air O/ L valve For Activated Carbon Filter ACF-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
187	DFXV-5415A	DFXV-5415A-CLS	Air O/ L valve For Activated Carbon Filter ACF-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
188	DFXV-5411B	DFXV-5411B-OPN	Service I/ L valve For Activated Carbon Filter ACF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
189	DFXV-5411B	DFXV-5411B-CLS	Service I/ L valve For Activated Carbon Filter ACF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
190	DFXV-5413B	DFXV-5413B-OPN	Backwash I/ L valve For Activated Carbon Filter ACF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
191	DFXV-5413B	DFXV-5413B-CLS	Backwash I/ L valve For Activated Carbon Filter ACF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
192	DFXV-5414B	DFXV-5414B-OPN	Backwash O/ L valve For Activated Carbon Filter ACF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
193	DFXV-5414B	DFXV-5414B-CLS	Backwash O/ L valve For Activated Carbon Filter ACF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
194	DFXV-5412B	DFXV-5412B-OPN	Service O/ L valve For Activated Carbon Filter ACF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
195	DFXV-5412B	DFXV-5412B-CLS	Service O/ L valve For Activated Carbon Filter ACF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
196	DFXV-5416B	DFXV-5416B-OPN	Rinse O/ L valve For Activated Carbon Filter ACF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
197	DFXV-5416B	DFXV-5416B-CLS	Rinse O/ L valve For Activated Carbon Filter ACF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
198	DFXV-5415B	DFXV-5415B-OPN	Air O/ L valve For Activated Carbon Filter ACF-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
199	DFXV-5415B	DFXV-5415B-CLS	Air O/ L valve For Activated Carbon Filter ACF-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
200	DFXV-5417A	DFXV-5417A-OPN	Service I/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
201	DFXV-5417A	DFXV-5417A-CLS	Service I/ L valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
202	DFXV-5425A	DFXV-5425A-OPN	Balance Water I/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
203	DFXV-5425A	DFXV-5425A-CLS	Balance Water I/ L valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
204	DFXV-5423A	DFXV-5423A-OPN	Middle Collector I/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
205	DFXV-5423A	DFXV-5423A-CLS	Middle Collector I/ L valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
206	DFXV-5419A	DFXV-5419A-OPN	Backwash I/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
207	DFXV-5419A	DFXV-5419A-CLS	Backwash I/ L valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
208	DFXV-5418A	DFXV-5418A-OPN	Service O/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
209	DFXV-5418A	DFXV-5418A-CLS	Service O/ L valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
210	DFXV-5420A	DFXV-5420A-OPN	Backwash O/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
211	DFXV-5420A	DFXV-5420A-CLS	Backwash O/ L valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
212	DFXV-5424A	DFXV-5424A-OPN	Middle Collector O/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
213	DFXV-5424A	DFXV-5424A-CLS	Middle Collector O/ L valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
214	DFXV-5427A	DFXV-5427A-OPN	Acid Injection valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
215	DFXV-5427A	DFXV-5427A-CLS	Acid Injection O/ L valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
216	DFXV-5422A	DFXV-5422A-OPN	Rinse O/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
217	DFXV-5422A	DFXV-5422A-CLS	Rinse O/ L valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
218	DFXV-5421A	DFXV-5421A-OPN	Air Vent valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
219	DFXV-5421A	DFXV-5421A-CLS	Air Vent valve For Stronge Acid Cation Exchanger SAC-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
220	DFXV-5428A	DFXV-5428A-OPN	Acid I/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
221	DFXV-5428A	DFXV-5428A-CLS	Acid I/ L valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
222	DFXV-5426A	DFXV-5426A-OPN	Acid Drain valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
223	DFXV-5426A	DFXV-5426A-CLS	Acid Drain valve For Stronge Acid Cation Exchanger SAC-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
224	DFXV-5417B	DFXV-5417B-OPN	Service I/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
225	DFXV-5417B	DFXV-5417B-CLS	Service I/ L valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
226	DFXV-5425B	DFXV-5425B-OPN	Balance Water I/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
227	DFXV-5425B	DFXV-5425B-CLS	Balance Water I/ L valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
228	DFXV-5423B	DFXV-5423B-OPN	Middle Collector I/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
229	DFXV-5423B	DFXV-5423B-CLS	Middle Collector I/ L valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
230	DFXV-5419B	DFXV-5419B-OPN	Backwash I/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
231	DFXV-5419B	DFXV-5419B-CLS	Backwash I/ L valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
232	DFXV-5418B	DFXV-5418B-OPN	Service O/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
233	DFXV-5418B	DFXV-5418B-CLS	Service O/ L valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
234	DFXV-5420B	DFXV-5420B-OPN	Backwash O/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
235	DFXV-5420B	DFXV-5420B-CLS	Backwash O/ L valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
236	DFXV-5424B	DFXV-5424B-OPN	Middle Collector O/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
237	DFXV-5424B	DFXV-5424B-CLS	Middle Collector O/ L valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
238	DFXV-5427B	DFXV-5427B-OPN	Acid Injection valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
239	DFXV-5427B	DFXV-5427B-CLS	Acid Injection O/ L valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
240	DFXV-5422B	DFXV-5422B-OPN	Rinse O/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
241	DFXV-5422B	DFXV-5422B-CLS	Rinse O/ L valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
242	DFXV-5421B	DFXV-5421B-OPN	Air Vent valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	

	IO LIST-DM PLANT
CUSTOMER	NTPCBHEL POWER PROJECT PVT. LTD
CONSULTANT	DEVELOPMENT CONSULTANT PVT. LTD
CONTRACTOR	WIPRO WATER
Project	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT
DOC. NO	A4-JWL-2194-INS-SCH-DM-002
DOCUMENT:	PLC IO LIST FOR DM PLANT

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad
PROJECT ENGINEERING DEPARTMENT

Issued For	Approval
Job No.	JWL-2194
Date	25.06.2013
Revision	R1

SR	TAG NO.	PLC Tag No.	DESCRIPTION	SIGNAL SOURCE	SIGNAL DEST.	SIGNAL TYPE	CONT NO/NC	IO TYPE DI	DO	AI	AO	INST RANGE	ENGG. UNIT	REDUNDANCY	ALARMS HH	H	LL	L	SCALE RANGE	REF. P. & I. D.	Rev No
243	DFXV-5421B	DFXV-5421B-CLS	Air Vent valve For Stronge Acid Cation Exchanger SAC-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
244	DFXV-5428B	DFXV-5428B-OPN	Acid I/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
245	DFXV-5428B	DFXV-5428B-CLS	Acid I/ L valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
246	DFXV-5426B	DFXV-5426B-OPN	Acid Drain valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
247	DFXV-5426B	DFXV-5426B-CLS	Acid Drain valve For Stronge Acid Cation Exchanger SAC-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
248	DFXV-5430A	DFXV-5430A-OPN	Service I/ L valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
249	DFXV-5430A	DFXV-5430A-CLS	Service I/ L valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
250	DFXV-5438A	DFXV-5438A-OPN	Balance Water I/ L valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
251	DFXV-5438A	DFXV-5438A-CLS	Balance Water I/ L valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
252	DFXV-5436A	DFXV-5436A-OPN	Middle Collector I/ L valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
253	DFXV-5436A	DFXV-5436A-CLS	Middle Collector I/ L valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
254	DFXV-5432A	DFXV-5432A-OPN	Backwash I/ L valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
255	DFXV-5432A	DFXV-5432A-CLS	Backwash I/ L valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
256	DFXV-5431A	DFXV-5431A-OPN	Service O/ L valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
257	DFXV-5431A	DFXV-5431A-CLS	Service O/ L valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
258	DFXV-5433A	DFXV-5433A-OPN	Backwash O/ L valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
259	DFXV-5433A	DFXV-5433A-CLS	Backwash O/ L valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
260	DFXV-5437A	DFXV-5437A-OPN	Middle Collector O/ L valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
261	DFXV-5437A	DFXV-5437A-CLS	Middle Collector O/ L valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
262	DFXV-5440A	DFXV-5440A-OPN	Caustic Injection valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
263	DFXV-5440A	DFXV-5440A-CLS	Caustic Injection valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
264	DFXV-5435A	DFXV-5435A-OPN	Rinse O/ L valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
265	DFXV-5435A	DFXV-5435A-CLS	Rinse O/ L valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
266	DFXV-5434A	DFXV-5434A-OPN	Air Vent valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
267	DFXV-5434A	DFXV-5434A-CLS	Air Vent valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
268	DFXV-5439A	DFXV-5439A-OPN	Caustic I/ L valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
269	DFXV-5439A	DFXV-5439A-CLS	Caustic I/ L valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
270	DFXV-5441A	DFXV-5441A-OPN	Caustic Drain valve For Strong Base Anion Exchanger SBA-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
271	DFXV-5441A	DFXV-5441A-CLS	Caustic Drain valve For Strong Base Anion Exchanger SBA-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
272	DFXV-5430B	DFXV-5430B-OPN	Service I/ L valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
273	DFXV-5430B	DFXV-5430B-CLS	Service I/ L valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
274	DFXV-5438B	DFXV-5438B-OPN	Balance Water I/ L valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
275	DFXV-5438B	DFXV-5438B-CLS	Balance Water I/ L valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
276	DFXV-5436B	DFXV-5436B-OPN	Middle Collector I/ L valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
277	DFXV-5436B	DFXV-5436B-CLS	Middle Collector I/ L valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
278	DFXV-5432B	DFXV-5432B-OPN	Backwash I/ L valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
279	DFXV-5432B	DFXV-5432B-CLS	Backwash I/ L valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
280	DFXV-5431B	DFXV-5431B-OPN	Service O/ L valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
281	DFXV-5431B	DFXV-5431B-CLS	Service O/ L valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
282	DFXV-5433B	DFXV-5433B-OPN	Backwash O/ L valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
283	DFXV-5433B	DFXV-5433B-CLS	Backwash O/ L valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
284	DFXV-5437B	DFXV-5437B-OPN	Middle Collector O/ L valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
285	DFXV-5437B	DFXV-5437B-CLS	Middle Collector O/ L valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
286	DFXV-5440B	DFXV-5440B-OPN	Caustic Injection valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
287	DFXV-5440B	DFXV-5440B-CLS	Caustic Injection valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
288	DFXV-5435B	DFXV-5435B-OPN	Rinse O/ L valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
289	DFXV-5435B	DFXV-5435B-CLS	Rinse O/ L valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
290	DFXV-5434B	DFXV-5434B-OPN	Air Vent valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
291	DFXV-5434B	DFXV-5434B-CLS	Air Vent valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
292	DFXV-5439B	DFXV-5439B-OPN	Caustic I/ L valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
293	DFXV-5439B	DFXV-5439B-CLS	Caustic I/ L valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
294	DFXV-5441B	DFXV-5441B-OPN	Caustic Drain valve For Strong Base Anion Exchanger SBA-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
295	DFXV-5441B	DFXV-5441B-CLS	Caustic Drain valve For Strong Base Anion Exchanger SBA-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
296	DFXV-5442A	DFXV-5442A-OPN	Service I/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
297	DFXV-5442A	DFXV-5442A-CLS	Service I/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
298	DFXV-5452A	DFXV-5452A-OPN	Acid Balance water I/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
299	DFXV-5452A	DFXV-5452A-CLS	Acid Balance water I/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
300	DFXV-5449A	DFXV-5449A-OPN	Middle collectror I/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
301	DFXV-5449A	DFXV-5449A-CLS	Middle collectror I/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
302	DFXV-5451A	DFXV-5451A-OPN	Baclwash I/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
303	DFXV-5451A	DFXV-5451A-CLS	Backwash I/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
304	DFXV-5444A	DFXV-5444A-OPN	Caustic Balance water I/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
305	DFXV-5444A	DFXV-5444A-CLS	Caustic Balance water I/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
306	DFXV-5443A	DFXV-5443A-OPN	Service O/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
307	DFXV-5443A	DFXV-5443A-CLS	Service O/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
308	DFXV-5445A	DFXV-5445A-OPN	Backwash O/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
309	DFXV-5445A	DFXV-5445A-CLS	Backwash O/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
310	DFXV-5450A	DFXV-5450A-OPN	Middle collectror O/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
311	DFXV-5450A	DFXV-5450A-CLS	Middle collectror O/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
312	DFXV-5457A	DFXV-5457A-OPN	Acid Injection valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
313	DFXV-5457A	DFXV-5457A-CLS	Acid Injection valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
314	DFXV-5447A	DFXV-5447A-OPN	Rinse O/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
315	DFXV-5447A	DFXV-5447A-CLS	Rinse O/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
316	DFXV-5448A	DFXV-5448A-OPN	Air I/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
317	DFXV-5448A	DFXV-5448A-CLS	Air I/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
318	DFXV-5446A	DFXV-5446A-OPN	Air Vent valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
319	DFXV-5446A	DFXV-5446A-CLS	Air Vent valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
320	DFXV-5454A	DFXV-5454A-OPN	Caustic Injection valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
321	DFXV-5454A	DFXV-5454A-CLS	Caustic Injection valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
322	DFXV-5453A	DFXV-5453A-OPN	Caustic I/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
323	DFXV-5453A	DFXV-5453A-CLS	Caustic I/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	

WIPRO Applying Thought

IO LIST-DM PLANT

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad
PROJECT ENGINEERING DEPARTMENT

CUSTOMER	NTPCBHEL POWER PROJECT PVT. LTD	Issued For	Approval
CONSULTANT	DEVELOPMENT CONSULTANT PVT. LTD	Job No.	JWL-2194
CONTRACTOR	WIPRO WATER	Date	25.06.2013
Project	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT	Revision	R1
DOC. NO	A4-JWL-2194-INS-SCH-DM-002		
DOCUMENT:	PLC IO LIST FOR DM PLANT		

