



SEB Accepted Relay List

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SEB Accepted Relay List

The items shown in this SEB Accepted Relay List (ARL) includes protection relays, disturbance recorders and ancillary equipment used for transmission and distribution substation. The list stipulated in this document supersedes all preceding issues including revisions.

Any supplier/manufacturer who desire to have their items placed on the list, or any user believing an existing item should be removed from the list, or any communication calling attention to an error or omission in the list, such as an obsolete item, etc, should address to:

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Every effort has been made to ensure the accuracy of this document. However, in case of any discrepancies, records of Transmission Protection, Control & Instrumentation Division are the authoritative source.

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1 Protection Relays

1.1 Current Differential Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Current Differential	ABB Power Grids / Sweden	RED670	RED670*2.2-F00X00-A00000000000001000-B41100000100000000110000000-C0100010010000000001000000-D11000010-E11000-F0-S0-G010-H00000000000-K01010110-L0000-M0010000-P0000000000000000-B1X0-CF-CB-B-A6X0-C ^① -PXXXXXXXXAAXXY ① - BIM / BOM	2.2.5.11 (2.2.2.1)	500kV	
			1MRK002810-AG (Short Ordering Code for RED670) RED670*2.2-F00X00-A00000000000001000-B41100000100000000110000000-C0100010010000000001000000-D11000010-E11000-F0-S0-G010-H00000000000-K01010110-L0000-M0010000-P0000000000000000-B1X0-CF-CB-B-A6X0-CD1AAXX-PXXXXXXXXAAXXY		275kV and 132kV	Ordering code for RED670 V2.2 if the remote end is using RED670 V1.1 :- RED670*2.2-F00X00-A00000000010000100-B41100000100000000110000000-C0100010010000000001000000-D11000010-E11000-F0-S0-G010-H00000000000-K01010110-L0000-M0010000-P0000000000000000-B1X0-CF-CB-B-A6X0-CD1AAXX-PXXXXXXXXAAXXY

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Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
	SIEMENS / Berlin, Germany	7SD522	7SD5221-4PB99-9HK5+ M1A+ N2A+ LOR	4.72	500kV, 275kV and 132kV	
	GE / Stafford, UK	P545	P545810A0S0760M	76 (Firmware) M (Hardware)	500kV, 275kV and 132kV	<ul style="list-style-type: none"> Mandatory Accessories & Software:- (a) MiCOM S1 Agile Software Communication Converter 2Mbps (P591601A0M0200B)
	Schneider Electric / Wuxi, Jiang Su, China	P545	P54531EA3M0H99M-SEB (without IEC61850) P54531QA6M0H99M-SEB (with IEC61850)	H9	500kV, 275kV and 132kV	<ul style="list-style-type: none"> Mandatory Accessories & Software:- (a) Easergy Studio Communication Converter 2Mbps (P-2M-L3A11A011A)
	SIEMENS / Berlin, Germany	7SD 610	7SD6101-0BB09-0BJ0+M20	4.74	33kV and below	P-Set 4.73
	Schneider Electric / Wuxi, Jiang Su, China	P521	P521B00Z112DG0-SEB	DG (Software Version)	33kV and below	

1.2 Distance Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Distance Protection	SIEMENS / Berlin, Germany	7SA 612	7SA6121-4NB99+5GB4+ M1A+LOR	4.74	500kV, 275kV and 132kV	
	Schneider Electric / Wuxi, Jiang Su, China	P443	P44331E03M0 H99M-SEB (if more binary inputs are required and without IEC61850)	H9	500kV	<ul style="list-style-type: none"> Mandatory Accessories & Software:- (a) Easergy Studio (b) Communication Converter 2Mbps (P-2M-L-3A11A011A)
			P44331QF6M0H99M-SEB (with IEC-61850)		275kV and 132kV	
	GE / Stafford, UK	Agile P443	P443810F0S0760M	76 (Firmware) M (Hardware)	500kV, 275kV and 132kV	<ul style="list-style-type: none"> Mandatory Accessories & Software:- (a) Micom S1 Agile Software Version 1.20 and above (b) Communication Converter G.703 2Mbps (P591602A0M0200B)

