



NOTES:
 The panels will be built to relevant IEC specifications
 Unless otherwise stated and/or where applicable

Construction:
 1. The panels will be dust and vermin proof with gaskets of the doors installed on the panel and not on door. The compartmentalized construction is required with ventilable top back. The entire assembly must go through tank process and will be oven baked.
 2. Outdoor installation will be with IP55 enclosure
 3. Bus bars will be 12mm copper with current density of not more than 800A / Sq. inch.
 4. Bare frame of atleast 1" made out of steel sections is to be provided.
 5. Panel will have
 Top Entry Bottom Entry
 Floor Mounted Installation/Wall Mounted Installation
 Bus bar system supports will be CPRI or equal test laboratory approved
 7. All panel compartments shall have identification etched on Aluminum strip.
 8. All MCCB DB will have each MCCB identification
 9. Stands should be provided for the installation of switch board meeting to height of the face frame
 10. All VFDs shall have an active-front-end design
 11. All UPSs shall have an active-front-end design
 12. KVAR Requirement for each transformer is 400 KVAR. Size should be appropriate considering data centre application & to maintain 1.75 to 1.85 pf
Component:
 1. MCCB will be atleast 35 kA or as specified in SLD
 2. MCCB will be atleast 10 kA short circuit withstand of the curve to suit discrimination
 3. All protections will be coordinated
 4. The range of the instruments for each that the readings will show the mid-range of the instrument.
 5. The load manager will be installed with communication port and serial or similar graphic OS based software.
 6. All ACB will be draw out type with test relay provided for over-current, earth fault
 7. For DC set protection restricted earth fault protection is required. MCCB to have following:
 Short trip, load indicators, Electronics trip mechanism.
 8. All Panel Should Have Tuya Protection

Earthing:
 1. All doors will have flying earth.
 2. Copper earth bus is to be installed
 3. Where applicable UPS system, VS system and Raw power earth shall be separate. All the earth bus installed on suitable insulators

Designing and Tests:
 1. Shop drawings are required to be submitted for the review and approval
 2. Test certificates for all components and the panels routine tests are required to be provided in triplicate
 3. Panels required to be tested at site and works

- LEGENDS**
- ONAN 11KV/433V STEPDOWN TRANSFORMER
 - AIR COOLED K-20 400/400V ISOLATION TRANSFORMER
 - ELECTRICALLY OPERATED DRAWOUT (EDO) TYPE ACB WITH O/L & S/C RELEASE (LSIG)
 - ELECTRICALLY OPERATED DRAWOUT (EDO) TYPE ACB WITH O/L, S/C & E/F RELEASE (LSIG)
 - MANUALLY OPERATED DRAWOUT (MDO) TYPE ACB WITH O/L & S/C RELEASE (LSI)
 - MANUALLY OPERATED DRAWOUT (MDO) TP-N(100%) TYPE ACB WITH O/L, S/C & E/F RELEASE (LSIG)
 - MANUALLY OPERATED DRAWOUT (MDO) TYPE MCCB WITH O/L & S/C RELEASE (LSI)
 - MANUALLY OPERATED MICROPROCESSOR BASED FIXED TYPE MCCB WITH O/L & S/C RELEASE (LSIG)
 - MANUALLY OPERATED FIXED TYPE MCCB WITH O/L & S/C RELEASE (LSI)
 - MOE (MOTOR OPERATED) FIXED TYPE MCCB WITH O/L & S/C RELEASE (LSI)
 - MANUALLY OPERATED FIXED TYPE MCCB WITH O/L, S/C & E/F RELEASE (LSIG)
 - MOTOR PROTECTION CIRCUIT BREAKER (MPCB)
 - MINIATURE CIRCUIT BREAKER (MCB)
 - RESIDUAL CURRENT CIRCUIT BREAKER (RCCB)
 - LOAD BREAK SWITCH
 - CHANGEOVER SWITCH
 - CURRENT TRANSFORMER (CT) RESIN CAST
 - POTENTIAL TRANSFORMER (PT)
 - DIGITAL LOAD MONITOR - EM6436 INTEGRATED BASIC POWER & ENERGY PARAMETERS
 - MDC MAXIMUM DEMAND CONTROLLER - EM6400
 - KWH BASIC ENERGY METER - A,KW,KWH
 - LVM LINE VOLTAGE MONITOR & CONTROL FOR OVER, UNDER VOLTAGE, SINGLE PHASE & PHASE REVERSAL PROTECTION
 - ON-OFF-TRIP INDICATING LAMPS
 - R,Y,B (RED,YELLOW,BLUE) INDICATING LAMPS
 - TVSS TRANSIENT VOLTAGE SURGE SUPPRESSOR
 - AUTO MANUAL SELECTOR SWITCH
 - H ALARM - HOOTER / BUZZER
 - TFR TRANSFORMER
 - MSB MAIN SWITCH BOARD
 - MCC MOTOR CONTROL CENTRE
 - 12 ANNUNCIATION PANEL WITH HOOTER
 - TNC SWITCH WITH SPRING RETURN TO NEUTRAL AUTO / MANUAL SELECTOR SWITCH
 - ONAN 11KV/433V STEPDOWN TRANSFORMER WITH OLTC
 - AIR COOLED K-20 400/400V ISOLATION TRANSFORMER
 - UNINTERRUPTED POWER SUPPLY (UPS)
 - MOTORISED LOAD BREAK CHANGEOVER SWITCH (ATS)
 - ATS
- ABBREVIATIONS**
- LSIG L : OVER CURRENT WITH TIMER DELAY
 S : SHORT CIRCUIT CURRENT WITH TIMER DELAY
 I : CONTINUOUS SHORT CIRCUIT
 G : GROUND FAULT CURRENT WITH TIME DELAY

NATIONAL SUPERCOMPUTING MISSION <small>RESEARCH INFRASTRUCTURE APPLICATIONS</small>		CDAC <small>CENTER FOR DEVELOPMENT OF ADVANCED COMPUTING</small>		ISSUED FOR APPROVAL
TITLE	ELECTRICAL SINGLE LINE DIAGRAM -SLD			
OWNER	INDIAN INSTITUTE OF TECHNOLOGY HYDERABAD			
CONSULTANT			DRAWN	
DRAWING NO.	---		CKD	
DATE			APPROVED	
			SCALE	NTS
	REV	DESCRIPTION	DATE	REV
				RO