SR	TAG NO.	PLC Tag No.	DESCRIPTION	SIGNAL SOURCE	SIGNAL DEST.	SIGNAL TYPE	CONT NO/NC	IO TYPE				INST RANGE	ENGG. UNIT	REDUNDANCY	ALARMS				SCALE RANGE	REF. P. & I. D.	Rev No
								DI	DO	AI	AO				HH	H	LL	L			
324	DFXV-5455A	DFXV-5455A-OPN	Caustic Drain valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
325	DFXV-5455A	DFXV-5455A-CLS	Caustic Drain valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
326	DFXV-5458A	DFXV-5458A-OPN	Acid Drain valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
327	DFXV-5458A	DFXV-5458A-CLS	Acid Drain valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
328	DFXV-5456A	DFXV-5456A-OPN	Acid I/ L valve For Mixed Bed Exchanger MB-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
329	DFXV-5456A	DFXV-5456A-CLS	Acid I/ L valve For Mixed Bed Exchanger MB-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
330	DFXV-5442B	DFXV-5442B-OPN	Service I/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
331	DFXV-5442B	DFXV-5442B-CLS	Service I/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
332	DFXV-5452B	DFXV-5452B-OPN	Acid Balance water I/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
333	DFXV-5452B	DFXV-5452B-CLS	Acid Balance water I/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
334	DFXV-5449B	DFXV-5449B-OPN	Middle collectror I/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
335	DFXV-5449B	DFXV-5449B-CLS	Middle collectror I/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
336	DFXV-5451B	DFXV-5451B-OPN	Baclwash I/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
337	DFXV-5451B	DFXV-5451B-CLS	Backwash I/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
338	DFXV-5444B	DFXV-5444B-OPN	Caustic Balance water I/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
339	DFXV-5444B	DFXV-5444B-CLS	Caustic Balance water I/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
340	DFXV-5443B	DFXV-5443B-OPN	Service O/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
341	DFXV-5443B	DFXV-5443B-CLS	Service O/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
342	DFXV-5445B	DFXV-5445B-OPN	Backwash O/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
343	DFXV-5445B	DFXV-5445B-CLS	Backwash O/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
344	DFXV-5450B	DFXV-5450B-OPN	Middle collectror O/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
345	DFXV-5450B	DFXV-5450B-CLS	Middle collectror O/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
346	DFXV-5457B	DFXV-5457B-OPN	Acid Injection valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
347	DFXV-5457B	DFXV-5457B-CLS	Acid Injection valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
348	DFXV-5447B	DFXV-5447B-OPN	Rinse O/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
349	DFXV-5447B	DFXV-5447B-CLS	Rinse O/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
350	DFXV-5448B	DFXV-5448B-OPN	Air I/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
351	DFXV-5448B	DFXV-5448B-CLS	Air I/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
352	DFXV-5446B	DFXV-5446B-OPN	Air Vent valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
353	DFXV-5446B	DFXV-5446B-CLS	Air Vent valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
354	DFXV-5454B	DFXV-5454B-OPN	Caustic Injection valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
355	DFXV-5454B	DFXV-5454B-CLS	Caustic Injection valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
356	DFXV-5453B	DFXV-5453B-OPN	Caustic I/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
357	DFXV-5453B	DFXV-5453B-CLS	Caustic I/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
358	DFXV-5455B	DFXV-5455B-OPN	Caustic Drain valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
359	DFXV-5455B	DFXV-5455B-CLS	Caustic Drain valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
360	DFXV-5458B	DFXV-5458B-OPN	Acid Drain valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
361	DFXV-5458B	DFXV-5458B-CLS	Acid Drain valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
362	DFXV-5456B	DFXV-5456B-OPN	Acid I/ L valve For Mixed Bed Exchanger MB-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
363	DFXV-5456B	DFXV-5456B-CLS	Acid I/ L valve For Mixed Bed Exchanger MB-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
364	DFXV-5460A	DFXV-5460A-OPN	O/ L Line valve For DM Water Storage Tank DMWST-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
365	DFXV-5460A	DFXV-5460A-CLS	O/ L Line valve For DM Water Storage Tank DMWST-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
366	DFXV-5460B	DFXV-5460B-OPN	O/ L Line valve For DM Water Storage Tank DMWST-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
367	DFXV-5460B	DFXV-5460B-CLS	O/ L Line valve For DM Water Storage Tank DMWST-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
368	DFXV-5465A	DFXV-5465A-OPN	Service Water I/ L Valve For Caustic Measuring Tank CMT-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
369	DFXV-5465A	DFXV-5465A-CLS	Service Water I/ L Valve For Caustic Measuring Tank CMT-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
370	DFXV-5462A	DFXV-5462A-OPN	Caustic I/ L Valve For Caustic Measuring Tank CMT-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
371	DFXV-5462A	DFXV-5462A-CLS	Caustic I/ L Valve For Caustic Measuring Tank CMT-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
372	DFXV-5463A	DFXV-5463A-OPN	Caustic I/ L Valve For Ejector CMT-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
373	DFXV-5463A	DFXV-5463A-CLS	Caustic I/ L Valve For Ejector CMT-A CloseFeedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
374	DFXV-5464A	DFXV-5464A-OPN	Service Water I/ L Valve For Ejector CMT-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
375	DFXV-5464A	DFXV-5464A-CLS	Service Water I/ L Valve For Ejector CMT-A CloseFeedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
376	DFXV-5465B	DFXV-5465B-OPN	Service Water I/ L Valve For Caustic Measuring Tank CMT-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
377	DFXV-5465B	DFXV-5465B-CLS	Service Water I/ L Valve For Caustic Measuring Tank CMT-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
378	DFXV-5462B	DFXV-5462B-OPN	Caustic I/ L Valve For Caustic Measuring Tank CMT-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
379	DFXV-5462B	DFXV-5462B-CLS	Caustic I/ L Valve For Caustic Measuring Tank CMT-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
380	DFXV-5463B	DFXV-5463B-OPN	Caustic I/ L Valve For Ejector CMT-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
381	DFXV-5463B	DFXV-5463B-CLS	Caustic I/ L Valve For Ejector CMT-B CloseFeedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
382	DFXV-5464B	DFXV-5464B-OPN	Service Water I/ L Valve For Ejector CMT-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
383	DFXV-5464B	DFXV-5464B-CLS	Service Water I/ L Valve For Ejector CMT-B CloseFeedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
384	DFXV-5465C	DFXV-5465C-OPN	Service Water I/ L Valve For Caustic Measuring Tank CMT-C Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
385	DFXV-5465C	DFXV-5465C-CLS	Service Water I/ L Valve For Caustic Measuring Tank CMT-C Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
386	DFXV-5462C	DFXV-5462C-OPN	Caustic I/ L Valve For Caustic Measuring Tank CMT-C Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
387	DFXV-5462C	DFXV-5462C-CLS	Caustic I/ L Valve For Caustic Measuring Tank CMT-C Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
388	DFXV-5463C	DFXV-5463C-OPN	Caustic I/ L Valve For Ejector CMT-C Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
389	DFXV-5463C	DFXV-5463C-CLS	Caustic I/ L Valve For Ejector CMT-C CloseFeedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
390	DFXV-5464C	DFXV-5464C-OPN	Service Water I/ L Valve For Ejector CMT-C Open FeedCack	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
391	DFXV-5464C	DFXV-5464C-CLS	Service Water I/ L Valve For Ejector CMT-C CloseFeedCack	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
392	DFXV-5465D	DFXV-5465D-OPN	Service Water I/ L Valve For Caustic Measuring Tank CMT-D Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
393	DFXV-5465D	DFXV-5465D-CLS	Service Water I/ L Valve For Caustic Measuring Tank CMT-D Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
394	DFXV-5462D	DFXV-5462D-OPN	Caustic I/ L Valve For Caustic Measuring Tank CMT-D Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
395	DFXV-5462D	DFXV-5462DCLS	Caustic I/ L Valve For Caustic Measuring Tank CMT-D Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
396	DFXV-5463D	DFXV-5463D-OPN	Caustic I/ L Valve For Ejector CMT-D Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
397	DFXV-5463D	DFXV-5463D-CLS	Caustic I/ L Valve For Ejector CMT-D CloseFeedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
398	DFXV-5464D	DFXV-5464D-OPN	Service Water I/ L Valve For Ejector CMT-D Open FeedCack	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
399	DFXV-5464D	DFXV-5464D-DLS	Service Water I/ L Valve For Ejector CMT-D CloseFeedCack	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
400	DFXV-5466A	DFXV-5466A-OPN	Acid I/ L Valve For Acid Measuring Tank AMT-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
401	DFXV-5466A	DFXV-5466A-CLS	Acid I/ L Valve For Acid Measuring Tank AMT-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
402	DFXV-5467A	DFXV-5467A-OPN	Acid I/ L line for Ejector AMT-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
403	DFXV-5467A	DFXV-5467A-CLS	Acid I/ L line for Ejector AMT-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
404	DFXV-5468A	DFXV-5468A-OPN	Service Water I/ L line for Ejector AMT-A Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	

IO LIST-DM PLANT

CUSTOMER	NTPCBHEL POWER PROJECT PVT. LTD	Issued For	Approval
CONSULTANT	DEVELOPMENT CONSULTANT PVT. LTD	Job No.	JWL-2194
CONTRACTOR	WIPRO WATER	Date	25.06.2013
Project	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT	Revision	R1
DOC NO	A4-JWL-2194-INS-SCH-DM-002		
DOCUMENT:	PLC IO LIST FOR DM PLANT		

SR	TAG NO.	PLC Tag No.	DESCRIPTION	SIGNAL SOURCE	SIGNAL DEST.	SIGNAL TYPE	CONT NO/ NC	IO TYPE DI	DO	AI	AO	INST RANGE	ENGG. UNIT	REDUN DANCY	ALARMS HH	H	LL	L	SCALE RANGE	REF. P. & I. D.	Rev No
405	DFXV-5468A	DFXV-5468A-CLS	Service Water I/ L line for Ejector AMT-A Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
406	DFXV-5466B	DFXV-5466B-OPN	Acid I/ L Valve For Acid Measuring Tank AMT-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
407	DFXV-5466B	DFXV-5466B-CLS	Acid I/ L Valve For Acid Measuring Tank AMT-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
408	DFXV-5467B	DFXV-5467B-OPN	Acid I/ L line for Ejector AMT-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
409	DFXV-5467B	DFXV-5467B-CLS	Acid I/ L line for Ejector AMT-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
410	DFXV-5468B	DFXV-5468B-OPN	Service Water I/ L line for Ejector AMT-B Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
411	DFXV-5468B	DFXV-5468B-CLS	Service Water I/ L line for Ejector AMT-B Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
412	DFXV-5466C	DFXV-5466C-OPN	Acid I/ L Valve For Acid Measuring Tank AMT-C Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
413	DFXV-5466C	DFXV-5466C-CLS	Acid I/ L Valve For Acid Measuring Tank AMT-C Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
414	DFXV-5467C	DFXV-5467C-OPN	Acid I/ L line for Ejector AMT-C Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
415	DFXV-5467C	DFXV-5467C-CLS	Acid I/ L line for Ejector AMT-C Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
416	DFXV-5468C	DFXV-5468C-OPN	Service Water I/ L line for Ejector AMT-C Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
417	DFXV-5468C	DFXV-5468C-CLS	Service Water I/ L line for Ejector AMT-C Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
418	DFXV-5466D	DFXV-5466D-OPN	Acid I/ L Valve For Acid Measuring Tank AMT-D Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
419	DFXV-5466D	DFXV-5466D-CLS	Acid I/ L Valve For Acid Measuring Tank AMT-D Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
420	DFXV-5467D	DFXV-5467D-OPN	Acid I/ L line for Ejector AMT-D Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
421	DFXV-5467D	DFXV-5467D-CLS	Acid I/ L line for Ejector AMT-D Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
422	DFXV-5468D	DFXV-5468D-OPN	Service Water I/ L line for Ejector AMT-D Open Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
423	DFXV-5468D	DFXV-5468D-CLS	Service Water I/ L line for Ejector AMT-D Close Feedback	Field	PLC	Pot free	NO	1	---	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
DIGITAL OUTPUT																					
1	DMFP-A	HS_DMFP-A_STR/ STP	DM Plant Feed Pump-A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
2	DMFP-B	HS_DMFP-B_STR/ STP	DM Plant Feed Pump-B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
3	ABL-01-A	HS_ABL-01-A_STR/ STP	PSF Blower -A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
4	ABL-01-B	HS_ABL-01-B_STR/ STP	PSF Blower -B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
5	ABL-02-A	HS_ABL-02-A_STR/ STP	Degasser Blower -A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
6	ABL-02-B	HS_ABL-02-B_STR/ STP	Degasser Blower -B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
7	ABL-02-C	HS_ABL-02-C_STR/ STP	Degasser Blower -C Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
8	ABL-02-D	HS_ABL-02-D_STR/ STP	Degasser Blower -D Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
9	DGWTP-A	HS_DGWTP-A_STR/ STP	Degassed Water Transfer Pumps-A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
10	DGWTP-B	HS_DGWTP-B_STR/ STP	Degassed Water Transfer Pumps-B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
11	DGWTP-C	HS_DGWTP-C_STR/ STP	Degassed Water Transfer Pumps-C Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
12	DGWTP-D	HS_DGWTP-D_STR/ STP	Degassed Water Transfer Pumps-D Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
13	ABL-03-A	HS_ABL-03-A_STR/ STP	Air Blower Silica Analyser at Common for MB-A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
14	ABL-03-B	HS_ABL-03-B_STR/ STP	Air Blower Silica Analyser at Common for MB-B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
15	DMRP-A	HS_DMRP-A_STR/ STP	DM water Regeneration pump-A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
16	DMRP-B	HS_DMRP-B_STR/ STP	DM water Regeneration pump-B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
17	CUP-A	HS_CUP-A_STR/ STP	Caustic Unloading Pump-A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
18	CUP-B	HS_CUP-B_STR/ STP	Caustic Unloading Pump-B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
19	AG-A	HS_AG-A_STR/ STP	Agitator for Caustic Measuring Tank-A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
20	AG-B	HS_AG-B_STR/ STP	Agitator for Caustic Measuring Tank-B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
21	AG-C	HS_AG-C_STR/ STP	Agitator for Caustic Measuring Tank-C Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
22	AG-D	HS_AG-D_STR/ STP	Agitator for Caustic Measuring Tank-D Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad

PROJECT ENGINEERING DEPARTMENT

DESCRIPTION OF CODE :

01. APPROVED SUBMIT AS BUILT DRAWINGS /DOCUMENTS.
02. APPROVED WITH MINOR COMMENTS ACTIVITY MAY PROCEED. PLEASE RE-SUBMIT FOR FINAL APPROVAL.
03. REVISE AS PER BHEL COMMENTS AND RESUBMIT FOR APPROVAL.
04. RETAINED FOR INFORMATION.

This approval does not absolve the vendor from the responsibility to comply with BHEL's specification and all applicable codes and standards. Vendor has to ensure safe and smooth operation and meet the intended performance of the equipment.