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Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
	ABB Power Grids / Sweden	REL670	REL670*2.2-F00X00-A0000000000000000000-B00000000000001000110000000-C0100010010000000001000000-D11000010-E11000-F0-S0-G010-H00000000000-K01010110-L0000-M00100-P000000000000000000-B1X0-CF-CB-B-A6X0-C ^① --PXXXXXXXXAAXXX	2.2.5.11 (2.2.2.1)	500kV	
			1MRK002812-AG (Short Ordering Code for REL670)		REL670*2.2-F00X00-A0000000000000000000-B00000000000001000110000000-C0100010010000000001000000-D11000010-E11000-F0-S0-G010-H00000000000-K01010110-L0000-M00100-P000000000000000000-B1X0-CF-CB-B-A6X0-CD1AAXX-PXXXXXXXXAAXXX	275kV and 132kV

1.3 Transformer Bias Differential Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks	
Transformer Bias Differential Protection	GE / Stafford, UK	P643	P643920F0S0060M	06 (Firmware) M (Hardware)	500kV, 275kV and 132kV	<ul style="list-style-type: none"> 3 Windings 	
	SIEMENS / Berlin, Germany	7UT613	7UT6131-4EB91-1AB0+LOR	4.65	500kV	<ul style="list-style-type: none"> B= for Over flux 3 Windings 	
			7UT6131-4EB91-1AA0+LOR		275kV and 132kV	<ul style="list-style-type: none"> 3 Windings 	
	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	7SR24	7SR2422-2NA11-0BA0	R8e-7e	275kV and below	<ul style="list-style-type: none"> 2 Windings 	
	Schneider Electric / Wuxi, Jiang Su, China	P633	P6338B9910H0314 427671701921-SEB (if more binary inputs/outputs are required and without IEC61850)		671-701	500kV	<ul style="list-style-type: none"> 3 Windings
			P6338B9910H0314 427671701971-SEB (with IEC61850)			275kV and 132kV	<ul style="list-style-type: none"> 3 Windings
			P6338B9910H0314427671701921-SEB				

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Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
			RET670*2.2-F00X00- A0000100000000000000- B00000000000000000000000000000000- C010001001000000000010000000- D11010010-E00000-F0-S0-G000- H000000000000-K00000000-L0000- M0010000-P00000000000000000000- B1X0- CF-CB-B-A3X0-CD1AXXX- PXXXXXXXXXXXXXX			<ul style="list-style-type: none"> 3 Windings
	SIEMENS/ Berlin, Germany	7UT613	7UT6131-◊EB02-1AA0	4.65	33kV and below	
	Schneider Electric / Wuxi, Jiang Su, China	P631	P6314B9000◊0315424671701921- SEB	315424671701 (Software Version)	33kV and below	
	ABB/ Finland	RET 615	RET615 HBT DBABA NBA1 ANN ◊1G	5.0 FP1 (5.1.6)	33kV and below	

1.4 Restricted Earth Fault Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Restricted Earth Fault Protection	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	7SR1101	7SR1101-3A-2CA0 *Pos 11 & 12 for IEC 61850	R4K-3d	500kV and below	
	Schneider Electric / Wuxi, Jiang Su, China	P721	P721000Z112CB0-SEB	12.B	500kV and below	
	GE / Stafford, UK	P14N-B	P14NB11A1B062BA (No IEC61850 Option) P14NB16A6C062BA (IEC61850 Option)	62	500kV and below	
	ABB/ Finland	REB611	REB611HBA ABA 1NN 1G	2.0 (2.0.1)	33kV and below	

