

**Break-up of Mandatory Spares
(Applicable for the line items whose *Unit* is *LS/Lot* in BPS)**

Sl. No.	Description	Unit	Qty	
			Hissar	Ballabgarh
1 SPARES-RELAY & PROT PANEL (AUTOMATION) – 400 & 220 kV				
1.1	IEC 61850 Sampled Values based Numerical distance relay (Main-I) with inbuilt DR and fault locator, OV prot., software	No.	2	2
1.2	IEC 61850 Sampled Values based Numerical distance relay (Main-II) with inbuilt DR and fault locator, OV prot., software	No.	2	2
1.3	IEC 61850 Sampled Values based Numerical Line differential relay (Main-I) with inbuilt Distance protection, DR and fault locator, OV prot., software	No.	0	1
1.4	Numerical distance relay (Main-I) with inbuilt Distance protection, DR and fault locator, OV prot., software	No.		1(remote end)
1.6	IEC 61850 Sampled Values based Transformer Main – I Protection System (Note 1)	Set	1	1
1.7	IEC 61850 Sampled Values based Reactor Main – I Protection System (Note 2)	Set	1	1
1.8	IEC 61850 Sampled Values based LBB Protection relay	No.	1	1
1.9	IEC 61850 Sampled Values based centralized Bus bar protection relay	No.	1	1
1.10	IEC 61850 Sampled Values based Numerical distance relay (Main-I) with inbuilt DR and fault locator, OV prot., software for 220 kV	No.	1	0
1.11	IEC 61850 Sampled Values based Numerical distance relay (Main-II) with inbuilt DR and fault locator, OV prot., software for 220 kV	No.	1	0
1.12	IEC 61850 Sampled Values based LBB Protection relay for 220 kV	No.	1	0
1.13	IEC 61850 Sampled Values based centralized Bus bar protection relay for 220 kV	No.	1	0
2 SPARES-SUBSTATION AUTOMATION SYSTEM				
2.1	Bay control unit (IED)	SET	2	2
2.2	Ethernet Switch of Each Type	SET	1	1
2.3	Switchgear controller (SGC) cum Merging unit of each type	SET	3	3
2.4	Red Box of Each type (If applicable)	SET	2	2
2.5	Digital interface for Transformer cum Merging Unit	SET	1	1
2.6	Digital interface for Reactor cum Merging Unit	SET	1	1
2.7	Spare FO patch cords (set of 10 of each colour of longest length used in the project)	SET	1	1

Note 1: Under this item, one number of each protection IED included in Transformer Main 1 protection system shall be supplied as spare.

Note 2: Under this item, one number of each protection IED included in Reactor Main 1 protection system shall be supplied as spare.

Note 3: Above items shall comply with specification/amendments of the subject package.