Comments as marked on drawing	Comments as in enclosed document.	
		Date: 21.08.13

	IO LIST-DM PLANT		
CUSTOMER	NTPC BHEL POWER PROJECT PVT. LTD	Issued For	Approval
CONSULTANT	DEVELOPMENT CONSULTANT PVT. LTD	Job No.	JWL-2194
CONTRACTOR	WIPRO WATER	Date	25.06.2013
Project	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT	Revision	R1
DOC NO	A4-JWL-2194-INS-SCH-DM-002		
DOCUMENT:	PLC IO LIST FOR DM PLANT		

SR	TAG NO.	PLC Tag No.	DESCRIPTION	SIGNAL SOURCE	SIGNAL DEST.	SIGNAL TYPE	CONT NO/ NC	IO TYPE DI	DO	AI	AO	INST RANGE	ENGG. UNIT	REDUN DANCY	ALARMS HH	H	LL	L	SCALE RANGE	REF. P. & I. D.	Rev No
23	AUP-A	HS_AUP-A_STR/ STP	Acid Unloading Pumps-A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
24	AUP-B	HS_AUP-B_STR/ STP	Acid Unloading Pumps-B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
25	N.P.ITP-A	HS_N.P.ITP-A_STR/ STP	N.P.I t pumps-A Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
26	N.P.ITP-B	HS_N.P.ITP-B_STR/ STP	N.P.I t pumps-B Start / Stop	PLC	MCC	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
27	DFXV-5404A	DFXV-5404A-OPN/ CLSCMD	Service I/ L valve For Pressure Sand Filter PSF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
28	DFXV-5406A	DFXV-5406A-OPN/ CLSCMD	Backwash I/ L valve For Pressure Sand Filter PSF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
29	DFXV-5410A	DFXV-5410A-OPN/ CLSCMD	Air I/ L valve For Pressure Sand Filter PSF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
30	DFXV-5407A	DFXV-5407A-OPN/ CLSCMD	Backwash O/ L valve For Pressure Sand Filter PSF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
31	DFXV-5405A	DFXV-5405A-OPN/ CLSCMD	Service O/ L valve For Pressure Sand Filter PSF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
32	DFXV-5409A	DFXV-5409A-OPN/ CLSCMD	Rinse O/ L valve For Pressure Sand Filter PSF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
33	DFXV-5408A	DFXV-5408A-OPN/ CLSCMD	Air O/ L valve For Pressure Sand Filter PSF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
34	DFXV-5404B	DFXV-5404B-OPN/ CLSCMD	Service I/ L valve For Pressure Sand Filter PSF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
35	DFXV-5406B	DFXV-5406B-OPN/ CLSCMD	Backwash I/ L valve For Pressure Sand Filter PSF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
36	DFXV-5410B	DFXV-5410B-OPN/ CLSCMD	Air I/ L valve For Pressure Sand Filter PSF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
37	DFXV-5407B	DFXV-5407B-OPN/ CLSCMD	Backwash O/ L valve For Pressure Sand Filter PSF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
38	DFXV-5405B	DFXV-5405B-OPN/ CLSCMD	Service O/ L valve For Pressure Sand Filter PSF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
39	DFXV-5409B	DFXV-5409B-OPN/ CLSCMD	Rinse O/ L valve For Pressure Sand Filter PSF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
40	DFXV-5408B	DFXV-5408B-OPN/ CLSCMD	Air O/ L valve For Pressure Sand Filter PSF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
41	DFXV-5411A	DFXV-5411A-OPN/ CLSCMD	Service I/ L valve For Activated Carbon Filter ACF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
42	DFXV-5413A	DFXV-5413A-OPN/ CLSCMD	Backwash I/ L valve For Activated Carbon Filter ACF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
43	DFXV-5414A	DFXV-5414A-OPN/ CLSCMD	Backwash O/ L valve For Activated Carbon Filter ACF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
44	DFXV-5412A	DFXV-5412A-OPN/ CLSCMD	Service O/ L valve For Activated Carbon Filter ACF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
45	DFXV-5416A	DFXV-5416A-OPN/ CLSCMD	Rinse O/ L valve For Activated Carbon Filter ACF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
46	DFXV-5415A	DFXV-5415A-OPN/ CLSCMD	Air O/ L valve For Activated Carbon Filter ACF-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
47	DFXV-5411B	DFXV-5411B-OPN/ CLSCMD	Service I/ L valve For Activated Carbon Filter ACF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
48	DFXV-5413B	DFXV-5413B-OPN/ CLSCMD	Backwash I/ L valve For Activated Carbon Filter ACF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
49	DFXV-5414B	DFXV-5414B-OPN/ CLSCMD	Backwash O/ L valve For Activated Carbon Filter ACF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
50	DFXV-5412B	DFXV-5412B-OPN/ CLSCMD	Service O/ L valve For Activated Carbon Filter ACF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
51	DFXV-5416B	DFXV-5416B-OPN/ CLSCMD	Rinse O/ L valve For Activated Carbon Filter ACF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
52	DFXV-5415B	DFXV-5415B-OPN/ CLSCMD	Air O/ L valve For Activated Carbon Filter ACF-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
53	DFXV-5417A	DFXV-5417A-OPN/ CLSCMD	Service I/ L valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
54	DFXV-5425A	DFXV-5425A-OPN/ CLSCMD	Balance Water I/ L valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
55	DFXV-5423A	DFXV-5423A-OPN/ CLSCMD	Middle Collector I/ L valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
56	DFXV-5419A	DFXV-5419A-OPN/ CLSCMD	Backwash I/ L valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
57	DFXV-5418A	DFXV-5418A-OPN/ CLSCMD	Service O/ L valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
58	DFXV-5420A	DFXV-5420A-OPN/ CLSCMD	Backwash O/ L valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
59	DFXV-5424A	DFXV-5424A-OPN/ CLSCMD	Middle Collector O/ L valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
60	DFXV-5427A	DFXV-5427A-OPN/ CLSCMD	Acid Injection valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
61	DFXV-5422A	DFXV-5422A-OPN/ CLSCMD	Rinse O/ L valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
62	DFXV-5421A	DFXV-5421A-OPN/ CLSCMD	Air Vent valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
63	DFXV-5428A	DFXV-5428A-OPN/ CLSCMD	Acid I/ L valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
64	DFXV-5426A	DFXV-5426A-OPN/ CLSCMD	Acid Drain valve For Stronge Acid Cation Exchanger SAC-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
65	DFXV-5417B	DFXV-5417B-OPN/ CLSCMD	Service I/ L valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
66	DFXV-5425B	DFXV-5425B-OPN/ CLSCMD	Balance Water I/ L valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
67	DFXV-5423B	DFXV-5423B-OPN/ CLSCMD	Middle Collector I/ L valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
68	DFXV-5419B	DFXV-5419B-OPN/ CLSCMD	Backwash I/ L valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
69	DFXV-5418B	DFXV-5418B-OPN/ CLSCMD	Service O/ L valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
70	DFXV-5420B	DFXV-5420B-OPN/ CLSCMD	Backwash O/ L valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
71	DFXV-5424B	DFXV-5424B-OPN/ CLSCMD	Middle Collector O/ L valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
72	DFXV-5427B	DFXV-5427B-OPN/ CLSCMD	Acid Injection valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
73	DFXV-5422B	DFXV-5422B-OPN/ CLSCMD	Rinse O/ L valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
74	DFXV-5421B	DFXV-5421B-OPN/ CLSCMD	Air Vent valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
75	DFXV-5428B	DFXV-5428B-OPN/ CLSCMD	Acid I/ L valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	

IO LIST-DM PLANT

CUSTOMER	NTPCBHEL POWER PROJECT PVT. LTD	Issued For	Approval
CONSULTANT	DEVELOPMENT CONSULTANT PVT. LTD	Job No.	JWL-2194
CONTRACTOR	WIPRO WATER	Date	25.06.2013
Project	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT	Revision	R1
DOC NO	A4-JWL-2194-INS-SCH-DM-002		
DOCUMENT:	PLC IO LIST FOR DM PLANT		

SR	TAG NO.	PLC Tag No.	DESCRIPTION	SIGNAL SOURCE	SIGNAL DEST.	SIGNAL TYPE	CONT NO/ NC	IO TYPE DI	DO	AI	AO	INST RANGE	ENGG. UNIT	REDUN DANCY	ALARMS HH	H	LL	L	SCALE RANGE	REF. P. & I. D.	Rev No
76	DFXV-5426B	DFXV-5426B-OPN/ CLSCMD	Acid Drain valve For Stronge Acid Cation Exchanger SAC-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
77	DFXV-5430A	DFXV-5430A-OPN/ CLSCMD	Service I/ L valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
78	DFXV-5438A	DFXV-5438A-OPN/ CLSCMD	Balance Water I/ L valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
79	DFXV-5436A	DFXV-5436A-OPN/ CLSCMD	Middle Collector I/ L valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
80	DFXV-5432A	DFXV-5432A-OPN/ CLSCMD	Backwash I/ L valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
81	DFXV-5431A	DFXV-5431A-OPN/ CLSCMD	Service O/ L valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
82	DFXV-5433A	DFXV-5433A-OPN/ CLSCMD	Backwash O/ L valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
83	DFXV-5437A	DFXV-5437A-OPN/ CLSCMD	Middle Collector O/ L valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
84	DFXV-5440A	DFXV-5440A-OPN/ CLSCMD	Caustic Injection valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
85	DFXV-5435A	DFXV-5435A-OPN/ CLSCMD	Rinse O/ L valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
86	DFXV-5434A	DFXV-5434A-OPN/ CLSCMD	Air Vent valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
87	DFXV-5439A	DFXV-5439A-OPN/ CLSCMD	Caustic I/ L valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
88	DFXV-5441A	DFXV-5441A-OPN/ CLSCMD	Caustic Drain valve For Strong Base Anion Exchanger SBA-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
89	DFXV-5430B	DFXV-5430B-OPN/ CLSCMD	Service I/ L valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
90	DFXV-5438B	DFXV-5438B-OPN/ CLSCMD	Balance Water I/ L valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
91	DFXV-5436B	DFXV-5436B-OPN/ CLSCMD	Middle Collector I/ L valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
92	DFXV-5432B	DFXV-5432B-OPN/ CLSCMD	Backwash I/ L valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
93	DFXV-5431B	DFXV-5431B-OPN/ CLSCMD	Service O/ L valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
94	DFXV-5433B	DFXV-5433B-OPN/ CLSCMD	Backwash O/ L valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
95	DFXV-5437B	DFXV-5437B-OPN/ CLSCMD	Middle Collector O/ L valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
96	DFXV-5440B	DFXV-5440B-OPN/ CLSCMD	Caustic Injection valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
97	DFXV-5435B	DFXV-5435B-OPN/ CLSCMD	Rinse O/ L valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
98	DFXV-5434B	DFXV-5434B-OPN/ CLSCMD	Air Vent valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
99	DFXV-5439B	DFXV-5439B-OPN/ CLSCMD	Caustic I/ L valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
100	DFXV-5441B	DFXV-5441B-OPN/ CLSCMD	Caustic Drain valve For Strong Base Anion Exchanger SBA-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
101	DFXV-5442A	DFXV-5442A-OPN/ CLSCMD	Service I/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
102	DFXV-5452A	DFXV-5452A-OPN/ CLSCMD	Acid Balance water I/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
103	DFXV-5449A	DFXV-5449A-OPN/ CLSCMD	Middle collector I/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
104	DFXV-5451A	DFXV-5451A-OPN/ CLSCMD	Badwash I/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
105	DFXV-5444A	DFXV-5444A-OPN/ CLSCMD	Caustic Balance water I/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
106	DFXV-5443A	DFXV-5443A-OPN/ CLSCMD	Service O/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
107	DFXV-5445A	DFXV-5445A-OPN/ CLSCMD	Backwash O/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
108	DFXV-5450A	DFXV-5450A-OPN/ CLSCMD	Middle collector O/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
109	DFXV-5457A	DFXV-5457A-OPN/ CLSCMD	Acid Injection valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
110	DFXV-5447A	DFXV-5447A-OPN/ CLSCMD	Rinse O/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
111	DFXV-5448A	DFXV-5448A-OPN/ CLSCMD	Air I/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
112	DFXV-5446A	DFXV-5446A-OPN/ CLSCMD	Air Vent valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
113	DFXV-5454A	DFXV-5454A-OPN/ CLSCMD	Caustic Injection valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
114	DFXV-5453A	DFXV-5453A-OPN/ CLSCMD	Caustic I/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
115	DFXV-5455A	DFXV-5455A-OPN/ CLSCMD	Caustic Drain valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
116	DFXV-5458A	DFXV-5458A-OPN/ CLSCMD	Acid Drain valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
117	DFXV-5456A	DFXV-5456A-OPN/ CLSCMD	Acid I/ L valve For Mixed Bed Exchanger MB-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
118	DFXV-5442B	DFXV-5442B-OPN/ CLSCMD	Service I/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
119	DFXV-5452B	DFXV-5452B-OPN/ CLSCMD	Acid Balance water I/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
120	DFXV-5449B	DFXV-5449B-OPN/ CLSCMD	Middle collector I/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
121	DFXV-5451B	DFXV-5451B-OPN/ CLSCMD	Badwash I/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
122	DFXV-5444B	DFXV-5444B-OPN/ CLSCMD	Caustic Balance water I/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
123	DFXV-5443B	DFXV-5443B-OPN/ CLSCMD	Service O/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
124	DFXV-5445B	DFXV-5445B-OPN/ CLSCMD	Backwash O/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
125	DFXV-5450B	DFXV-5450B-OPN/ CLSCMD	Middle collector O/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
126	DFXV-5457B	DFXV-5457B-OPN/ CLSCMD	Acid Injection valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
127	DFXV-5447B	DFXV-5447B-OPN/ CLSCMD	Rinse O/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
128	DFXV-5448B	DFXV-5448B-OPN/ CLSCMD	Air I/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
129	DFXV-5446B	DFXV-5446B-OPN/ CLSCMD	Air Vent valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
130	DFXV-5454B	DFXV-5454B-OPN/ CLSCMD	Caustic Injection valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
131	DFXV-5453B	DFXV-5453B-OPN/ CLSCMD	Caustic I/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
132	DFXV-5455B	DFXV-5455B-OPN/ CLSCMD	Caustic Drain valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
133	DFXV-5458B	DFXV-5458B-OPN/ CLSCMD	Acid Drain valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
134	DFXV-5456B	DFXV-5456B-OPN/ CLSCMD	Acid I/ L valve For Mixed Bed Exchanger MB-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
135	DFXV-5460A	DFXV-5460A-OPN/ CLSCMD	O/ L Line valve For DM Water Storage Tank DMWST-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
136	DFXV-5460B	DFXV-5460B-OPN/ CLSCMD	O/ L Line valve For DM Water Storage Tank DMWST-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
137	DFXV-5465A	DFXV-5465A-OPN/ CLSCMD	Service Water I/ L Valve For Caustic Measuring Tank CMT-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
138	DFXV-5462A	DFXV-5462A-OPN/ CLSCMD	Caustic I/ L Valve For Caustic Measuring Tank CMT-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
139	DFXV-5463A	DFXV-5463A-OPN/ CLSCMD	Caustic I/ L Valve For Ejector CMT-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
140	DFXV-5464A	DFXV-5463A-OPN/ CLSCMD	Service Water I/ L Valve For Ejector CMT-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
141	DFXV-5465B	DFXV-5465B-OPN/ CLSCMD	Service Water I/ L Valve For Caustic Measuring Tank CMT-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
142	DFXV-5462B	DFXV-5462B-OPN/ CLSCMD	Caustic I/ L Valve For Caustic Measuring Tank CMT-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
143	DFXV-5463B	DFXV-5463B-OPN/ CLSCMD	Caustic I/ L Valve For Ejector CMT-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
144	DFXV-5464B	DFXV-5463B-OPN/ CLSCMD	Service Water I/ L Valve For Ejector CMT-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
145	DFXV-5465C	DFXV-5465COPN/ CLSCMD	Service Water I/ L Valve For Caustic Measuring Tank CMT-C Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
146	DFXV-5462C	DFXV-5462COPN/ CLSCMD	Caustic I/ L Valve For Caustic Measuring Tank CMT-C Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
147	DFXV-5463C	DFXV-5463COPN/ CLSCMD	Caustic I/ L Valve For Ejector CMT-C Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
148	DFXV-5464C	DFXV-5463C-OPN/ CLSCMD	Service Water I/ L Valve For Ejector CMT-C Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
149	DFXV-5465D	DFXV-5465DOPN/ CLSCMD	Service Water I/ L Valve For Caustic Measuring Tank CMT-D Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
150	DFXV-5462D	DFXV-5462DOPN/ CLSCMD	Caustic I/ L Valve For Caustic Measuring Tank CMT-D Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
151	DFXV-5463D	DFXV-5463DOPN/ CLSCMD	Caustic I/ L Valve For Ejector CMT-D Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
152	DFXV-5464D	DFXV-5463D-OPN/ CLSCMD	Service Water I/ L Valve For Ejector CMT-D Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
153	DFXV-5466A	DFXV-5466A-OPN/ CLSCMD	Acid I/ L Valve For Acid Measuring Tank AMT-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
154	DFXV-5467A	DFXV-5467AOPN/ CLSCMD	Acid I/ L line for Ejector AMT-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
155	DFXV-5468A	DFXV-5467AOPN/ CLSCMD	Service Water I/ L line for Ejector AMT-A Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
156	DFXV-5466B	DFXV-5466B-OPN/ CLSCMD	Acid I/ L Valve For Acid Measuring Tank AMT-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	

