

TD-201 Rev No. 00	Form No.	 	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION, HYDERABAD	ANNEXURE-2B to PY55223
				Rev No. 00
				Page 1 of 9

COPYRIGHT AND CONFIDENTIAL
The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED,
It must not be used directly or indirectly in any way detrimental to the interest of the company.

PROJECT

40MW CDQ WASTE HEAT RECOVERY
CO-GENERATION POWER PLANT

CUSTOMER

M/S TATA STEEL LIMITED,
JAMSHEDPUR

CONSULTANT

TATA CONSULTING ENGINEERS,
KOLKATA

INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

DRG. NO. PY-SC-4-M085-9301-01

SH. 01 OF 08

DRIVE CONTROL PHILOSOPHY

REV.	DATE	ALTERED
		CHD/APPD
ZONE		

REV.	DATE	ALTERED
02	14.07.16	VINEET CHD/APPD SUJATHA
ZONE		

CONSULTANT: TATA CONSULTING ENGINEERS LIMITED									
MUMBAI									
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD									
DEPT. PE&SD	UNTOL. DIMS. GR.		SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO.OF ITEMS	NO.OF VAR.	
CODE 450	GR. 2/M/7		NTS	-N.A.-	-N.A.-	-N.A.-	-N.A.-	N.A.	
TITLE					BHEL DRAWING NO.		REV.		
DRIVE CONTROL PHILOSOPHY					PY-SC-4-M085-9301-01		02		
					SHT. No 01		NO. OF SHT. 08		

TATA STEEL LTD			
JAMSHEDPUR			
DEPT	40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT		CODE
AREA	JAMSHEDPUR		CODE
SUBJECT	DRIVE CONTROL PHILOSOPHY		CODE
TATA DRG. NO.			REV
			01

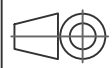
NOTES & LEGENDs

NOTEs

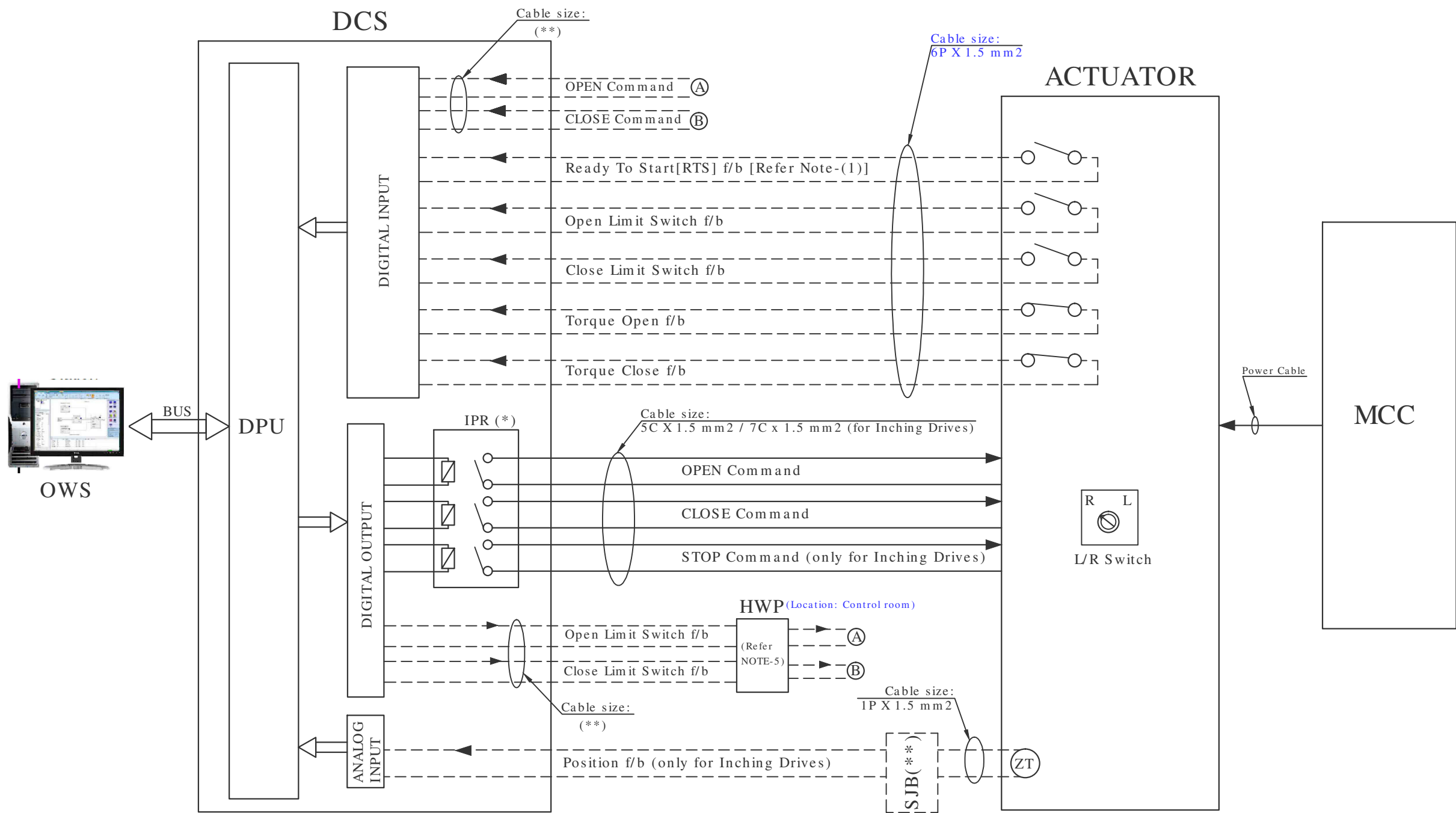
- 1) RTS feedback shall be generated in MCC / SWGR / ACTUATOR when following conditions are met:
a) Stop PB in MCC / SWGR & ACTUATOR & LCS & DCS is not pressed
b) Control Supply ON
c) Thermal overload relay in Actuator (or) Motor protection relay in MCC/SWGR not operated.
d) Local/Remote switch located in MCC / SWGR / Actuator is in REMOTE
- 2) Local control stations (LCS) shall be provided for all LT & HT drives. LCS shall have START PB & Emergency Stop [EPB] push button and shall be hard wired directly to MCC. The EPB (stay put type) will be provided with press to lock and turn to release type, keyless mechanim.
- 3) Deleted.
- 4) ON/OFF Indicating lamps and ammeters will be provided on Local control stations (LCS) for motors rated 30kW and above.
- 5) Control from Backup panel (HWP) is applicable only for Lub Oil pumps (AOP, MOP, EOP, AC & DC JOP), Turning Gear MOV, Vaccum Breaker Valve, Main steam Stop Valve, CW pumps & Vacuum pumps.