1.5 Busbar Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
High Impedance Busbar Protection	Schneider Electric / Wuxi, Jiang Su, China	P723	723000Z112CB0-SEB	12.B	500kV and below	
	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	7SR23	7SR2302-1NA77-0CA0D 7SR2300 = If more BI/BO is required for 500KV installation	R8e-1c	500kV, 275kV and 132kV	
	ABB Power Grids / Sweden	REB650	REB6501.3-A03X00-X00-B1X0-D-H-SA-E-SA1B1-A ① -F	1.3.5.1 (1.3.0.4)	500kV	
			REB6501.3-A03X00-X00-B1X0-D-H-SA-E-SA1B1-AX-F		275kV and 132kV	
	GE /Stafford, UK	P14N-B	P14NB11A1B062BA (No IEC61850 Option) P14NB16A6C062BA (IEC61850 Option)	62	500kV and below	
	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	7SR23	7SR2302-1NA12-0CA0D	R8e-1c	33kV and below	

1.6 Overcurrent and Earth Fault Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Overcurrent and Earth Fault Protection	Schneider Electric / Wuxi, Jiang Su, China	P123	P123-B00- Z112-EB-0-SEB	<i>EB (Software Version)</i>	500kV and below	
	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	7SR1103	7SR1103-10A00-2CA0 *Pos 11 & 12 for IEC 61850	R4K-3d	500kV and below	
	GE / Stafford, UK	P14N	P14NB10A000530A	53	500kV and below	
	SEL / USA	751A	For 110Vdc, 1A model: 751A11D1D0X0X810610 For 110Vdc, 5A model: 751A11D1D0X0X850610	R419	500kV, 275kV and 132kV	
	SIEMENS/ Berlin, Germany	7SJ612	7SJ6121-4EB91-1FA0+LOR	4.93	500kV, 275kV and 132kV	
	ABB / Finland	REF611	REF611 HBB ABA 1NA 1G	2.0 (2.0.1)	275kV and below	

1.7 Directional Overcurrent and Earth Fault Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Directional Overcurrent and Earth Fault Protection	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	7SR1206	7SR1206-2A-2CA0 *Pos 11 & 12 for IEC 61850	R4K-3d	500kV and below	
	Schneider Electric / Wuxi, Jiang Su, China	P127	P127-BA0- Z112-FE-0-SEB	<i>FE (Software Version)</i>	500kV and below	
	GE / Stafford, UK	P14D	P14DB1A-C0530A	53	500kV and below	
	SIEMENS/ Berlin, Germany	7SJ622	7SJ6221-4EB91-1FC0+LOR	4.93	500kV, 275kV and 132kV	
	ABB / Finland	REF 615	REF615 HBF FAEAG NBA1 ANA-1G	5.0 FP1 (5.1.6)	275kV and below	

1.8 Transformer Standby Earth Fault Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Transformer Standby Earth Fault protection	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India)	7SR1101	7SR1101-10A00-2CA0 *Pos 11 & 12 for IEC 61850	R4K-3d	500kV and below	
	GE / Stafford, UK	P14N	P14NB10A000530A	53	500kV and below	
	Schneider Electric / Wuxi, Jiang Su, China	P122	P122-B00- Z112-EB-0-SEB	<i>EB (Software Version)</i>	33kV and below	

1.9 Sensitive Earth Fault Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Sensitive Earth Fault Protection	SIEMENS / Berlin, Germany	7SJ612	7SJ6122-0EB92-1FB0	4.93	33kV and below	
	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India)	7SR1101	7SR1101-30A12-2CA0	R4K-3d	33kV and below	
	Schneider Electric / China	P122	P122-C00-Z112-EC-0-SEB	EC (Software Version)	33kV and below	

1.10 Directional Sensitive Earth Fault Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Directional Sensitive Earth Fault Protection	Schneider Electric / China	P127	P127CA0Z112FE0-SEB	15.E	33kV and below	

1.11 Circuit Breaker Fail Protection Relay

Function	Manufacturer/ Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Circuit Breaker Failure Protection	SEL /USA	751A	For 110Vdc, 1A model: 751A11D1D0X0X810610 For 110Vdc, 5A model: 751A11D1D0X0X850610	R419	500kV and below	
	Schneider Electric / Wuxi, Jiang Su, China	P821	P821B00Z112AE0-SEB	10.E	500kV and below	
	SIEMENS / Berlin, Germany	7VK611	7VK6111-4AB91-4YC0+LOR	4.71	500kV, 275kV and 132kV	
	ABB Power Grids / Sweden	REQ650	REQ650*1.3-A11X00-X00-B1X0-D-①-S②-E-SA3-AA③-F	1.3.5.1 (Firmware) 1.3.0.4 (Product Version)	500kV	
			REQ650*1.3-A11X00-X00-B1X0-D-①-S②-E-SA3-AAXX-F		275kV and 132kV	
	GE /Stafford, UK	P841	P84191◇A◇S081AM	81	500kV, 275kV and 132kV	
	SIEMENS / Berlin, Germany or Goa, India	7SR1103	7SR1103-1◇A12-2CA0	R4K-3d	33kV and below	