IO LIST-DM PLANT

CUSTOMER	NTPC BHEL POWER PROJECT PVT. LTD	Issued For	Approval
CONSULTANT	DEVELOPMENT CONSULTANT PVT. LTD	Job No.	JWL-2194
CONTRACTOR	WIPRO WATER	Date	25.06.2013
Project	DM PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT	Revision	R1
DOC NO	A4-JWL-2194-INS-SCH-DM-002		
DOCUMENT:	PLC IO LIST FOR DM PLANT		

SR	TAG NO.	PLC Tag No.	DESCRIPTION	SIGNAL SOURCE	SIGNAL DEST.	SIGNAL TYPE	CONT NO/ NC	IO TYPE DI	DO	AI	AO	INST RANGE	ENGG. UNIT	REDUN DANCY	ALARMS HH	H	LL	L	SCALE RANGE	REF. P. & I. D.	Rev No
157	DFXV-5467B	DFXV-5467B-OPN/ CLSCMD	Acid I/ L line for Ejector AMT-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
158	DFXV-5468B	DFXV-5467B-OPN/ CLSCMD	Service Water I/ L line for Ejector AMT-B Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
159	DFXV-5466C	DFXV-5466C-OPN/ CLSCMD	Acid I/ L Valve For Acid Measuring Tank AMT-C Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
160	DFXV-5467C	DFXV-5467C-OPN/ CLSCMD	Acid I/ L line for Ejector AMT-C Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
161	DFXV-5468C	DFXV-5467C-OPN/ CLSCMD	Service Water I/ L line for Ejector AMT-C Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
162	DFXV-5466D	DFXV-5466D-OPN/ CLSCMD	Acid I/ L Valve For Acid Measuring Tank AMT-D Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
163	DFXV-5467D	DFXV-5467D-OPN/ CLSCMD	Acid I/ L line for Ejector AMT-D Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
164	DFXV-5468D	DFXV-5467D-OPN/ CLSCMD	Service Water I/ L line for Ejector AMT-D Open/ Close Command	PLC	Field	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
165	AT-5407-CT-H	AT-5407-COND-HIGH	Conductivity High at common outlet of MB Feedback to DCS	PLC	DCS	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	-"	R1
166	AT-5404-pH-H	AT-5404-pH-HIGH	pH High at common outlet of MB Feedback to DCS	PLC	DCS	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	-"	R1
167	AT-5406-SIL-H	AT-5406-SIL-HIGH	Silica High at common outlet of MB Feedback to DCS	PLC	DCS	Pot free	NO	---	1	---	---	---	---	N	---	---	---	---	---	-"	R1
ANALOG INPUT																					
1	FIT-5404A	FIT-5404A	Flow at Service Inlet of PSF-A	Field	PLC	4-20 mA	---	---	---	1	---	#	m3/ Hr	N	---	---	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
2	FIT-5404B	FIT-5404B	Flow at Service Inlet of PSF-B	Field	PLC	4-20 mA	---	---	---	1	---	#	m3/ Hr	N	---	---	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
3	FIT-5405A	FIT-5405A	Flow at Outlet of SAC-A	Field	PLC	4-20 mA	---	---	---	1	---	#	m3/ Hr	N	---	---	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
4	FIT-5405B	FIT-5405B	Flow at Outlet of SAC-B	Field	PLC	4-20 mA	---	---	---	1	---	#	m3/ Hr	N	---	---	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
5	FIT-5406A	FIT-5406A	Flow at Outlet of SBA-A	Field	PLC	4-20 mA	---	---	---	1	---	#	m3/ Hr	N	---	---	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
6	FIT-5406B	FIT-5406B	Flow at Outlet of SBA-B	Field	PLC	4-20 mA	---	---	---	1	---	#	m3/ Hr	N	---	---	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
7	FIT-5407A	FIT-5407A	Flow at Outlet of MB-A	Field	PLC	4-20 mA	---	---	---	1	---	#	m3/ Hr	N	---	---	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
8	FIT-5407B	FIT-5407B	Flow at Outlet of MB-B	Field	PLC	4-20 mA	---	---	---	1	---	#	m3/ Hr	N	---	---	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
9	AT-5404A	CT-AT-5404A	Conductivity at Service Outlet SAC-A	Field	PLC	4-20 mA	---	---	---	1	---	#	µS/ Cm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
10	AT-5404B	CT-AT-5404B	Conductivity at Service Outlet SAC-B	Field	PLC	4-20 mA	---	---	---	1	---	#	µS/ Cm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
11	AT-5405A	CT-AT-5405A	Conductivity at Service Outlet SBA-A	Field	PLC	4-20 mA	---	---	---	1	---	#	µS/ Cm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
12	AT-5405B	CT-AT-5405B	Conductivity at Service Outlet SBA-B	Field	PLC	4-20 mA	---	---	---	1	---	#	µS/ Cm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
13	AT-5406A	CT-AT-5406A	Conductivity at Outlet of MB-A	Field	PLC	4-20 mA	---	---	---	1	---	#	µS/ Cm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
14	AT-5406B	CT-AT-5406B	Conductivity at Outlet of MB-B	Field	PLC	4-20 mA	---	---	---	1	---	#	µS/ Cm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
15	AT-5407	CT-AT-5407	Conductivity at Common outlet header MB	Field	PLC	4-20 mA	---	---	---	1	---	#	µS/ Cm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
16	AT-5404	pH-AT-5404	pH at Common outlet header MB	Field	PLC	4-20 mA	---	---	---	1	---	#	pH	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
17	AI-5405	pH-AI-5405	pH at Common outlet header of Npit pumps	Field	PLC	4-20 mA	---	---	---	1	---	#	pH	N	---	1	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
18	LT-5404A	LT-5404A	Level at DGWST-A	Field	PLC	4-20 mA	---	---	---	1	---	#	Mtr	N	---	1	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
19	LT-5404B	LT-5404B	Level at DGWST-B	Field	PLC	4-20 mA	---	---	---	1	---	#	Mtr	N	---	1	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
20	LT-5405A	LT-5405A	Level at DMWST-A	Field	PLC	4-20 mA	---	---	---	1	---	#	Mtr	N	---	1	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
21	LT-5405B	LT-5405B	Level at DMWST-B	Field	PLC	4-20 mA	---	---	---	1	---	#	Mtr	N	---	1	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
22	LT-5406	LT-5406	Level at Filter Backwash OverHead Tank (FBOT)	Field	PLC	4-20 mA	---	---	---	1	---	#	Mtr	N	---	1	---	1	#	A0-JWL-2194-201/ 202/ 203-01-R2	
23	AT-5404A	NA-AT-5404A	Sodium Analyser at Service Outlet SAC-A	Field	PLC	4-20 mA	---	---	---	1	---	#	ppm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
24	AT-5404B	NA-AT-5404B	Sodium Analyser at Service Outlet SAC-B	Field	PLC	4-20 mA	---	---	---	1	---	#	ppm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
25	AT-5404A	SIL-AT-5404A	Silica Analyser at Service Outlet SBA-A	Field	PLC	4-20 mA	---	---	---	1	---	#	ppm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
26	AT-5404B	SIL-AT-5404B	Silica Analyser at Service Outlet SBA-B	Field	PLC	4-20 mA	---	---	---	1	---	#	ppm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
27	AT-5405A	SIL-AT-5405A	Silica Analyser at Outlet of MB-A	Field	PLC	4-20 mA	---	---	---	1	---	#	ppm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
28	AT-5405B	SIL-AT-5405B	Silica Analyser at Outlet of MB-B	Field	PLC	4-20 mA	---	---	---	1	---	#	ppm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
29	AT-5406	SIL-AT-5406	Silica Analyser at Common outlet header MB	Field	PLC	4-20 mA	---	---	---	1	---	#	ppm	N	---	1	---	---	#	A0-JWL-2194-201/ 202/ 203-01-R2	
ANALOG OUTPUT																					
1	GLXV5429A	GLXV5429A-OPN	I/ L Line Valve For Degasser Water Storage Tank DGWST-A Open Command	PLC	Field	4-20 mA	---	---	---	---	1	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
2	GLXV5429B	GLXV5429B-OPN	I/ L Line Valve For Degasser Water Storage Tank DGWST-B Open Command	PLC	Field	4-20 mA	---	---	---	---	1	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
3	DFXV5459A	DFXV5460A-OPN	I/ L Line Valve For DM Water Storage Tank DGWST-A Open Command	PLC	Field	4-20 mA	---	---	---	---	1	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	
4	DFXV5459B	DFXV5460B-OPN	I/ L Line Valve For DM Water Storage Tank DGWST-B Open Command	PLC	Field	4-20 mA	---	---	---	---	1	---	---	N	---	---	---	---	---	A0-JWL-2194-201/ 202/ 203-01-R2	

Rev. no.	Date	Description	Prepared By	Checked By	Approved By
R1	25.06.2013	For Approval	SSK	SSK	GSS

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad

PROJECT ENGINEERING DEPARTMENT

DESCRIPTION OF CODE :

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02. APPROVED WITH MINOR COMMENTS ACTIVITY MAY PROCEED. PLEASE RE-SUBMIT FOR FINAL APPROVAL.
03. REVISE AS PER BHEL COMMENTS AND RESUBMIT FOR APPROVAL.
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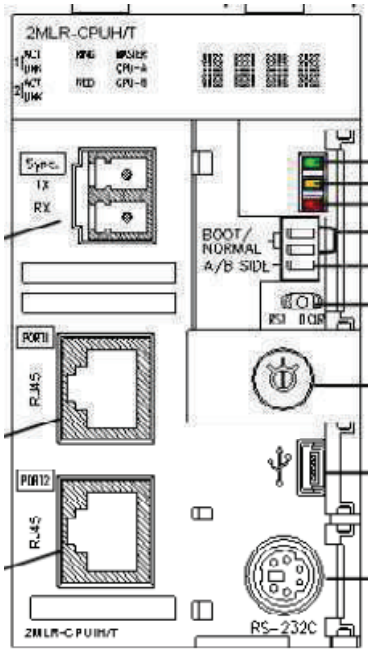
This approval does not absolve the vendor from the responsibility to comply with BHEL's specification and all applicable codes and standards. Vendor has to ensure safe and smooth operation and meet the intended performance of the equipment.

Comments as marked on drawing	Comments as in enclosed document.	
		Date: 21.08.13

WIPRO WATER	SHEET 1 OF 18	REV : ~~0~~ R1
	DOC NO.: A4-JWL-2194-INS-DTS-DM-017	

PLC SYSTEM DATASHEET

CUSTOMER	M/s. NTPC BHEL POWER PROJECTS PVT. LTD.
PROJECT	DM PLANT FOR 1X 100 NAMRUPCOMBINED CYCLE REPLACEMENT POWER PROJECT
END USER	M/s. ASSAM POWER GENERATION CORPORATION LTD.
CONSULTANT	M/s. DEVELOPMENT CONSULTANT PVT.LTD.



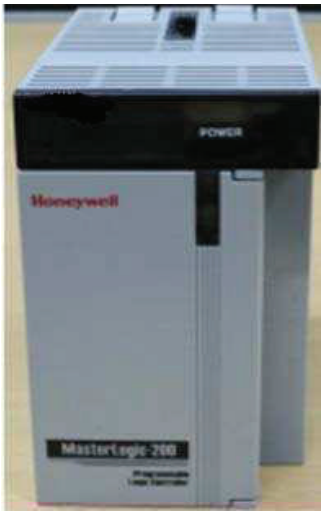
Redundant CPU Module

Product Name	Master logic-200
Module Type	Redundant CPU
Backplane Support	Dual backplane bus support - PCI &serial bus
Boolean Execution Speed	0.042µs/Step
Master Switching time	22ms
Processing Speed	0.042 µs/Step
Redundant Type	Hot Redundant
User Logic Memory	7MB
Type of Memory Storage	9 Mbytes of battery-backed RAM & 16MB Flash memory
I/O Discrete Points	16K
I/O Analog Points	16K
Max no Of extension stations	31
Max no Of slots	372
Max no of I/O	23808 using 64 chanel DI/DO
	11904 using 32 chanel DI/DO
current consumption	980mA
Communication	USB for softmaster PC
	RS 232 for peripherala(Modbus Suported)
	Ethernet TCP-IP

MODBUS protocol shall be RS-485 RTU. RS-232 to be modified to RS 485.