LEGENDs

- ZT - Position Transmitter
- DCS - Distributed Control System
- MCC - Motor Control Center
- L/R Switch - Local / Remote switch
- OWS - Operating Work Station
- IPR - Interposing Relay
- LCS - Local Control Station
- E/P - E/P Positioner
- SJB - Signal Junction Box (Location in Field)
- MFM - Multi Function Meter
- NR - Numerical Relay
- HBP - Hardwired Backup Panel
- DCSC - DC Distribution Board
- PS - Pressure Switch

CONSULTANT:  TATA CONSULTING ENGINEERS LIMITED MUMBAI										 TATA STEEL LTD JAMSHEDPUR				
 BHARAT HEAVY ELECTRICALS LTD., HYDERABAD					NAME	SIGN.	DATE	NO.OF VAR.	DEPT	40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT		CODE		
					DRN.	VINEET	-sd/-	04.06.16	N.A.	AREA	JAMSHEDPUR	CODE		
					CHD.	SUJATHA	-sd/-	06.06.16						
					APPD.	SUJATHA	-sd/-	06.06.16						
DEPT. PE&SD CODE 450	UNTOL. DIMS. GR. ø/M/P		SCALE NTS	WEIGHT (KG) -N.A.-	REF. TO ASSY. DRG. -N.A.-	ITEM NO. -N.A.-	NO.OF ITEMS -N.A.-	SUBJECT	DRIVE CONTROL PHILOSOPHY		CODE			
TITLE DRIVE CONTROL PHILOSOPHY					CARD CODE	BHEL DRAWING NO. PY-SC-4-M085-9301-01			REV. 02	TATA DRG. NO.			REV	
					SHT. No	02	NO. OF SHT.			08	05			