1.12 Over/Under Frequency Protection Relay

Function	Manufacturer/ Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Over / Under Frequency	SEL /USA	751A	For 110Vdc model: 751A11D1D0X73810610	R419	500kV and below	
	Schneider Electric / China	P3U30	P3U30-6AAA2BBBM (without IEC61850) P3U30-6AAA2BCBM (with IEC 61850)	30.108	500kV and below	
	SIEMENS / Berlin, Germany or Goa, India	7RW	7RW8020-5EB96-1DA0+LOR	4.62	500kV, 275kV and 132kV	
		7RW	7RW8020-5EB00-1DA0	4.62	33kV and below	

1.13 Over/Under Voltage Protection Relay

Function	Manufacturer /Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Over / Under Voltage	SEL /USA	751A	For 110Vdc model: 751A11D1D0X73810610	R419	500kV and below	
	SIEMENS (REYROLLE) / Goa, India	7SR158	7SR1587 – 5HA12-2DA0/BB	2436H80011R4e-2a	500kV and below	
	Schneider Electric / China	P3U30	P3U30-6AAA2BBBM (without IEC61850) P3U30-6AAA2BCBM (with IEC 61850)	30.108	500kV and below	
	SIEMENS / Berlin, Germany or Goa, India	7RW	7RW8020-5EB96-1DA0+LOR	4.62	500kV, 132kV and 132kV	

1.14 Shunt Reactor High Impedance Circulating Protection Relay

Function	Manufacturer/ Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Shunt Reactor High Impedance Circulating Protection	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	7SR23	7SR2302-1NA77-0CA0D (Transmission) 7SR2302-1NA12-0CA0D (Distribution) 7SR2300 = If more BI/BO is required for 500KV installation	R8e-1c	500kV and below	
	Schneider Electric / China	P723	P723000Z112CB0-SEB	12.B	500kV and below	
	GE / Stafford, UK	P14N-B	P14NB11A1B062BA (No IEC61850 Option) P14NB16A6C062BA (IEC61850 Option)	62	500kV and below	

1.15 Autoreclose + Synchro-Check Relay

Function	Manufacturer/ Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Autoreclose + Synchro- check	SIEMENS/ Berlin, Germany	7VK	7VK6111-4AB91-4YN0+LOR	4.71	500kV, 275kV and 132kV	
	Schneider Electric / Wuxi, Jiang Su, China	P841	P841311A3M0G79M-SEB (without IEC61850) P84131QA6M0G79M-SEB (with IEC61850)	G7	500kV, 275kV and 132kV	
	ABB Power Grids / Sweden	REQ650	REQ650*1.3-A11X00-X00-B1X0- D- ①-S ②-E-SA3-AA ③-F ① - Mounting details ② - PSM ③ - BIM /BOM	1.3.5.1 (1.3.0.4)	500kV	
			REQ650*1.3-A11X00-X00-B1X0- D- ①-S ②-E-SA3-AAXX-F ① - Mounting details ② - PSM		275kV and 132kV	
	GE / Stafford, UK	P841	P84191◇A◇S081AM	81	500kV, 275kV and 132kV	

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Function	Manufacturer/ Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
	Schneider Electric / Wuxi, Jiang Su, China	P123	P123-B00- Z112-EB-0-SEB	<i>EB (Software Version)</i>	33kV and below	
	SEL /USA	751A	751A6000000X00800000	R419	33kV and below	
	SIEMENS / Berlin, Germany or Goa, India)	7SR1103	7SR1103-10A12-2DA0	R4K-3d	33kV and below	