Honeywell

Technical Specification
2MLR-DC42



Power Supply Module 24 VDC (7.5A @ 5VDC)

Rated input voltage	DC24V
Input voltage range	19.2~28.8V DC
Inrush current	80A peak or lower
Input fuse	Built in(not replaceable by a user) AC: 250V / 3.15A
Efficiency	65% or more
Output voltage	DC 5V (±2%)
Output current	7.5A
Output power	37.5W at 55°C
Over current protection	9.0 A~17.0A
Rated switching voltage/current	DC 24V, 0.5A
Response time	OFF→ON/ ON→OFF: 10ms or less/12ms or less
Dimension (W x H x D mm)	55 x 95 x 110
Weight	417g

Honeywell

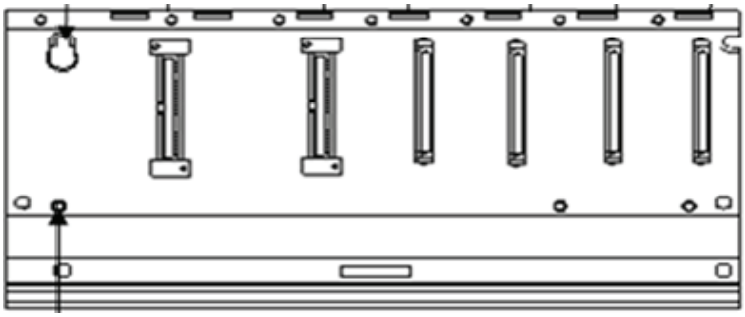
Technical Specification
2MLF-DC8A

8 Point Ananlog Output Module

Channels	8
Analog output	0-20mA, 4-20mA
Accuracy	± 2%
Maximunm conversion Speed	250µs/channel
Absolute maximum output	±24mA
Insulation method	Photo-coupler insulation between input terminal and PLC power (no insulation between channels)
Current consumption	243mA
Weight (g)	150g

Honeywell

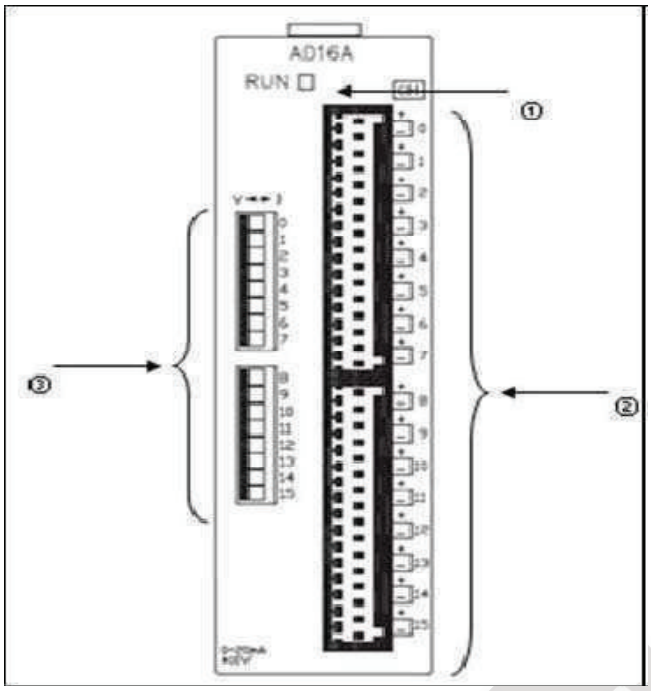
Technical Specification
2MLR-M02P



CPU MAIN BASE	
No. of modules	Base 2 slot
Installed module	CPU
Current Consumption	0.2A

Honeywell

Technical Specification
2MLF-AD16A



16 Channel Analog input module-2MLF-AD16A

Channels	16 current/voltage
Maximum conversion speed	500μs/channel
Isolation method	Photo-coupler isolation between input terminal and PLC power (no isolation between
Internal-consumed current	330mA
Weight	115g
RUN LED	Displays the operation status of analog input module (voltage
	On: Operation normal
	Flickering: Error occurs (for more details, refer to Error codes
	Off: DC 5V disconnected, analog input module error.
Voltage/current selection sw	Switch to select voltage/current (left: voltage, right: current).
Input current	4 to 20mA/0-10V

Honeywell

Technical Specification
2MLI-D24A

32-point digital input module (source/sink type)

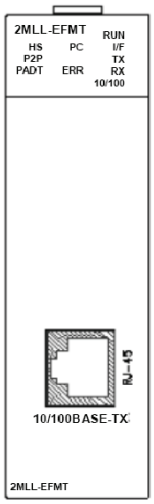
Channels	32-point
Isolation method	Photo coupler isolation
Rated input voltage	DC24V
Rated input current	About 4mA
Operation voltage range	DC20.4~28.8V (ripple rate < 5%)
On voltage/current	DC19V or higher / 3mA or higher
Off voltage/current	DC11V or lower / 1.7mA or lower
Input resistance	About 5.6kΩ
Response time	1ms/3ms/5ms/10ms/20ms/70ms/100ms (CPU parameter)
Isolation resistance	10MΩ or more by megger
Current consumption (mA)	50mA
Operation indicator	Input On, LED On
External connection method	40-point connector
Weight	0.1kg

Honeywell

Technical Specification
2MLQ-TR4B

32-point transistor digital output module (source type)

Output point	32-point
Isolation method	Photo coupler isolation
Rated input voltage	DC24V
Rated input current	About 4mA
Operation voltage range	DC20.4~28.8V (ripple rate < 5%)
Off voltage/current	0.1mA or less
Maximum inrush current	4A / 10ms or less
Current consumption	130mA
External connection method	40 Pin Connector
Response time	1ms or less
Weight	0.1kg
Maximum voltage drop (On)	DC 0.3V or less

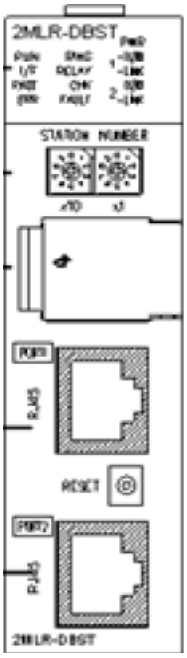


HMI Interface Module

Ethernet processor	32 bit		
Number of Ethernet PortS	01 - 10/100T with auto-sensing RJ-45 connection.		
Current cunsumption	410mA		
LEDs	HS	On during HS Link service	
	P2P	On P2P service	
	PADT	On remote service	
	PC	On dedicated service use	
	ERR	ON when a fatal error occurs	
	RUN	Normal	
	I/F	Blink when Normal	ON when a fatal error occurs
	TX	Blinks when sending	
	RX	Blinks when receiving	
	10/100	Off 10Mbps Media check	
Connectvity	To HMI S/W		

Honeywell

Technical Specification
2MLR-DBST



Normal Base copper Slave Communication Module

Media	Electrical
Max. distance between Extension bases	Electrical (100m)
Loader connection	Extension drive USB
Range of station no.	1 ~ 31 (other no. will generate an error)
Install position	CPU parts(CPU0 connector) in extension base
Weight (g)	100
Current Cunsumption	550mA

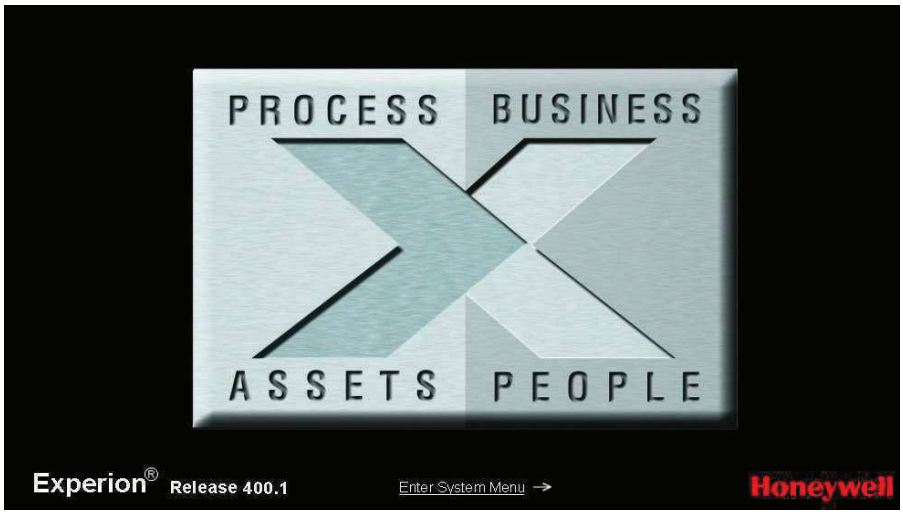
Technical Specification

DELL industrial PC

Processor	Intel Core2 Duo (2.33Ghz) or equivalent
System memory (RAM)	2 GB or more
Networking	Dual 100/100 mbps Ethernet
Video Resolution	22 " 1280*1024 or 1600*1200
Video memory per channel	256 VRAM
Operating System	microsoft windows 7, 32 bit
Browser type	internet explorer 7
Load Device	DVD RW
Hard Drive	160 GB. SATA 3mbps

Honeywell

Technical Specification
EPKS R400.1



Experion SCADA Release 400.1

max. no. of composite SCADA points	8050 SCADA Points
max. no. of stations	10
max. no. of active alarms	2000
max. no. of active messages	1000
max. no of events (burst condition)	1000 events
max. no of sustained alarms/sec.	20/sec
max. no. of events in online events database	1.2 million
redundancy	supports redundant & non-redundant server topologies
trend pens per set	32
points per operating group	8
no. of parameters assigned to history	2000-50000 parameters

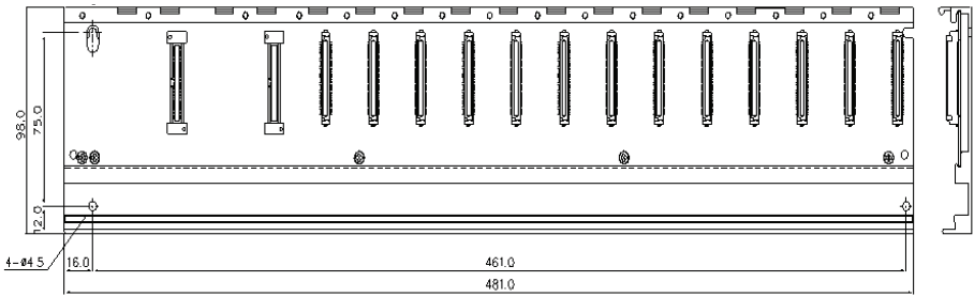
Honeywell

Technical Specification
2MLL-C42A

RS-485 Serial Communication Module (Snet)		
	Interface Standard	2 channel- RS422/ RS485
Comm. Settings	Start Bit	1
	Data Bits	7 or 8
	Stop Bits	1 or 2
	Parity	Odd/Even/None
	Baud Rate	300/600/1200/2400/4800/9600/19200/38400/57600/115200 bps
	Synchronization	Asynchronous
	Transmission Distance	500m Max.
	Network Configuration	1:1, 1:N, N:M
	Station No. Settings	Setting range: 0-31
	Service/Protocol	Modbus RTU/ASCII master, User defined Protocol Master
	Configuration Software	Software master-NM
	LED's	RUN, I/F, TX, RX, ERR
	Network Diagnostics	Auto Scan, Frame Monitor, Link Monitor, Loop Back
	Current Consumption	300mA

Honeywell

Technical Specification
2MLR-E12P



IO Normal Expansion Racks

No. of modules	12 Module
Installed module	All modules except FEnet, RAPIEnet
Dimension (mm)	481 X 98 X 19
Distance of hole for panel attachment	461X 75
Weight (g)	700

Phoenix make 5 port Ethernet Switch - SFNB5TX

Interface	1 Ethernet (RJ45)
No. of ports	5 (RJ45 ports)
Connection method	RJ45 female connector, auto negotiation & autocrossing
Transmission physics	Ethernet in RJ45 twisted pair
Transmission speed	10/100 MBit/s (RJ45)
Basic functions	10/100T switch / autonegotiation,
	store and forward switching mode
DiagnosticS	LEDs: US, link and activity per port
Supply voltage	
Supply voltage	24 V DC
Residual ripple	3.6 VPP (within the permitted voltage range)
Supply voltage range	12 V DC ... 48 V DC
Current consumption	185 mA (@24 V DC)
General data	Width 28 mm
	Height 110 mm
	Depth 70 mm
Mounting type	DIN rail

SMPS 24 VDC / 100W - PSS100/24/4.2

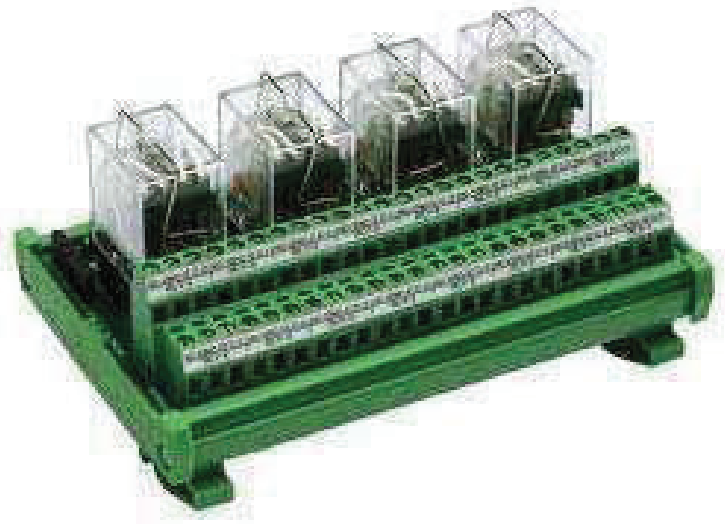
Output	Power ratings	100W
	Output voltage (VDC)	24 V
	Output current	4.2A @ 24VDC
	Ripple (typical)	100 mV
	Rise time (typical)	150ms
	Hold time (typical)	30 ms
Efficiency		86%
Input	Voltage	115/230 (Auto Select)
	Frequency	47 to 63 Hz
	Current (typical)	2.4 @ 90VAC
	Leakage current	0.25 mA
	Inrush current	30/60A @ 110/230VAC
	Power Dissipation	15 Watts
Additional functions	Input Fuse	T6.3A/250VAC Internal
	Surge Protection	Variastor
	Overload protection	140%
	Overvoltage protection	33 VDC, Auto Recovery after fault removal
Other	MTBF	456000 hrs min.
	Isolation Voltage	3000 VAC
	Isolation Resistance	100 MΩ
	Output indicator	DC ON (Grren), DC Low (Red) LED
	Dimensions	90H x 54W x 114D mm
	Weight	1380gm

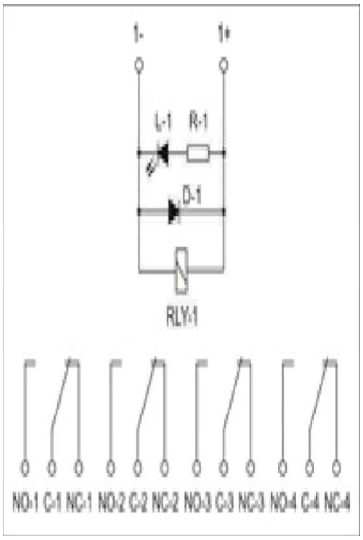
SMPS 24 VDC / 240W - PSS240/24/10

Output	Power ratings	240W
	Output voltage (VDC)	24 V
	Output current	10A @ 24VDC
	Ripple (typical)	100 mV
	Rise time (typical)	150ms
	Hold time (typical)	30 ms
Efficiency		88%
Input	Voltage	115/230 (Auto Select)
	Frequency	47 to 63 Hz
	Current (typical)	4.4/1.6A @ 110/230 VAC
	Leakage current	0.25 mA
	Inrush current	30/60A @ 110/230VAC
	Power Dissipation	35 Watts
Additional functions	Input Fuse	T6.3A/250VAC Internal
	Surge Protection	Variastor
	Overload protection	145%
	Overvoltage protection	33 VDC, Auto Recovery after fault removal
Other	MTBF	423000 hrs min.
	Isolation Voltage	3000 VAC
	Isolation Resistance	100 MΩ
	Output indicator	DC ON (Grren), DC Low (Red) LED
	Dimensions	124.5H x 83.5W x 123.6D
	Weight	1380gm