DCS Interface for BI-DIRECTIONAL DRIVE

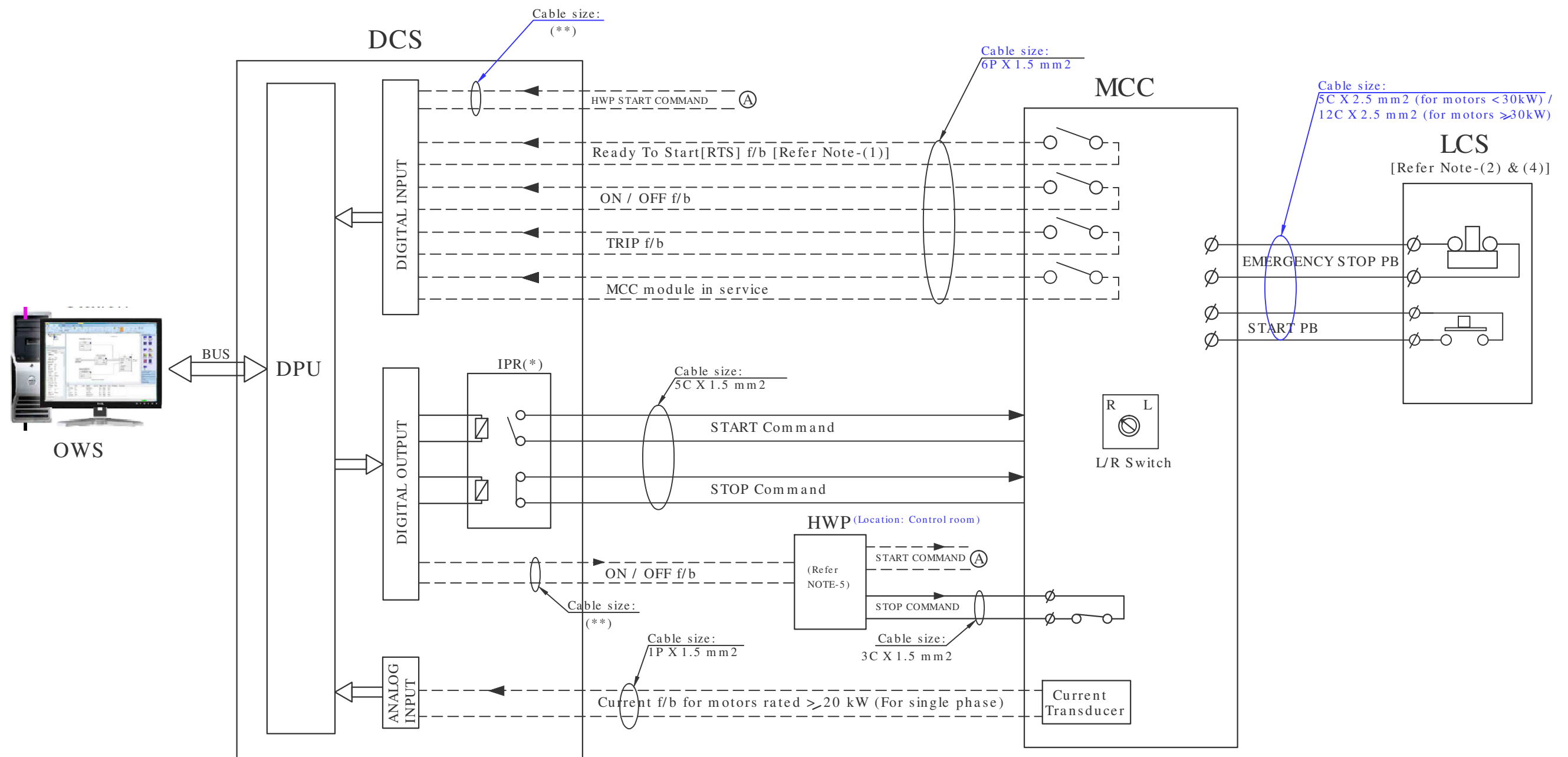


(*) -> Interrogation voltage for commands & feedbacks shall be 24V DC and same shall be powered from DCS and ACTUATOR respectively.

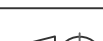
(**) -> For exact size of the cable, refer C&I Cable schedule for BOP area.

CONSULTANT: TATA TATA CONSULTING ENGINEERS LIMITED										TATA TATA STEEL LTD				
MUMBAI										JAMSHEDPUR				
BHEL BHARAT HEAVY ELECTRICALS LTD., HYDERABAD						NAME	SIGN.	DATE	NO.OF VAR.	DEPT	40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT		CODE	
					DRN.	VINEET	-sd/-	04.06.16	N.A.					
					CHD.	SUJATHA	-sd/-	06.06.16						
					APPD.	SUJATHA	-sd/-	06.06.16						
DEPT. PE&SD CODE 450	UNTOL. DIMS. GR. ø/M/P		SCALE NTS	WEIGHT (KG) -N.A.-	REF. TO ASSY. DRG. -N.A.-	ITEM NO. -N.A.-	NO.OF ITEMS -N.A.-		SUBJECT	DRIVE CONTROL PHILOSOPHY		CODE		
TITLE DRIVE CONTROL PHILOSOPHY					CARD CODE	BHEL DRAWING NO. PY-SC-4-M085-9301-01			REV. 02	TATA DRG. NO.			REV	
						SHT. No 03		NO. OF SHT. 08					05	