1.16 Synchro-Check Relay

Function	Manufacturer/ Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Synchronising Check	Schneider Electric / China	P3U30	P3U30-6AAA2BBBM (without IEC61850)	30.108	500kV and below	
	SIEMENS/ Berlin, Germany	7VK	7VK6101-4AB91-4YNO+LOR	4.71	500kV, 275kV and 132kV	
	Schneider Electric / Wuxi, Jiang Su, China	P841	P841311A3M0G79M-SEB (without IEC61850) P84131QA6M0G79M-SEB (with IEC61850)	G7	500kV, 275kV and 132kV	
	SIEMENS / Berlin, Germany or Goa, India	7RW	7RW8020-5EB96-1DC0+LOR	4.62	500kV, 275kV and 132kV	
	SIEMENS (REYROLLE) / Goa, India	7SR157	7SR1578-5HA12-2CAO/BB	2436H80010R4e-2a	275kV and below	
	SIEMENS / Berlin, Germany or Goa, India	7VK	7VK6101-0AB02-4YNO	4.71	33kV and below	
	SIEMENS / Berlin, Germany or Goa, India	7RW	7RW8020-5EB00-1DC0	4.62	33kV and below	
	SEL /USA	751A	751A500000X72800000	R419	33kV and below	

1.17 Capacitor Bank Protection Relay

Function	Manufacturer/ Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Capbank Overall Differential Protection	ABB Power Grids / Sweden	RET670	RET670*1.2-A30X00-D03-B1X0- AF-KB-B-A3-①-XXX-XD	1.2	500kV	
			① - BIM / BOM 1MRK 004 816-AC (Short Ordering Code for Capbank RET670)		275kV and 132kV	
	SIEMENS / Berlin, Germany	7UT613	RET670*1.2-A30X00-D03-B1X0- AF-KB-B-A3-DIAA-XXX-XD 7UT6131-4EB91-1AA0+LOR	4.65	500kV, 275kV and 132kV	
	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	7SR23	7SR2303-10A00-0CA0	R8e-1c	500kV, 275kV and 132kV	
1. Capacitor unbalance 2. Thermal overload protection 3. Reactor thermal overload protection 4. Resistor thermal overload 5. Resistor open circuit protection	SIEMENS (REYROLLE) / Goa, India	7SR191	7SR1916-1HA12-2CAO (no IEC 61850) 7SR1916-1HA77-2CA0 (with IEC 61850)	R4e-2a	500kV, 275kV and 132kV	<ul style="list-style-type: none"> Function: a) Capacitor Bank Unbalance Protection

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Function	Manufacturer/ Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
	SIEMENS (REYROLLE) / Goa, India	7SR1206	7SR1206-2A00-2CA0 *Pos No 11 & 12 option for IEC 61850	R4K-3d	500kV, 275kV and 132kV	<ul style="list-style-type: none"> Function: <ol style="list-style-type: none"> Reactor Thermal Overload Protection
	SIEMENS (REYROLLE) / Goa, India	7SR1103	7SR1103-1A00-2CA0 *Pos No 11 & 12 option for IEC 61850	R4K-3d	500kV, 275kV, and 132kV	<ul style="list-style-type: none"> Function: <ol style="list-style-type: none"> Resistor Thermal Overload Protection Resistor Open Circuit Protection
1. Capacitor unbalance/ thermal overload protection 2. Reactor thermal overload protection 3. Resistor thermal overload /open circuit protection	TRENCH /Austria	CPR 04	CPR4-00-110	4v81 (Software Version: 5v1)	275kV and 132kV	<ul style="list-style-type: none"> Function: <ol style="list-style-type: none"> Capacitor Bank Unbalance Protection Capacitor Bank Thermal Overload Protection Reactor Thermal Overload Protection Resistor Thermal Overload Protection Resistor Open Circuit Protection
	Schneider Electric / China	P3U30	P3U30-6AAA2BBBM (without IEC61850)	30.108	500kV and below	<ul style="list-style-type: none"> Function: <ol style="list-style-type: none"> Capacitor Bank Unbalance Protection Capacitor Bank Thermal Overload Protection

