

SUB-SECTION – B-17

ELECTRICAL ACTUATORS WITH
INTEGRAL STARTERS

EPC PACKAGE FOR
PATRATU SUPER THERMAL POWER STATION EXPANSION
PHASE – I (3X 800MW)

TECHNICAL SPECIFICATION
SECTION – VI, PART-B
BID DOC NO. : CS-9585-001-2

CLAUSE NO.	TECHNICAL REQUIREMENTS			
1.00.00	CODES AND STANDARDS:			
1.01.00	All standards, specifications and codes of practice referred to herein shall be the latest editions including all applicable official amendments and revisions. In case of conflict between this specification and codes, standards, etc, the former shall prevail.			
2.00.00	ELECTRIC ACTUATORS WITH INTEGRAL STARTERS			
2.01.00	TYPE:			
2.01.01	The actuators shall have integral starters along with over load relays with built in SPP (Single Phasing Preventer). Alternatively Smart non intrusive actuators are also acceptable. A 415, 3 phase 3 wire power supply shall be given to the actuator from switch board as applicable through a switch fuse unit. Control voltage of the motor starter shall be 110 V AC / 24 V DC, derived suitably from 415V power supply.			
2.01.02	In case supplier's standard control voltage for Open/Close contactors is 110V AC, the same is acceptable if suitable Opto Isolation circuit is provided with coupling relays for 24 V DC command inputs.			
2.02.00	INTERFACES:			
2.02.01	Open/Close command termination logic with position & torque Limit Switches, positioner circuit shall be suitably built in the PCB inside the actuator. (a) For Binary Drive (both ON-OFF and INCHING type) :- Open/Close command & status thereof and disturbance monitoring signal (common contact for Overload, Thermostat, control supply failure, L/R selector switch at local & other protections operated) shall be provided. Interface with the control system shall be through hardware signal only. Inter posing relays provided (with coil burden 2.5 VA) in the actuator shall be energized to initiate opening and closing, by 24V DC signal from the external control system. (b) For Modulating Drive:- the command to actuator shall be in form of 4-20mA signal. The necessary positioning circuit and motor protection shall be provided (c) Open/close command termination logic shall be suitably built inside actuator.			
2.03.00	RATING : (a) Supply Voltage & frequency: 415V +/- 10%, 3 Phase, 3 Wire 50HZ +/-5%. (b) Sizing:- Open/Close at rated speed against designed differential pressure at 90% of rated voltage. For isolating service:- Three successive open-close operations or 15 mins, whichever is higher. For regulating service 150 starts per hour or required cycles, whichever is higher.			
2.04.00	CONSTRUCTION: (a) Enclosure:			
EPC PACKAGE FOR PATRATU SUPER THERMAL POWER STATION EXPANSION PHASE -I (3X 800MW)		TECHNICAL SPECIFICATIONS SECTION-VI, PART-B BID DOC NO : CS-9585-001-2	SUB-SECTION B-17 ELECTRIC ACTUATORS WITH INTEGRAL STARTERS	PAGE 1 OF 5

CLAUSE NO.	TECHNICAL REQUIREMENTS	एनटीपीसी NTPC		
2.05.00	Totally enclosed weatherproof minimum IP-55 degree of protection. (b) Gear Train : Metal (Fibre gears are not acceptable)) self-locking to prevent drift under torque switch (where ever applicable) spring pressure when motor is de-energized. (c) Manual Wheel: Shall disengage automatically during motor operation. MOTOR : (a) Type : Squirrel cage induction motor suitable for Direct On Line (DOL)starting. (b) Enclosure: Totally enclosed, self ventilated IP-55 degree of protection. (c) Insulation Class B or better. Temperature rise 70 Deg C. over 50 Deg C ambient (d) Bearings: Double shielded, grease lubricated antifriction. (e) Earth Terminals: Two (f) Protection: Single Phasing Protection, Over heating protection through Thermostat (as applicable) and wrong phase sequence protection shall be provided over and above other protection features standard to bidder's design Suitable means shall be provided to diagnose the type of fault locally.			
2.06.00	POSITION/TORQUE SWITCHES:			
2.06.01	Four nos. (2 each in open and close position) position limit switches/contacts and two nos. (one in open and other in close direction) torque switches/contacts each having two nos. NO and two nos. NC contacts shall be provided. Torque switches/contacts shall be bypassed in both the end positions with the other end Limit switches/contacts. Limit switches/contacts Limit switches shall be Silver plated with high conductivity and non –corrosive type. Contact rating shall be sufficient to meet the requirement of Control System subject to a minimum of 60 V, 6 VA rating. Protection class shall be IP-55.			
EPC PACKAGE FOR PATRATU SUPER THERMAL POWER STATION EXPANSION PHASE –I (3X 800MW)		TECHNICAL SPECIFICATIONS SECTION-VI, PART-B BID DOC NO : CS-9584-001-2		SUB-SECTION B-17 ELECTRIC ACTUATORS WITH INTEGRAL STARTERS
				PAGE 2 OF 5

CLAUSE NO.	TECHNICAL REQUIREMENTS			
	Limit switch/contacts and disturbance signals shall be available to DCS even when the power supply to the actuators is not available.			
2.07.00	LOCAL OPERATION:			
2.07.01	It shall be possible to operate the actuator locally also. Lockable local/remote selection shall be provided on the actuator.			
2.08.00	POSITION INDICATOR :			
2.08.01	To be provided for 0 to 100% travel.			
2.09.00	POSITION TRANSMITTER (FOR MODULATING/INCHING TYPE) :			
2.09.01	As required. Suitable for stabilized 4-20 mA signal, 2 wire inductive type, External 24 volts DC operated.			
2.10.00	WIRING :			
2.10.01	Suitable voltage grade copper wire.			
2.11.00	TERMINAL BOX :			
	(i) 9 pin plug and socket (1 no. per actuator to suit 4 pair 0.5 sq.mm. copper overall shielded (16 mm OD), instrumentation cable) suitably mounted in the starter box itself to terminate open/close command and status feedback signals with external control systems. (ii) Additional one number 9 pin plug and socket (to suit 4 pair 0.5 sq.mm copper (16 mm OD) individual and overall shielded instrumentation cable) suitably mounted in the starter box itself for actuators with 4-20 mA position transmitters. (iii) Necessary glands for power cables shall be provided.			
2.12.00	TERMINAL BLOCK :			
2.12.01	650V grade. For power cables.			
2.13.00	SPACE HEATER :			
2.13.01	Space heater of suitable rating. The supply shall be derived from the main power supply available in the actuator.			
2.14.00	TYPICAL WIRING DIAGRAM :			
2.14.01	Refer Tender Drawing No. 0000-999-POI-A-063.			
EPC PACKAGE FOR PATRATU SUPER THERMAL POWER STATION EXPANSION PHASE -I (3X 800MW)		TECHNICAL SPECIFICATIONS SECTION-VI, PART-B BID DOC NO : CS-9585-001-2	SUB-SECTION B-17 ELECTRIC ACTUATORS WITH INTEGRAL STARTERS	PAGE 3 OF 5