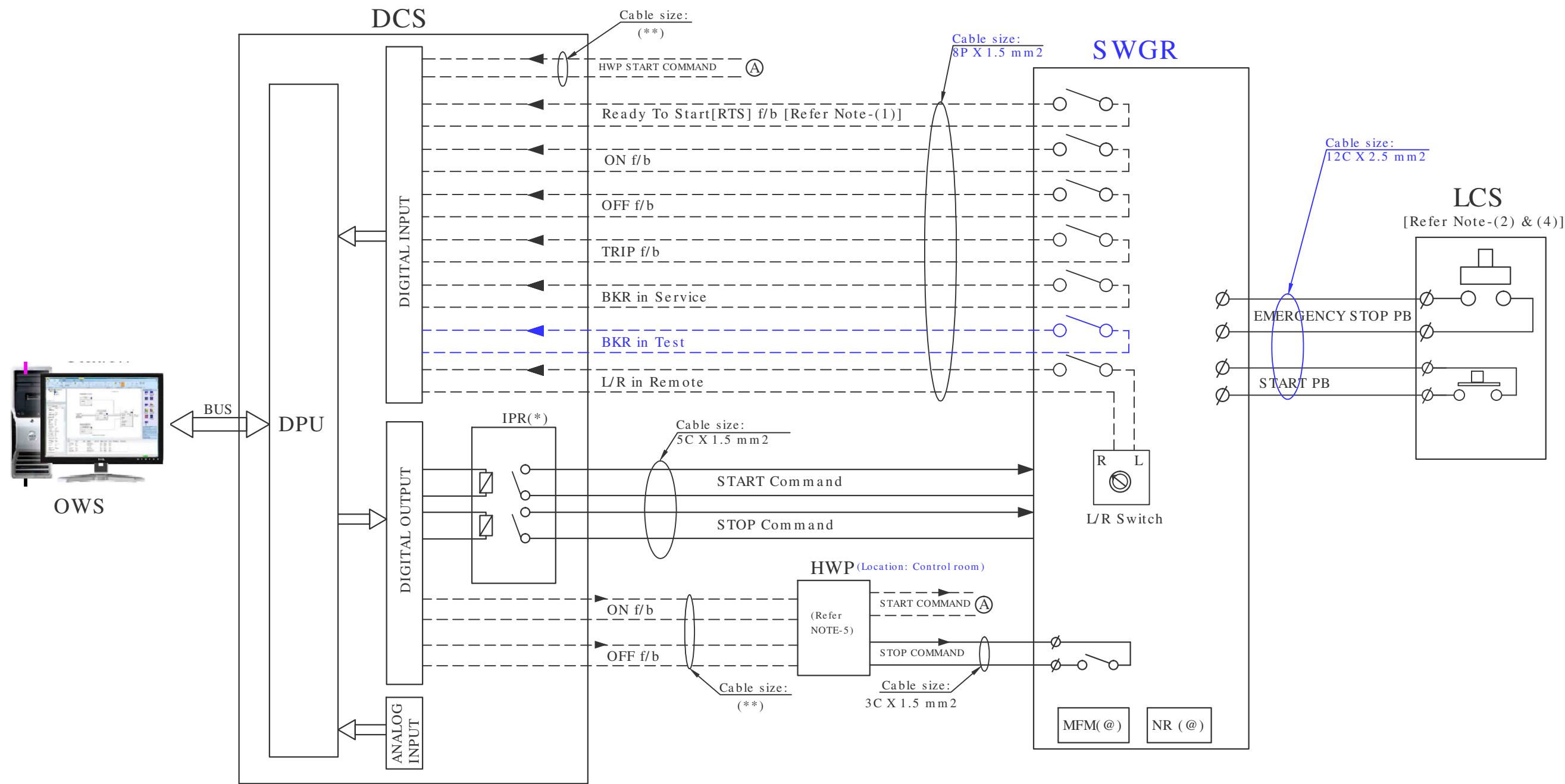
OWS



(*) -> Interrogation voltage for commands shall be 110V AC and same shall be powered from MCC.