1.18 Stub Protection Relay

Function	Manufacturer/ Country	Relay Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Stub Protection	GE / Stafford, UK	P14N	P14NB10A000530A	53	500kV and 275kV	
	Schneider Electric / Wuxi, Jiang Su, China	P723	P723000Z112CB0-SEB	12.B	500kV and 275kV	
	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	7SR23	7SR2302-1NA77-0CA0D 7SR2300 = If more BI/BO is required for 500KV installation	R8e-1c	500kV and 275kV	
	ABB / Sweden	REB650	REB6501.3-A03X00-X00-B1X0- D-H-SA-E-SA1B1-A ^① -F ^① - BIM /BOM	1.3.5.1 (1.3.0.4)	500kV and 275kV	

2 Disturbance Recorder

Function	Manufacturer/ Country	Model	Ordering Code	Firmware Version	Voltage Limit	Remarks
Disturbance Recorder	QUALITROL / Northern Ireland	BEN 6000	BEN 6000	2.5.25	500kV and below	
	SIEMENS/Berlin, Germany	7KE85	7KE85-JAAA-AA0-0AAAA0- AA8111-13113A-AAA000- 000AC1-CB1BA1-CB1CB1- CB1CB1-BC1CG0- 000	7.50	500kV and below	<ul style="list-style-type: none"> Mandatory Accessories & Software: - (a) DIGSI 5 software premium (b) SICAM PQ Analyzer (PQA) software (c) SICAM PQS/ PAS (Data Concentrator) (d) GPS Clock (e) Ethernet Switch
	NR Electric / China	PCS-996	PCS-996RC-R4.08 PCS-996RA-4.08	4.08 (CRC: B703A1A0)	500kV, 275kV and 132kV	<ul style="list-style-type: none"> Mandatory Accessories & Software: - (a) PCS-PC5 Tools Software (b) DFR Manager Software (c) DFR Helper (d) GPS Clock NR PCS-9785

3 Ancillary Equipment

3.1 Trip Circuit Supervision Relay

Function	Manufacturer/ Country	Model	Ordering Code	Voltage Limit	Remarks
Trip Circuit Supervision	GE / Stafford, UK	MVAX31	MVAX31S1DE0754A	500kV and below	
	SIEMENS / Europe	7PA3032	7PA3032-1AA00-1	500kV and below	(a) Single phase
	Schneider Electric / Spain	REL913	REL91323	500kV and below	
	RMS / Australia	ALPHA	XR5- 00 -1/4/6 0 (ALPHA XR Series)	500kV and below	
	ABB / Sweden	SPER IBI	-	33kV and below	

3.2 Lockout Relay

Function	Manufacturer/ Country	Model	Ordering Code	Voltage Limit	Remarks	
Lockout	GE / Stafford, UK	MVAJ105	MVAJ105RA0802B	500kV and below	(a) Voltage rating: 110/125V	
	SIEMENS / Europe	7PA2231	7PA2001-1	500kV and below		
	RMS/ Australia	ALPHA/ DELTA/ 6RJ	TR 5/12 - 00 - 1/2/3/4 0	(ALPHA TR Series)	500kV and below	
			AR 5/12 - 00 - 1/2/3/4 0	(ALPHA AR Series- 1 element)		
			AR25 - 00 - 1/2/3/4 0	(ALPHA AR Series- 2 element)		
			TRD-400	(DELTA TRD Series)		
			6RJ25-20-00	(6RJ Series)		
	Schneider Electric / Spain	REL912	REL91263	(4 changeover contacts)	500kV and below	
REL91283			(8 changeover contacts)			