connectwell THE RIGHT CONNECTION OMRON

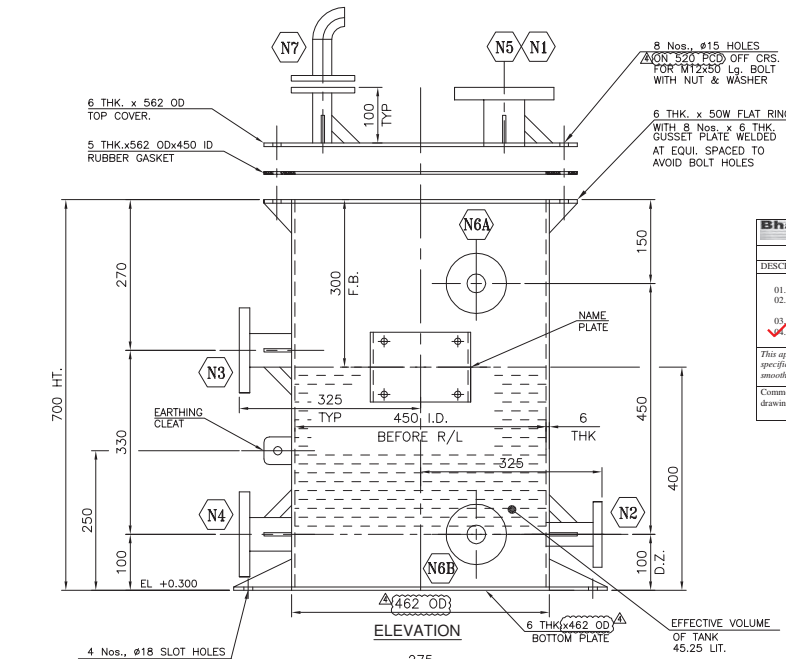
Technical Specification
IMRE4SS8/24/OM





8 Channel 4 C/0 Relay plate using Omron Relays - IMRE4SS8/24/OM

RELAY GENERAL SPECS	
RELAY TYPE	4PDT - 4CO
NO.OF RELAY	8
TYPE	PLUGGABLE RELAY WITH SCHRACK OR EQ. SOCKET
COIL DATA	
OPERATING VOLTAGE	24 VDC
RELEASE VOLTAGE	3.6 VDC
CONSUMPTION	21.8mA
RESISTANCE	275 Ω
CONTACT DATA	
CONTACT MATERIALS	AgCdO
RELATED CONTACT CURRENT	5A
LOAD VOLTAGE RANGE	250 VAC, 125 VDC
MAX. OPERATING FREQ.	1800 Hz
LIFE EXPECTANCY	20,000,000 OPERTAIONS MECHANICAL,100,000 OPERTAIONS ELECTRICAL
TERMINATIONS	
TYPE OF CONNECTION	Screw Connection
WIRE CONNECTION	I/P: 20 CORE CABLE, O/P: 0.5 TO 2.5 SQMM
SRIPPRING LENGTH	8.3 MM
TORQUE	0.5 NM
GENERAL SPECIFICATIONS	
OPERATING TEMP.	-20 TO 50 DEG AMBIENT
INDICATION	3 MM RED LED FOR COILSTATUS
PROTECTION	1N4007 FREEWHEELING DIODE ACROSS RELAY COIL
MOUNTING	DIN32 / DIN35 / DIN35-15 / PANEL
DIMENSIONS	257(L) X 88(W) X 74(H)mm



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Ramachandrapuram, Hyderabad

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✓	

Dt: 30.04.12

AS BUILT

NOZZLE SCHEDULE

MARK NO.	QTY. NOS.	SERVICE	SIZE NB	COMP. PAD O.D	COMP. PAD THK.	REMARKS
N1	1	ACID INLET	32	---	---	
N2	1	ACID OUTLET	32	---	---	
N3	1	OVERFLOW	50	---	---	WITH FUME ABSORBER
N4	1	DRAIN	50	---	---	
N5	1	LEVEL SWITCH	65	---	---	
N6 A/B	2	LEVEL GAUGE	25	---	---	REFER NOTE: 9
N7	1	AIR VENT	25	---	---	REFER NOTE: 9
---	---	---	---	---	---	

DESIGN DATA

TAG No.		AMT-A/B
DESCRIPTION		ACID MEASURING TANK FOR SAC-A/B
QTY.		02 Nos.
DESIGN CODE		IS:803
WORKING PRESSURE		ATM
DESIGN PRESSURE		ATM+HYDROSTATIC
HYDROTEST PRESSURE		FULL OF WATER
WORKING TEMPERATURE		AMBIENT
DESIGN TEMPERATURE		60° C
FLUID HANDLED		30% HCL
FLANGES	EXTERNAL	ANSI B16.5, 150#, SOFF OFF. CRS.
	INTERNAL	NA
RADIOGRAPHY	SHELL	NIL
	--	--
JOINT EFFICIENCY	SHELL	0.7
	--	--
CORROSION ALLOWANCE		0.0 mm
THINNING ALLOWANCE		NA
SURFACE AREA I/E		INTERNAL-1.5m²/ EXTERNAL-1.6m²
EFFECTIVE VOLUME		45.25 LTR.
INTERNAL LINING		4.5mm THK. NATURAL RUBBER HARDNESS 65° ±5° SHORE-A, AS PER IS:4682,PART-UN THREE LAYERS.
PAINTING EXTERNAL	PRIMER	2 COATS OF ZINC PHOSPHATE WITH 2 COATS EPOXY PRIMER, DFT 50 MICRONS.
	INTERMEDIATE PAINT	N.A.
	FINISH PAINT	2 COATS OF EPOXY FINISH, DFT 75 MICRONS.
	TOTAL DFT	TOTAL DFT 250 MICRONS.
COLOUR SHADE		GOLDEN YELLOW / RAL-1004
SURFACE PREPARATION		BLAST CLEAN TO BS:4232 2ND QUALITY (SA 2½)
TOTAL WEIGHT	EMPTY	93 Kgs. (APPROX.) FOR EACH TANK
	WORKING	141 Kgs. (APPROX.) FOR EACH TANK
SHIPPING DIMENSION		700X700X1000 HIGH
INSPECTION BY		AS PER APPROVED QAP

MATERIAL OF CONSTRUCTION

SHELL,TOP COVER,BOTTOM PLATE		IS: 2062 GR. B
NOZZLE FLANGE	UP TO 40NB	IS: 2062 GR. B
	ABOVE 40NB	IS: 2062 GR. B
COMP. PAD		IS: 2062 GR. B
DISH END		NA
MANHOLE FLANGE		NA
MANHOLE NECK		NA
NOZZLE NECK		IS:1239 'B' CLASS
GASKETS		3 THK. FOR PIPING NATURAL RUBBER,
BOLTS & NUTS WITH WASHER	EXTERNAL	M.S. GALVANISED--IS:1364(BOLT) & IS:1363(NUT) & IS:2016(WASHER)
	INTERNAL	NA
LIFTING LUGS, SADDLE PAD & OTHER ATTACHMENTS		IS: 2062 GR. B

NOTES :-

1. ALL DIMENSIONS ARE IN mm. UNLESS OTHERWISE SPECIFIED.
2. ALL BOLT HOLES SHOULD STRADDLE THE PRINCIPAL C.L. OF TANK.
3. NOZZLE 50NB AND BELOW SHALL BE STIFFENED WITH 2 Nos. GUSSETS AT 90° APART.
4. ALL SHARP CORNER SHALL BE SUITABLY ROUNDED OFF AND GROUND SMOOTH.
5. THE VESSEL SHALL BE CLEANED TO REMOVE SCALE ,SAND & FOREIGN MATTER.
6. ALL REINFORCEMENT PADS WITH TELL TALE HOLES SHALL BE PNEUMATICALLY TESTED AT 1.02 Kg/cm2 (g).
7. EARTHING CLEATS SHALL NOT BE PAINTED.
8. FOR ORIENTATION REFER PLAN VIEW ONLY.
9. ALL 25 NB FLANGES TO SUIT 32 NB BORE PIPE. ⚠

REF. DRG. :-

1. P & ID FOR DM PLANT A1-JWL-2194-201-03 SHT. 3 OF 3
2. FOR EQUIPMENT LAYOUT REFER A0-JWL-2194-02-01
3. FABRICATION DETAILS FOR REGENERATION TANK A3-JWL-2194-10A-05

REV.	DATE	LOCATION	DESCRIPTION	DRN BY	CHK. BY
4	25.04.12	⚠	DRAWING MADE AS BUILT.	PM	KG
3	02.01.12	⚠	REVISED AS PER CLIENT COMMENTS DTD. 02.01.12 DURING MEETING AT BHEL, HYDERABAD.	NP	KG
2	27.12.11	⚠	REVISED AS PER INTERNAL COMMENTS	SJ	KG
1	05.12.11	⚠	REVISED AS PER DCPL COMMENTS DT. 01.12.11	PM	KG
0	19.11.11		FIRST ISSUE	PM	KG

	CV	ME	EL	C&I				DEPT.
								SIGN
								DATE

CUSTOMER: ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI, ASSAM

CONSULTANT : DEVELOPMENT CONSULTANTS (P) LTD. CONSULTING ENGINEERS

PROJECT: 1X100MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE-1) AT NAMRUP,ASSAM

EPC CONTRACTOR: BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

EPC SUB-CONTRACTOR: NTPC BHEL POWER PROJECTS PVT. LTD. (A Joint Venture Company of NTPC & BHEL)

VENDOR: WIPRO WATER, SERENE PROPERTIES PVT LTD., SEZ, AIROLI, NAVI MUMBAI-400708.

TITLE: ⚠ G.A. DRAWING FOR ACID MEASURING TANK-AMT-AB (ø450x700HT.)

SCALE: NTS | VENDOR DOC. NO.: A2-JWL-2194-05A-08 | SHT. NO: 1 OF 1 | REV: 4

WIPRO WATER ORIGINAL SIZE : A3

WIPRO WATER

CLIENT:	ASSAM POWER GENERATION COOPERATION LTD.GUWAHATI,ASSAM	**JOB NO.**	JWL-2194
CONSULTANT	DEVELOPMENT CONSULTANTS PRIVATE LIMITED.	**DATE**	15-07-13
PROJECT:	1 X 100MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE-1) AT NAMPUR,ASSAM		
TITLE:	Datasheet for AUTO Diaphram Valves		
DOC. NO.:	A4-JWL-2194-DM-DS-DPV-01	**PAGE**	1 OF 1

SR. No	DESCRIPTION UNIT	UNIT	DATA	REMARK
	General			
1	Valve Type		Diaphragm(Lined)	
2	Type of Operation		Auto (Double acting)	
	Application (On-off / Control)		On / Off	
3	Quantity	Nos.	As per attached Annexure - 1	
4	Make		Weir BDK	
5	Tag No.		As per attached Annexure - 1	
6	Fluid to be handled		As per attached Annexure - 1	
7	Location		As per attached Annexure - 1	
	Technical Specification			
8	Valve Size	NB	As per attached Annexure - 1	
9	Design & Manufacturing Standard		BS EN 13397 (BS 5156)	
10	Testing Standard		BS EN 12266-1	
11	Operating Temperature	^{0}c	Ambient	
12	Max. Temperature Withstand	^{0}c	60	
13	Design Pressure	Bar	6 (MAX.)	
14	Pressure rating	Bar	PN16 upto 2"/ PN10 for 2.5" to 6"	
15	End Connection		Flanged End as per ANSI B16.5	
16	Hydro Test Pressure &			
i	Body	Bar	As per attached drg no: BA0701/ 2, Rev.R0	
ii	Seat	Bar	As per attached drg no: BA0701/ 2, Rev.R0	
17	Hydro Test Duration			
i	Body	Sec	As per attached drg no: BA0701/ 2, Rev.R0	
ii	Seat	Sec	As per attached drg no: BA0701/ 2, Rev.R0	
18	Range of Flow Control		10-100%	
19	Leakage Class		Class VI (No Leakage)	
	Material of Construction			
20	Body		CI : IS 210 Gr. FG 260 with Ebonite Lined Lining Hardness: 95 +/ - 5 Shore A	
21	Bonnet		CI : IS 210 Gr. FG 260	
22	Compressor		CI : IS 210 Gr. FG 260	
23	Stem		ASTM A276 TYPE 410	
24	Diaphragm		Neoprene	
25	Hand Wheel		CI : IS 210 Gr. FG 260	
26	Other parts		As per attached drg no: BA0701/ 2, Rev.R0	
	Other Detail			
27	Mechanical Position Indicator		Provided	
28	Actuator (Pneumatic / Electric)		Pneumatic double acting, Make: Weir BDK Model No: As per attached drg no: BA0701/ 2, Rev.R0 Air supply: 4 Bar	
29	Limit Switch		2 NO + 2 NC Make: Kenwood make Model No:007LAA01311	
30	Solenoid Valve (Voltage detail / Type of SOV)		24 V DC / 5/ 2 way Make: ROTEX Model No:51400-6-2R-24V DC-16	
31	Air Filter Regulator		Make: SHAVO Model No: SB02-221-M2MA	
32	Manual Override		Provided with valve	
33	Gear Operated - with self locking device		Not Applicable	

Technically Approved by Engineering

WIPRO WATER

CLIENT:	ASSAM POWER GENERATION COOPERATION LTD.GUWAHATI,ASSAM	**JOB NO.**	JWL-2194	
CONSULTANT	DEVELOPMENT CONSULTANTS PRIVATE LIMITED.	**DATE**	15-07-13	
PROJECT:	1 X 100MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE-1) AT NAMPUR,ASSAM			
TITLE:	Datasheet for AUTO Diaphram Valves			
DOC. NO.:	A4-JWL-2194-DM-DS-DPV-01	**PAGE**	1 OF 1	
SR. No	**DESCRIPTION UNIT**	**UNIT**	**DATA**	**REMARK**
34	Weight of Valve	kg	As per attached drg no: BA0701/ 2, Rev.R0	
35	Painting for valve		As per tender specfication	
	Surface preparation		Blast clean to BS 4232 2nd quality (SA 2 1/ 2)	
	Priming		1 coats of zinc rich 2 pack epoxy primer , DFT 35 microns	
	Finish coat		Coats 2-pack epoxy undercoat, DFT 75 microns per coat + 1 coats 2-pack epoxy finish, DFT 50 microns Total DFT: 235 microns	
	Paint Shade		As per mfg std	
36	Testing & Inspection		As per Approved QAP	
ENCLOSED: ANNEXURE-1				
R0	**Approval**	**15-07-13**	**JN**	**AS**
Rev.	**Issued for**	**Date**	**Prepared By**	**App. By**

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad

PROJECT ENGINEERING DEPARTMENT

DESCRIPTION OF CODE :

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03. REVISE AS PER BHEL COMMENTS AND RESUBMIT FOR APPROVAL.
04. RETAINED FOR INFORMATION.

This approval does not absolve the vendor from the responsibility to comply with BHEL's specification and all applicable codes and standards. Vendor has to ensure safe and smooth operation and meet the intended performance of the equipment.

Comments as marked on drawing ✓	Comments as in enclosed document.	
		Date: 18.07.13

DRAWN : Yogesh | CHECKED : VRJ | APPROVED : R. P.