CONSULTANT:										TATA CONSULTING ENGINEERS LIMITED										TATA STEEL LTD																																																																												
										MUMBAI																				JAMSHEDPUR																																																																		
										BHARAT HEAVY ELECTRICALS LTD., HYDERABAD										<table><tr><td></td><td>NAME</td><td>SIGN.</td><td>DATE</td><td>NO.OF VAR.</td></tr><tr><td>DRN.</td><td>VINEET</td><td>-sd/-</td><td>04.06.16</td><td rowspan="3">N.A.</td></tr><tr><td>CHD.</td><td>SUJATHA</td><td>-sd/-</td><td>06.06.16</td></tr><tr><td>APPD.</td><td>SUJATHA</td><td>-sd/-</td><td>06.06.16</td></tr></table>											NAME	SIGN.	DATE	NO.OF VAR.	DRN.	VINEET	-sd/-	04.06.16	N.A.	CHD.	SUJATHA	-sd/-	06.06.16	APPD.	SUJATHA	-sd/-	06.06.16	<table><tr><td>DEPT</td><td colspan="10">40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT</td><td>CODE</td><td></td></tr><tr><td>AREA</td><td colspan="10">JAMSHEDPUR</td><td>CODE</td><td></td></tr><tr><td>SUBJECT</td><td colspan="10">DRIVE CONTROL PHILOSOPHY</td><td>CODE</td><td></td></tr></table>										DEPT	40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT										CODE		AREA	JAMSHEDPUR										CODE		SUBJECT	DRIVE CONTROL PHILOSOPHY										CODE	
	NAME	SIGN.	DATE	NO.OF VAR.																																																																																												
DRN.	VINEET	-sd/-	04.06.16	N.A.																																																																																												
CHD.	SUJATHA	-sd/-	06.06.16																																																																																													
APPD.	SUJATHA	-sd/-	06.06.16																																																																																													
DEPT	40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT										CODE																																																																																					
AREA	JAMSHEDPUR										CODE																																																																																					
SUBJECT	DRIVE CONTROL PHILOSOPHY										CODE																																																																																					
DEPT. PE&SD CODE 450		UNTOL. DIMS. GR. 2/M/7				SCALE NTS		WEIGHT (KG) -N.A.-		REF. TO ASSY. DRG. -N.A.-		ITEM NO. -N.A.-		NO.OF ITEMS -N.A.-		TATA DRG. NO.										REV																																																																						
TITLE DRIVE CONTROL PHILOSOPHY								CARD CODE		BHEL DRAWING NO. PY-SC-4-M085-9301-01						REV. 02																																																																																
										SHT. No 04				NO. OF SHT. 08														06																																																																				

DCS Interface for UNI-DIRECTIONAL LT & HT DRIVE >110 kW (Breaker operated)



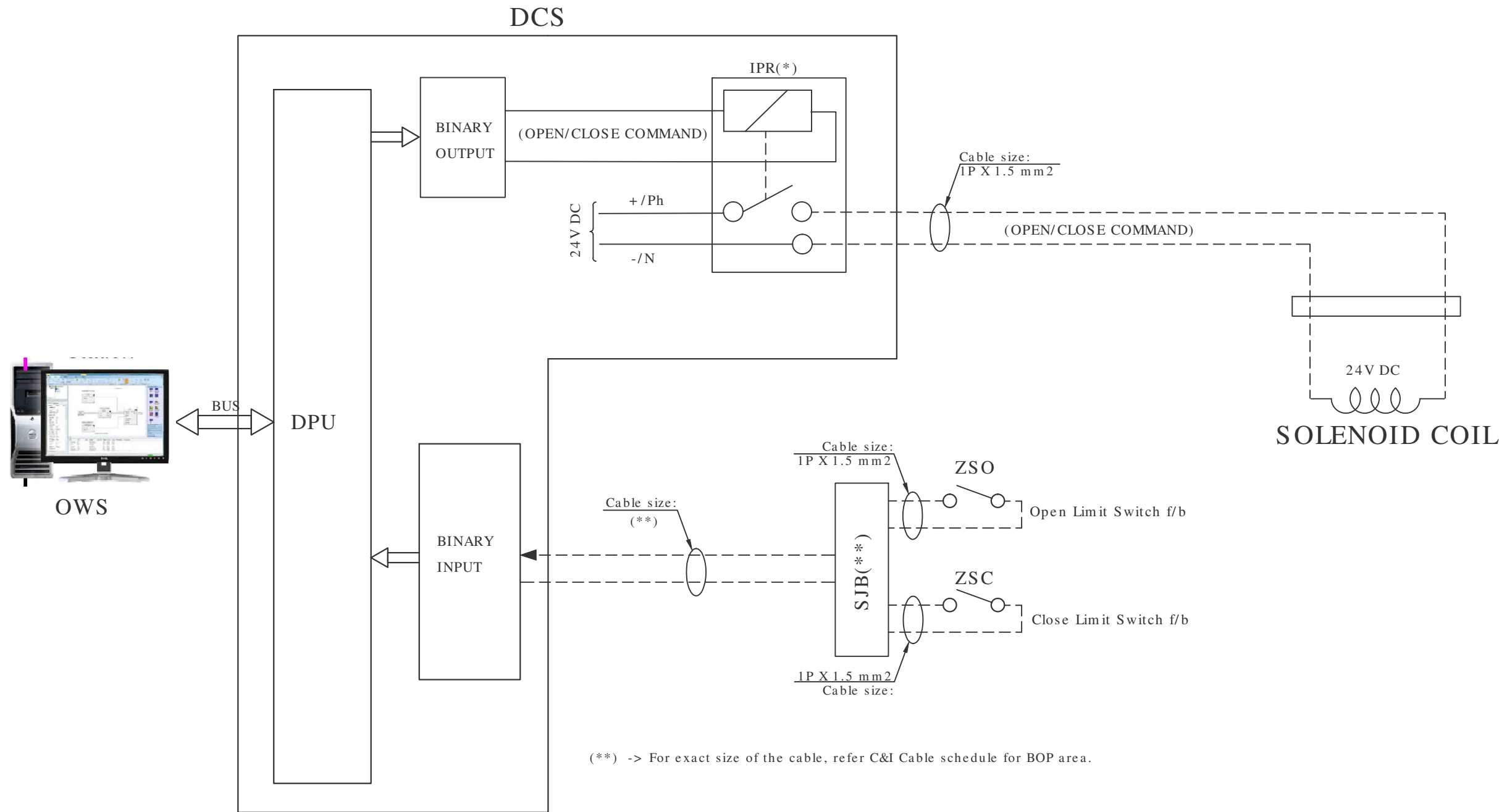
(*) -> Interrogation voltage for commands shall be 220V DC and same shall be powered from MCC.