3.3 Tripping Relay

Function	Manufacturer/ Country	Model	Ordering Code	Voltage Limit	Remarks
Tripping	ABB / India	ABB RXMS	RXMS1 RK216 x63-AN	500kV and below	
	SIEMENS/ Europe	7PA2732	7PA2002-0AA00-0	500kV and below	
	SIEMENS/ Berlin, Germany or Goa, India	TR221	7PG1522-1HA40-1AF0	500kV and below	(a) For Busbar Protection tripping
		AR 011	7PG1101-1EA10-0C00		(b) For Busbar Zone
	RMS/ Australia	ALPHA/ DELTA	TR 5/12 - 00 - 1/2/3/4 0	500kV and below	
			(ALPHA TR Series)		
			AR 5/12 - 00 - 1/2/3/4 0		
			(ALPHA AR Series- 1 element)		
	AR 25 - 00 - 1/2/3/4 0	(ALPHA AR Series-2 element)			
	TRD-400 - (DELTA TRD Series)				
	Schneider Electric / Spain	REL912	REL91203 (4 changeover contacts)	500kV and below	
			REL91223 (Fast trip relay with 4 changeover contacts)		
GE / Stafford, UK	MVAJ05	MVAJ051RA0800B (5 Contact)	500kV and below		
		MVAJ101RA0800A (10 Contact)			

3.4 Test Terminal Block

Function	Manufacturer/ Country	Model	Ordering Code	Voltage Limit	Remarks
Testing Facilities	ABB / India	RTXP 18/24	a) Test Socket: i. RTXP 18 RK926-115- 00 ii. RTXH 24 RK926 315- 00 b) Test Plug: i. RTXH 18 RK926 011-BC ii. RTXH 24 RK926 016-AA	500kV and below	
	GE / Stafford, UK	MMLG01	<ul style="list-style-type: none"> Test Block: MMLG01R1AB0001E Test Plug: MMLB01AXAA0011E 	500kV and below	
	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	2RMLG07	<ul style="list-style-type: none"> Test Socket: 7XG2220-3AA00-0AA0 Test Plug: 7XG2240-3AA00-0AA0 	500kV, 275kV and 132kV	
	RMS/ Australia	4M Series	<ul style="list-style-type: none"> Test Socket: 4M400-00 Test Plug: 4M420-0 	500kV, 275kV and 132kV	
	Schneider Electric / Spain	ETB14	<ul style="list-style-type: none"> Test Socket: ETB1400000000000000000000-H Test Plug: ETB14PH 	500kV, 275kV and 132kV	
	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	2RMLG01	<ul style="list-style-type: none"> Test Socket: 7XG2220-1AA00-0AA0 Test Plug: 7XG2240-1AA00-0AA0 	33kV and below	
	RMS / Australia	4M Series	<ul style="list-style-type: none"> Test Block: 4M200-01 Test Plug: 4M220-00 	33kV and below	

3.5 DC Supervision Relay

Function	Manufacturer/ Country	Model	Ordering Code	Voltage Limit	Remarks
DC Supervision	SIEMENS (REYROLLE) / Berlin, Germany or Goa, India	XR152	7PG1741-3BD10-4AA0	500kV and below	
	Schneider Electric / Spain	REL913	REL91344	500kV and below	
	RMS / Australia	Delta XRD Series	XRD-400	500kV and below	
	GE / Stafford, UK	MVAX12	MVAX12R1CB0750A	500kV and below	

4 Substation Interrogation and Monitoring System

Function	Manufacturer/ Country	Model	Ordering Code	Voltage Limit	Remarks
Substation Interrogation and Monitoring system	Malaysia	Advance Remote Access Commander (ARAC)	NA	132kV and above	<ul style="list-style-type: none"> Mandatory Accessories & Software: <ol style="list-style-type: none"> ARAC Interrogation Software

Important Note:

- The recommended relay ordering no. indicated by ♦ are to be specified based on actual installation requirement / SEB application.
- The protection relay manufacturer/supplier shall provide 10 years product warranty from the date of supply. Faulty relays shall be collected from and replacement shall be delivered to SEB office without cost to SEB.
- The Disturbance recorder manufacturer/supplier shall provide 5 years product warranty from the date of supply. Faulty disturbance recorders shall be collected from and replacement shall be delivered to SEB office without cost to SEB.
- The ancillary equipment manufacturer/supplier shall provide 5 years product warranty from the date of supply. Faulty ancillary equipment shall be collected from and replacement shall be delivered to SEB office without cost to SEB.