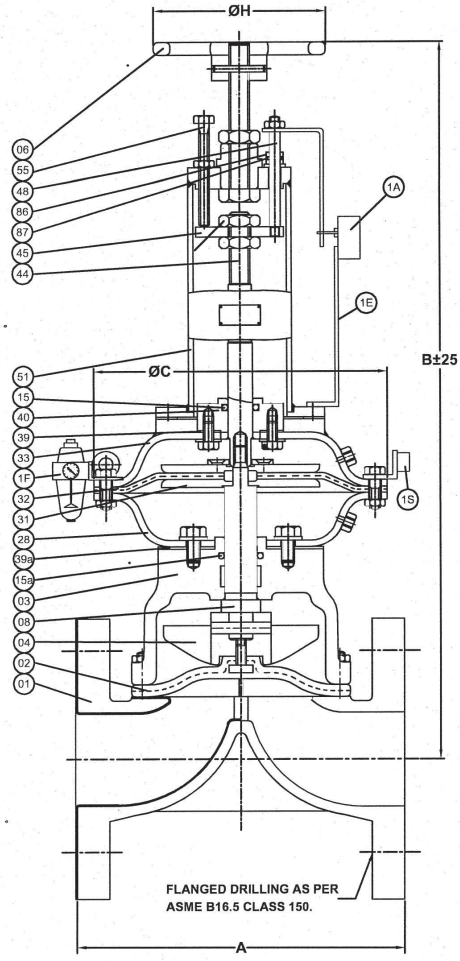
☐ FOR APPROVAL ☐ FOR RECORD

WEIR BDK VALVES
A UNIT OF WEIR INDIA PRIVATE LIMITED

BA - ACTUATORS, DOUBLE ACTING	DATE : 09 JUL 2013	DRG NO : BA0701	00 REV. NO

EBONITE LINED WEIR TYPE (STANDARD BONNET)
SERIES - 'S2K' DIAPHRAGM VALVES.

CO.NO. : 30003377. SHEET NO. : 01 OF 09



Notes :

1) Face to Face Dimension as per EN 558- 1 SERIES 7.
2) Diaphragm Hardness : 65 ± 5° Shore 'A'
3) Lining Hardnes : 95° ±5° Shore 'A' .
4) Lining spark tested as per IS - 4682 Part - 1
5) Actuator type Air to Close, Air to Open
6) Air pressure 4 bar & Line Pressure 6 bar.
7) Limit Switches Kenwood Make Model : 007LAA01311.
8) 5/2 Way Solenoid valve Rotex Make Model : 51400-6-2R-24V DC-16.
9) Air Filter Regulator Shavo Make Model : SB02-221-M2MA.
10) Accessories arrangement shown is indicative only & may vary during assembly.
11) **DM PLANT.**

ALL DIMENSIONS ARE IN mm.

Nom. Size	25	32	40	50	65
A (RL)	133	152	165	196	222
ACTUATOR MODEL	BA-13	BA-23	BA-23	BA-23	BA-23
B	375	465	490	505	550
ØH	100	140	140	140	140
ØC	170	255	255	255	255
AIR SUPPLY CONNECTION	¼" NPT				

Part No.	Part Name	Material
01	Body	CI-IS:210 Gr.FG260 WITH EBONITE LINED
02	Diaphragm	NEOPRENE
03	Bonnet	CI-IS:210 Gr.FG260
04	Compressor	CI-IS:210 Gr.FG260
06	Handwheel *	CI-IS:210 Gr.FG260
08	Stem	ASTM A 276 TYPE 410
15/15a	'O' Ring	BUNA - N
28	Bottom Chamber *	STEEL (IS: 1079, Gr. DD)
31	Bottom Support Plate	STEEL (IS: 2062, Gr. A) Z.P
32	Air Diaphragm	BUNA - N (Reinforced)
33	Top Chamber *	STEEL (IS: 1079, Gr. DD)
39/39a	Gasket	RUBBER
40	Spring Seat	STEEL (IS: 2062, Gr. A) Z.P
44	Stem Extension	STEEL A 276, Gr. 410
45	Top plate	STEEL (IS: 2062, Gr. A) Z.P
48	Position Indicator	STEEL (IS: 2062, Gr. A) Z.P
51	Spring Chamber *	STEEL (IS: 1239, Pt. 1)
55	Limit Opening Bolt or Screw	STEEL (IS: 1364, Gr. 8.8) Z.P
86	Indicator Bush	STEEL (IS: 2062, Gr. A) Z.P
87	'O' Ring (For Indicator Bush)	BUNA - N
1S	Solonoid Valves	'Rotex' Make
1A	Limit Switch	'Kenwood' Make
1E	Linkage	STEEL
1F	Air Filter Regulator	Shavo Make

* Duly Stoving Enamel Coated Z.P- Zinc Plated.

Valve Size	Act.Model	△P%	Opt.Pr. bar.	Hyd. Test Pr. (bar) Shell Without Actuator	Hyd. Test Pr. (bar) Seat with Actuator	Air Pr. Reqd to close/open the valve (bar)	Wt.(Kg) (approx)	Qty.	Line Item No.	Po.Sl.No.	TAG NO.
25	BA-13	0 %	6	24	6	3.5 To 4.5	14.0	REFER ANNEXURE			
32	BA-23	0 %	6	24	6	3.5 To 4.5	30.0				
40	BA-23	0 %	6	24	6	2.0 To 3.0	32.0				
50	BA-23	0 %	6	24	6	2.75 To 3.75	35.0				
65	BA-23	0 %	6	15	6	4.0 To 5.0	40.0				

TEST DURATION IN Seconds		
Valve Size	Shell	Sheet
25 To 50	15	15
65	60	15

CLIENT.	M/s, ASSAM POWER GENERATION LIMITED. GUWAHTI, ASSAM.
CONSULTANT.	DEVELOPMENT CONSULTANTS PVT, LIMITED.
ORDER NO.	WLM:WBDK:JWL2194:307. DTD : 21/06/2013.
PROJECT :	1 X 100MW NAMRUP COMBINE CYCLE REPLACEMENT POWER PROJECT (PHASE-01).

MANUFACTURED BY : WEIR BDK VALVES, HUBLI - 580 030, INDIA

DRW. NO.

DRAWN: Yogesh | CHECKED: VRJ | APPROVED: R. P.

☐ FOR APPROVAL ☐ FOR RECORD

WEIR BDK VALVES
A UNIT OF WEIR INDIA PRIVATE LIMITED

TAG NO's ANNEXURE	DATE : 09 JUL 2013	DRG NO : BA0702	00 REV. NO

CO.NO. : 30003377. SHEET NO. : 02 OF 09

Size x Rating	Quantity	P.O Line Item No	W.O. Line No.	Service	TAG No.
25 x PN16	04	28	-	--	DFXV5410A/B ,DFXV5448A/B
32 x PN16	82	29	-	--	DFXV5413A/B ,DFXV5414A/B, DFXV5419A/B ,DFXV5420A/B ,DFXV5425A/B ,DFXV5423A/B ,DFXV5424A/B ,DFXV5427A/B , DFXV5426A/B ,DFXV5428A/B ,DFXV5433A/B ,DFXV5438A/B ,DFXV5436A/B ,DFXV5437A/B ,DFXV5440A/B , DFXV5441A/B ,DFXV5439A/B ,DFXV5452A/B ,DFXV5445A/B ,DFXV5449A/B ,DFXV5450A/B ,DFXV5457A/B ,DFXV5444A/B , DFXV551A/B ,DFXV5446A/B ,DFXV5454A/B ,DFXV5453A/B ,DFXV5455A/B ,DFXV5456A/B ,DFXV5458A/B ,DFXV5465A/B/C /D , DFXV5468A/B/C /D ,DFXV5465A/B/C /D ,DFXV5462 A/B/C/D ,DFXV5463 A/B/C/D. DFXV 5432A/B
40 x PN16	02	31	-	--	DFXV5460A/B
50 x PN16	40	32	-	--	DFXV5404A/B ,DFXV5405A/B,DFXV5409A/B ,DFXV5408A/B ,DFXV5411A/B ,DFXV5412A/B ,DFXV5416A/B ,DFXV5415A/B , DFXV5417A/B ,DFXV5418A/B ,DFXV5422A/B ,DFXV5421A/B ,DFXV5430A/B ,DFXV5431A/B ,DFXV5435A/B ,DFXV5434A/B , DFXV5442A/B ,DFXV5443A/B ,DFXV5447A/B ,DFXV5459A/B.
65 x PN10	04	33	-	--	DFXV5406A/B ,DFXV5407A/B

CLIENT.	M/s, ASSAM POWER GENERATION LIMITED. GUWAHTI, ASSAM.
CONSULTANT.	DEVELOPMENT CONSULTANTS PVT, LIMITED.
ORDER NO.	WLM:WBDK:JWL2194:307. DTD : 21/06/2013.
PROJECT :	1 X 100MW NAMRUP COMBINE CYCLE REPLACEMENT POWER PROJECT (PHASE-01).

MANUFACTURED BY : WEIR BDK VALVES, HUBLI - 580 030, INDIA

BDK-101

DM,CW & ETP PLANT FOR 1X100 MW NAMRUP COMBINED CYCLE REPLACEMENT POWER PROJECT (PHASE – 1) AT NAMRUP, AASAM.

DOCUMENMT CONTROL SHEET

CLIENT	:	NTPC BHEL POWER PROJECT PVT. LTD.
DOCUMENT TITLE	:	DATASHEET FOR DG BLOWER
WIPRO DOC NO	:	A4-JWL2194-BL-02
REV. NO.	:	1

ENDORSEMENTS :

1	29.10.2012	For Approval	Arpit Sheth		JN		AS				
Rev no	Date	Description	Initials	Sign	Initials	Sign	Initials	Sign	Initials	Sign	
			Prepared by		Reviewed by		Approved by		Issue Authorisation		

	CUSTOMER : **ASSAM POWER GENERATION CORPORATION LTD. GUWAHATI , ASSAM.**
	CONSULTANT: **DEVELOPMENT CONSULTANTS PRIVATE LIMITED. 24 – B, PARK STREET, KOLKATA – 700016.**
	EPC CONTRACTOR: **BHARAT HEAVY ELECTRICALS LTD. RAMACHANDRAPURAM, HYDERABAD, T.N – 502 032**
	EPC SUB CONTRACTOR: **NTPC BHEL POWER PROJECT PVT. LTD., 6TH FLOOR, LOBE-4, TOWER-B, THE CORENTHUM, PLOT A/41, SEC-62, NOIDA – 201309.**
	CONTRACTOR **WIPRO WATER, Serene Properties, S.E.Z., 3rd Floor, Building No. 7, Plot No.3,TTC Industrial Area, Thane Belapur Road, Airoli, Navi Mumbai- 400708.**

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad

PROJECT ENGINEERING DEPARTMENT

DESCRIPTION OF CODE :

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Comments as marked on drawing	Comments as in enclosed document.	
		Date:07.12.12

WIPRO WATER

CLIENT:	ASSAM POWER GENERATION LTD. GUWAHTI,ASSAM	**JOB NO.**	JWL-2194	
CONSULTANT	DEVELOPMENT CONSULTANTS PRIVATE LIMITED	**DATE**	03-10-12	
PROJECT:	1 X100MW NAMRUP COMBINE CYCLE REPLACEMENT POWER PROJCT (PHASE-01)			
TITLE:	DATA SHEET FOR DG AIR BLOWERS.			
SR. No	A4-JWL2194-BL-02	**PAGE**	1 OF 1	
	General			
1	Type		Centrifugal Type Oil Free	
2	No. of Blowers	Nos.	Four (2 Working + 2 Standby)	
3	Manufacturer		Unimax	
4	Tag No.		ABL -02A/BC/D	
5	Model No.		**UCM-27**	
6	Fluid to be handled		Ambient Air	
7	Service		To transfer Ambient Air to Degasser Tower	
8	Location		Outdoor	
9	Duty		Continous	
10	Temperature (Operating/Design/Discharge)	^{0}C	40/40/41.6	**R1**
11	Drive Type		Direct Driven	
12	Direction of Rotation		Top Vertical clockwise from drive end	
13	Impeller Type		Backward Curved	
14	Design Code		IS 4894	
15	Performance Test Code		IS 4894	
	Operating condition			
16	Capacity	m^3/hr	212	
17	Discharge Pressure (Static / Total)	mmwc	100	
18	Blower Speed	rpm	2780	
19	Efficiency	%	72.6	
20	Noise level	dB	85 dBA at 1 m with system connected at outlet in free field condition.	
	Material of construction			
21	Casing		MS: IS 2062	
22	Impeller		MS: IS 2062	
23	Base frame		MS: IS 2062	
24	Total Weight of Blower with Motor & Accessories	kg	81 (approx.)	
	Motor Details			
25	Motor Rating	kW	0.746	
26	Motor Type		Squirrel cge, Induction motor ,TEFC foot mounted, 2 Pole	
27	Motor RPM	rpm	2900 (Syn)	
28	Motor protection		IP 55	**R1**
29	Temprature rise		70 Degree C	**R1**
30	Method of starting		DOL	**R1**
31	Motor Make		ABB/CGL/SIEMENS/BB/KIRLOSKAR	
32	Voltage / Phase / Frequency		415 v (+ 10%) / 3 / 50 Hz	
33	Motor Frame		80	
34	Nuts & Bolts		MS	
35	Painting for blower			
	Surface preparation:		Blast clean to BS 4232 2nd Quality (SA 2½)	
	Primer Coat:		1 coats zinc rich 2 pack epoxy primer, dft 35 microns.	
	Finish coat:		2 coats 2 - pack epoxy undercoat, dft 75 microns per coat. 1 coats 2 - peak epoxy finish, dft 50 microns.	
	Shade:		Capri Blue	
36	Inspection & Testing		As per Approved QAP	

R1	**Approval**	**29-10-12**	**Arpit Sheth**	**JN/AS**
R0	**Approval**	**03-10-12**	**Arpit Sheth**	**JN/AS**
Rev.	**Issued for**	**Date**	**Prepared By**	**App. By**

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad

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Comments as marked on drawing	Comments as in enclosed document.	
		Date:07.12.12

AN ISO 9001 : 2008 CERTIFIED COMPANY

UNIMAX
POLLUTION CONTROL (I) PVT. LTD.

Tel. : +91-22-42602121
Fax : +91-22-42602129
E-mail : upcipl@gmail.com
www.unimaxpollutioncontrol.com

PERFORMANCE CURVE FOR CENTRIFUGAL FAN

PROJECT : 1X100 MW NAMRUP COMBINE CYCLE REPLACEMENT POWER PROJECT (PHASE 01)

CLIENT : ASSAM POWER GENERATION LTD.

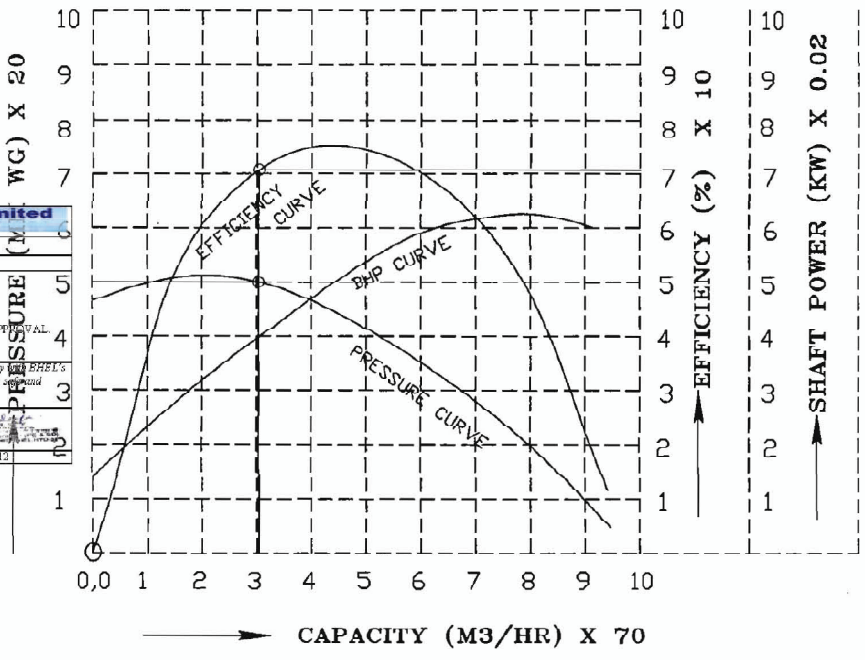
GUWAHATI, ASSAM.