(@) -> For connectivity of these systems, please refer latest revision of Plant control overview [Doc. No.: PY-SZ-2-M085-9301-01]

(**) -> For exact size of the cable, refer C&I Cable schedule for BOP area.

CONSULTANT: TATA TATA CONSULTING ENGINEERS LIMITED										TATA TATA STEEL LTD					
MUMBAI										JAMSHEDPUR					
भारत भारेल BHEL BHARAT HEAVY ELECTRICALS LTD., HYDERABAD						NAME	SIGN.	DATE	NO.OF VAR.	DEPT	40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT		CODE		
					DRN.	VINEET	-sd/-	04.06.16							
					CHD.	SUJATHA	-sd/-	06.06.16							
					APPD.	SUJATHA	-sd/-	06.06.16							
DEPT. PE&SD CODE 450	UNTOL. DIMS. GR. ø/M/P		SCALE NTS	WEIGHT (KG) -N.A.-	REF. TO ASSY. DRG. -N.A.-	ITEM NO. -N.A.-	NO.OF ITEMS -N.A.-	SUBJECT	DRIVE CONTROL PHILOSOPHY		CODE				
TITLE DRIVE CONTROL PHILOSOPHY															
CARD CODE	BHEL DRAWING NO. PY-SC-4-M085-9301-01				REV. 02	TATA DRG. NO.							REV		
	SHT. No 05		NO. OF SHT. 08												

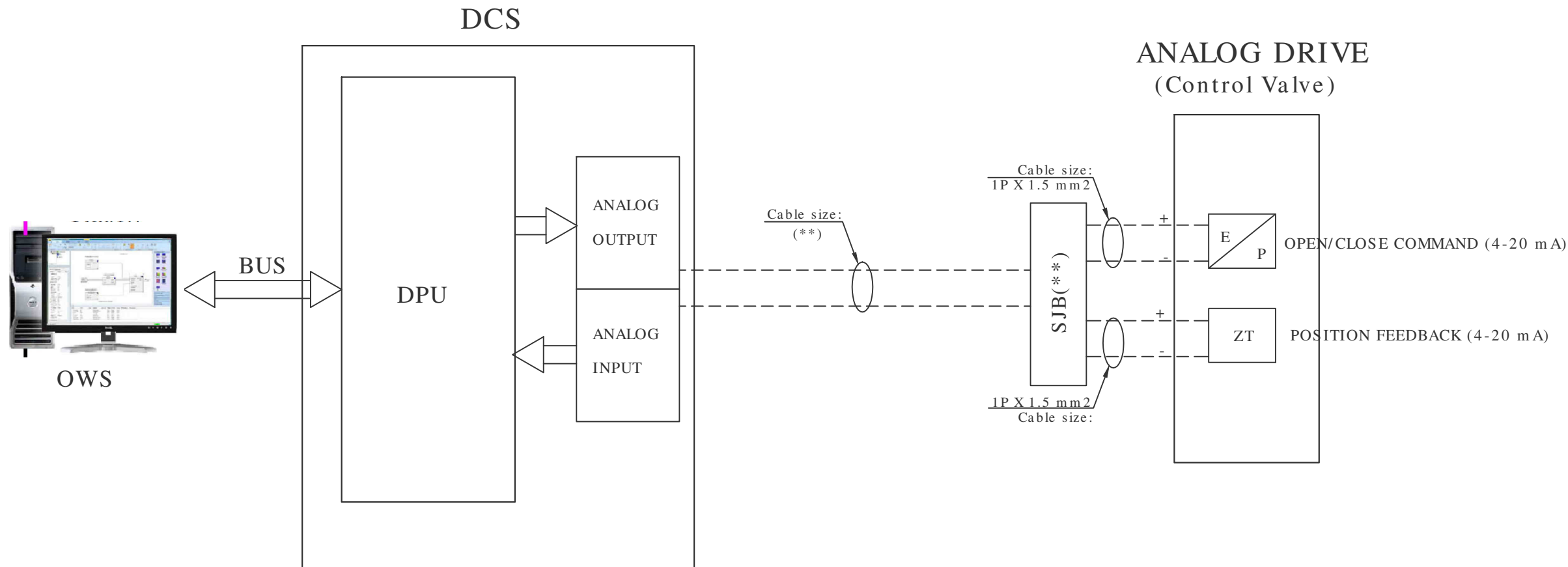
DCS Interface for Solenoid (24V DC) operated ON-OFF valve



(**) -> For exact size of the cable, refer C&I Cable schedule for BOP area.

CONSULTANT: TATA TATA CONSULTING ENGINEERS LIMITED MUMBAI										TATA TATA STEEL LTD JAMSHEDPUR				
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD					NAME	SIGN.	DATE	NO.OF VAR.	DEPT	40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT		CODE		
				DRN.	VINEET	-sd/-	04.06.16	N.A.						
				CHD.	SUJATHA	-sd/-	06.06.16							
				APPD.	SUJATHA	-sd/-	06.06.16							
DEPT. PE&SD CODE 450	UNTOL. DIMS. GR. ø/M/P		SCALE NTS	WEIGHT (KG) -N.A.-	REF. TO ASSY. DRG. -N.A.-	ITEM NO. -N.A.-	NO.OF ITEMS -N.A.-		SUBJECT	DRIVE CONTROL PHILOSOPHY		CODE		
TITLE DRIVE CONTROL PHILOSOPHY				CARD CODE	BHEL DRAWING NO. PY-SC-4-M085-9301-01			REV. 02	TATA DRG. NO.				REV	
					SHT. No 06		NO. OF SHT. 08						09	

DCS Interface for ANALOG DRIVE

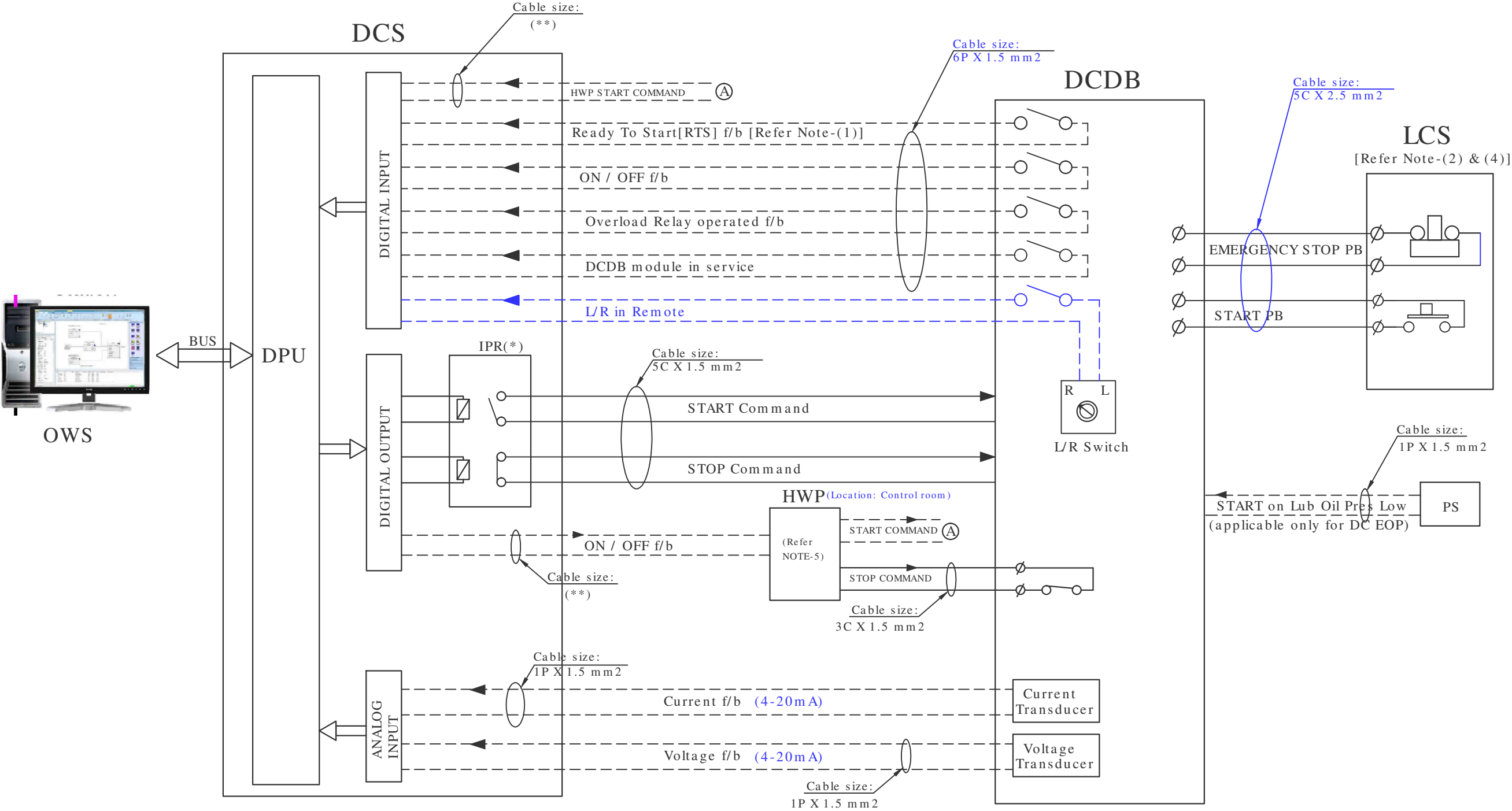


(**) -> For exact size of the cable, refer C&I Cable schedule for BOP area.

INVENTORY NO. SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

CONSULTANT:  TATA										TATA CONSULTING ENGINEERS LIMITED MUMBAI										 TATA										TATA STEEL LTD JAMSHEDPUR									
 BHARAT HEAVY ELECTRICALS LTD., HYDERABAD											NAME	SIGN.	DATE	NO.OF VAR.	DEPT	40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT										CODE													
										DRN.	VINEET	-sd/-	04.06.16	N.A.																									
										CHD.	SUJATHA	-sd/-	06.06.16																										