CONSULTANT : DEVELOPMENT CONSULTANTS PRIVATE. LIMITED.

REF NO.	TAG NO.	MODEL NO.
5036	ABL-02A/BC/D	UCM-27

SPECIFICATIONS

FAN MODEL	:	UCM-27
CAPACITY	:	212 M3/HR
STATIC PRESSURE	:	100 MMWG
FAN SPEED (RPM)	:	2780
B.H.P AT OPER. TEMP	:	0.11
REC. MOTOR	:	1 HP/2780 RPM



Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad
PROJECT ENGINEERING DEPARTMENT
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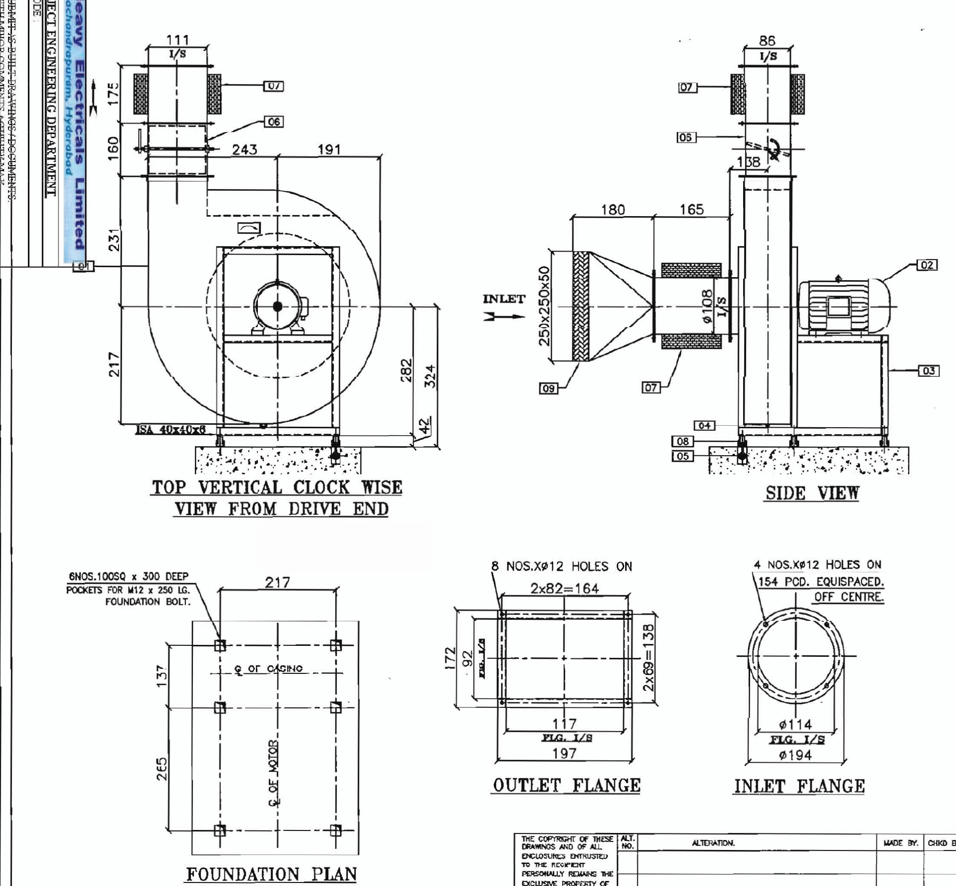
Date:07.12.12



TECHNICAL DATA

A	AIR QUANTITY (M^3/HR)	212	H	FAN RPM	2780
B	STATIC PR. @ INLET (MMWG)	0	I	BHP @ 20°C	0.112
C	STATIC PR. @ OUTLET (MMWG)	100	J	BHP @ OPER. TEMP.	0.11
D	OPERATING TEMP. (°C)	40	K	GD2 VALUE (KGM2)	–
E	GASDENSITY@OPER TEMP (KG/M3)	1.123	L	TORQUE DEATAILS (KG/M)	0.02 MAX
F	BLADE LINER	NA			0.001 MIN
G	FAN APPLICATION	DEGASSER	M	ACCESS DOOR OPENING	NA
			N	METHOD OF STARTING	DIRECT ON LINE
			O	DESIGN TEMP. (°C)	40
			P	DISCHARGE TEMP. (°C)	41.18

SCOPE OF SUPPLY

SR. NO.	DESCRIPTION	QTY. NOS.	MAKE	SCOPE
01	FAN ASSEMBLY	1	UNIMAX	UNIMAX
02	MOTOR	1	ABB/SIEME./CGL/BB	UNIMAX
03	MOTOR BASE FRAME	1	UNIMAX	UNIMAX
04	DRAIN PLUG	1	UNIMAX	UNIMAX
05	FOUNDATION BOLTS	6	STD	UNIMAX
06	OUTLET BUTTERFLY DAMPER	1	UNIMAX	UNIMAX
07	SUCTION & DISCHARGE SILENCER	1	UNIMAX	UNIMAX
08	ANTI VIBRATION PADS (PU-1B)	6	STD	UNIMAX
09	FILTER & FILTER PLENUM	1	UNIMAX	UNIMAX

MATERIAL OF CONSTRUCTION

SR.NO.	DESCRIPTION	MOC
01	CASING	M.S.– IS 2062
02	IMPELLER	M.S.– IS 2062

NOTES FOR CLIENT

1. INLET AND OUTLET FLANGES ARE NOT DESIGNED TO TAKE ANY EXTERNAL LOAD.
2. CIVIL WORK SHOWN IS PICTORIAL ONLY, UNIMAX-FAN. IS NOT RESPONSIBLE FOR CIVIL DESIGN.
3. DIMENSIONS RELATED TO MOTOR ARE BASED ON MOTOR FRAME SIZE– ND 80 AND MOTOR SHAFT EXTENSION ø19 MM.
4. THE TOLERANCES ON PERFORMANCE IS AS PER IS:4894–1987.

PROJECT : 1X100 MW NAMRUP COMBINE CYCLE REPLACEMENT POWER PROJECT (PHASE 01)

CLIENT : ASSAM POWER GENERATION LTD. GUWAHATI, ASSAM.

CONSULTANT : DEVELOPMENT CONSULTANTS PRIVATE LIMITED.

TAG NO. : ABL-02A/BC/D

MODEL : UCM-27

REF : MISC : 2012/5036

UPC : CENTRIFUGAL : 1132-I

GENERAL TOLERANCES								
DIMENSION	0 – 10	11 – 50	51 – 100	101 – 500	501 – 1000	1001–3000	ABOVE 3000
FABRICATION	± 0.5		± 1.5	± 2.0	± 3.0	± 4.0	± 5.0
MACHINING	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2.0

ALL DIMNS ARE IN MM.
IF IN DOUBT ASK.

ALT. NO.	ALTERATION.	MADE BY.	CHKD BY.

QTY:- 4 NOS. | REF :MISC :2012/5036

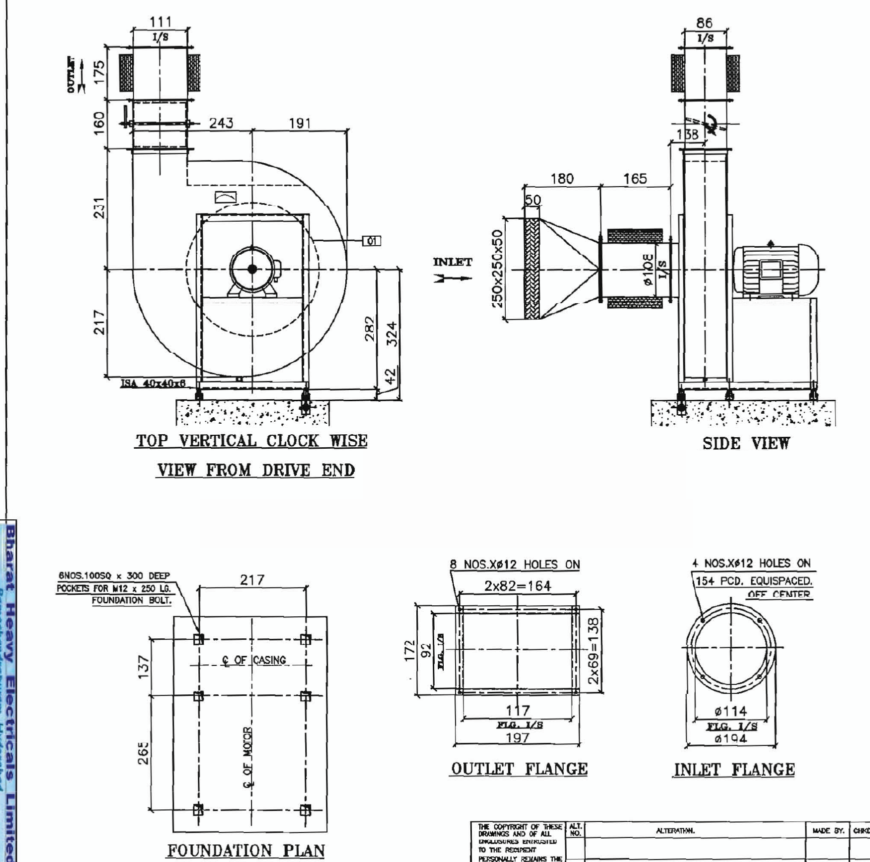
TITLE: GENERAL ARRANGEMENT OF FAN
PRODUCT: FAN:- UCM/SZ-27/SISW/100/270
MOTOR:- 1 HP/2780 RPM

UNIMAX POLLUTION CONTROL (I) PVT. LTD. MUMBAI-400 072

SCALE: -

SUBMITTED FOR	APPROVAL	BY	DATE	DATE	01/10/12
APPROVAL ☐				CHKD.	
INFORMATION ☑				DESIGN	
CONSTRUCTION ☐				APPVD. BY	
RESUBMITION ☐					

JOB NO. | UNIMAX DRG.NO. UPC-3/6883 | REV. 0



	TECHNICAL DATA				
A	AIR QUANTITY (M^3/HR)	212	K	FAN RPM	2780
B	STATIC PR. @ INLET (MMWG)	0	L	BHP @ 20°C	0.112
C	STATIC PR. @ OUTLET (MMWG)	100	M	BHP @ OPER. TEMP.	0.11
D	OPERATING TEMP. (°C)	40	N	GD2 VALUE (KGM2)	–
E	GASDENSITY@OPER.TEMP.(KG/M3)	1.123	O	TORQUE DETAILS (KG/M)	0.02 (MAX)
F	BLADE LINER	NA			0.001 (MIN)
G	FAN APPLICATION	DEGASSER	P	ACCESS DOOR OPENING	NA
			Q	METHOD OF STARTING	DIRECT ON LINE
			R	DESIGN TEMP. (°C)	40
			S	DISCHARGE TEMP. (°C)	41.18

SCOPE OF SUPPLY

SR. NO.	DESCRIPTION	QTY. NOS.	MAKE	SCOPE
01	IMPELLER ASSEMBLY	1	UNIMAX	UNIMAX

MATERIAL OF CONSTRUCTION

SR.NO.	DESCRIPTION	MOC
01	IMPELLER	M.S-IS 2062

NOTES FOR CLIENT

1. INLET AND OUTLET FLANGES ARE NOT DESIGNED TO TAKE ANY EXTERNAL LOAD.
2. CIVIL WORK SHOWN IS PICTORIAL ONLY, UNIMAX-FAN. IS NOT RESPONSIBLE FOR CIVIL DESIGN.
3. DIMENSIONS RELATED TO MOTOR ARE BASED ON MOTOR FRAME SIZE- ND 80 AND MOTOR SHAFT EXTENSION ø19 MM.
4. THE TOLERANCES ON PERFORMANCE IS AS PER IS:4894-1987.

NOTE : KINDLY CONFIRM THE DIRECTION OF ROTATION OF IMPELLER.

PROJECT : 1X100 MW NAMRUP COMBINE CYCLE REPLACEMENT POWER PROJECT (PHASE 01)

CLIENT : ASSAM POWER GENERATION LTD. GUWAHATI, ASSAM.

CONSULTANT : DEVELOPMENT CONSULTANTS PRIVATE LIMITED.

TAG NO. : ABL-02A/BC/D

SPARE IMPELLER ONLY

MODEL : UCM-27

REF : MISC : 2012/5036

UPC : CENTRIFUGAL : 1132-II

QTY:- 1 NO. REF: MISC: 2012/5036

TITLE: GENERAL ARRANGEMENT OF FAN

PRODUCT: FAN:- UCM/SZ-27/SISW/100/270
MOTOR:- 1 HP/2780 RPM

UNIMAX POLLUTION CONTROL (I) PVT. LTD. MUMBAI-400 078

SCALE: -

SUBMITTED FOR	APPROVAL	BY	DATE	DATE	01/10/12
APPROVAL ☐				CHKD.	
INFORMATION ☑				DESIGN	
CONSTRUCTION ☐				APPVD. BY	
RESUBMITTION ☐					
	JOB NO.	UNIMAX DWG.NO.	UPC 3/6883(A)	REV.	0

ALT. NO.	ALTERATION.	MADE BY.	CHKD BY.

ALL DIMNS ARE IN MM.
IF IN DOUBT ASK.

GENERAL TOLERANCES

DIMENSION	0 – 10	11 – 50	51 – 100	101 – 500	501 – 1000	1001–3000	ABOVE 3000
FABRICATION	± 0.5		± 1.5	± 2.0	± 3.0	± 4.0	± 6.0
MACHINING	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2.0

Bharat Heavy Electricals Limited
Ramachandrapuram, Hyderabad
PROJECT ENGINEERING DEPARTMENT

DESCRIPTION OF CODE:
01. APPROVED SUBMIT AS BUILT DRAWINGS / DOCUMENTS.
02. APPROVED WITH MINOR COMMENTS ACTIVITY MAY PROCEED. PLEASE RESUBMIT FOR FINAL APPROVAL.
03. REVISE AS PER BHEL COMMENTS AND RESUBMIT FOR APPROVAL.
04. RETAINED FOR INFORMATION.

This approval does not absolve the vendor from the responsibility to comply with BHEL's specification and all applicable codes and standards. Vendor has to ensure safe and smooth operation and meet the intended performance of the equipment.

Comments as marked on drawing	Comments as in document	Comments as in enclosed document	Date 07.12.12