										APPD.	SUJATHA	-sd/-	06.06.16																										
DEPT. PE&SD CODE 450	UNTOL. DIMS. GR. ø/M/P		SCALE NTS	WEIGHT (KG) -N.A.-	REF. TO ASSY. DRG. -N.A.-	ITEM NO. -N.A.-	NO.OF ITEMS -N.A.-	SUBJECT	DRIVE CONTROL PHILOSOPHY										CODE																				
TITLE DRIVE CONTROL PHILOSOPHY					CARD CODE	BHEL DRAWING NO. PY-SC-4-M085-9301-01			REV. 02	TATA DRG. NO.										REV																			
						SHT. No 07		NO. OF SHT. 08												10																			

DCS Interface for DC DRIVE (DC operated)



(*) -> Interrogation voltage for commands shall be 220V DC and same shall be powered from MCC.

(**) -> For exact size of the cable, refer C&I Cable schedule for BOP area.

CONSULTANT: TATA TATA CONSULTING ENGINEERS LIMITED MUMBAI										TATA TATA STEEL LTD JAMSHEDPUR				
BHARAT HEAVY ELECTRICALS LTD., HYDERABAD						NAME	SIGN.	DATE	NO.OF VAR.	DEPT	40MW CDQ WASTE HEAT RECOVERY CO-GENERATION POWER PLANT		CODE	
					DRN.	VINEET	-sd/-	04.06.16	N.A.					
					CHD.	SUJATHA	-sd/-	06.06.16						
					APPD.	SUJATHA	-sd/-	06.06.16						
DEPT. PE&SD CODE 450	UNTOL. DIMS. GR. ø/M/P		SCALE NTS	WEIGHT (KG) -N.A.-	REF. TO ASSY. DRG. -N.A.-	ITEM NO. -N.A.-	NO.OF ITEMS -N.A.-		SUBJECT	DRIVE CONTROL PHILOSOPHY		CODE		
TITLE DRIVE CONTROL PHILOSOPHY					CARD CODE	BHEL DRAWING NO. PY-SC-4-M085-9301-01		REV. 02	TATA DRG. NO.				REV	
						SHT. No 08	NO. OF SHT. 08						06	