

ANNEXURE - A REV-00 (Technical Specification)

BHEL BHOPAL SWE	Technical Specification of:- EM RELAYS		
W.O	PI No.: Rate Contract		
	Various Power Projects		

ITEM NO.		001	Vendor Confirmation
a.	APPLICATION	High Speed Tripping Relay (86) With Min 8 Contacts having operating time 10 ms or less With A)Hand Reset contacts B)Coil Supervision & Coil Cut off Contact(other than above) C)High Burden	Complied/ Not Complied
b.	TYPE	VAJHM23 of GE T&D(Previously Alstom)make or Equivalent	Complied/ Not Complied
c.	AUX. SUPPLY	Aux. Supply shall be provided by BHEL Lot wise during order execution stage	Complied/ Not Complied
d.	OPERATING VOLTAGE	70% TO 120% of Rated Aux. Supply.	Complied/ Not Complied
e.	FLAG	Hand Reset Operation Indicator (Flag) for each element	Complied/ Not Complied
f.	CASE & TERMINATION	i. Case size to be enclosed	Complied/ Not Complied
		ii. Cutout drawing to be enclosed.	Complied/ Not Complied
		iii. The Relay shall be mounted in flush mounted case, with rear access terminals.	Complied/ Not Complied
		iv. Terminals shall be suitable for connecting two wires of 1.5 mm Sq.mm cross section	Complied/ Not Complied
		v. Special Lugs or sockets, if required shall be supplied in adequate quantity along with the each relay.	Complied/ Not Complied
		vi. All contacts and coil connections shall be independently wired out to relay terminals without any common point.	Complied/ Not Complied
g.	CONTACTS	Minimum contacts combination i) 5 NO + 3 NC HR	Complied/ Not Complied
h.	WIRING DIAGRAM	i. Wiring diagram to be enclosed.	Complied/ Not Complied
		ii. Drawing of terminal disposition viewed from terminal side to be enclosed.	Complied/ Not Complied
i.	APPLICABLE MODEL NO.	Complete Model No. for Offered Relay to be enclosed	Complied/ Not Complied
j.	RESISTOR IF APPLICABLE	If applicable shall be supplied with each relay	Complied/ Not Complied

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ITEM NO.	002	Vendor Confirmation
APPLICATION	Aux Relay With Self Reset Contacts Double Element Type For Transformer Faults (30)	Complied/ Not Complied
TYPE	VAA21 of GE T&D(Previously Alstom) make or Equivalent	Complied/ Not Complied
AUX. SUPPLY	Aux. Supply shall be provided by BHEL Lot wise during order execution stage	Complied/ Not Complied
OPERATING VOLTAGE	80% TO 120% of Rated Aux. Supply.	Complied/ Not Complied
FLAG	Hand Reset Operation Indicator (Flag) for each element	Complied/ Not Complied
CASE & TERMINATION	i. Case size to be enclosed	Complied/ Not Complied
	ii. Cutout drawing to be enclosed.	Complied/ Not Complied
	iii. The Relay shall be mounted in flush mounted case, with rear access terminals.	Complied/ Not Complied
	iv. Terminals shall be suitable for connecting two wires of 1.5 mm Sq.mm cross section.	Complied/ Not Complied
	v. Special Lugs or sockets, if required shall be supplied in adequate quantity along with the each relay.	Complied/ Not Complied
	vi. All contacts and coil connections shall be independently wired out to relay terminals without any common point.	Complied/ Not Complied
CONTACTS	Minimum contacts combination 3 N/O + 1 NC S/R type with H/R operation indicator per element.	Complied/ Not Complied
WIRING DIAGRAM	i. Wiring diagram to be enclosed	Complied/ Not Complied
	ii. Drawing of terminal disposition viewed from terminal side to be enclosed.	
APPLICABLE MODEL NO.	Complete Model No. for Offered Relay to be enclosed	Complied/ Not Complied
RESISTOR IF APPLICABLE	If applicable shall be supplied with each relay	Complied/ Not Complied

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Item No		003	Vendor Confirmation
a.	APPLICATION	Bi stable(Electrically Reset)type for Breaker Contact Multiplication (52X)	Complied/ Not Complied
b.	TYPE	VAJC11 of GE T&D(Previously Alstom) or Equivalent Relay	Complied/ Not Complied
c.	AUX.SUPPLY	Aux. Supply shall be provided by BHEL Lot wise during order execution stage	Complied/ Not Complied
d.	OPERATING VOLTAGE	80% TO 110% of rated Aux. Supply. Supplier to specifically confirm that relay is suitable for continuous operation at i.e. 110% of rated aux supply.	Complied/ Not Complied
e.	FLAG	Electrically Reset flag	Complied/ Not Complied
f.	CONTACTS	Minimum 4 NO + 4 NC Electrically Reset	Complied/ Not Complied
g.	CASE & TERMINATION	i. Case size to be enclosed	Complied/ Not Complied
		ii. Cutout drawing to be enclosed.	Complied/ Not Complied
		iii. The Relay shall be flush mounted or Din Rail mounted case.	Complied/ Not Complied
		iv. Terminals shall be suitable for connecting two wires of 1.5 mm Sq.mm cross section.	Complied/ Not Complied
		v. Special Lugs or sockets, if required shall be supplied in adequate quantity along with the each relay.	Complied/ Not Complied
		vi. All contacts and coil connections shall be independently wired out to relay terminals without any common point.	Complied/ Not Complied
h.	WIRING DIAGRAM	i. Wiring diagram to be enclosed	Complied/ Not Complied
		ii. Drawing of terminal disposition viewed from terminal side to be enclosed.	
i.	APPLICABLE MODEL NO.	Complete Model No. for Offered Relay to be enclosed	Complied/ Not Complied
j.	RESISTOR IF APPLICABLE	If applicable shall be supplied with each relay	Complied/ Not Complied

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BHEL BHOPAL SWE	Technical Specification of:- EM RELAYS		
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ITEM NO.		004 (86M)	Vendor's Confirmation
a.	APPLICATION	HIGH SPEED TRIPPING RELAY with min 7 contacts in different contacts combinations & with a) Self reset contacts b) High burden coil	Complied/ Not Complied
b.	TYPE NO.	VENDORS TO INDICATE	
c.	AUX. SUPPLY	<i>Aux. Supply shall be provided by BHEL Lot wise during order execution stage</i>	Complied/ Not Complied
d.	OPERATING VOLTAGE	70% TO 110% of Rated Aux. Supply.	Complied/ Not Complied
e.	FLAG	YES (operation indicator for each element/coil)	Complied/ Not Complied
f.	CASE & TERMINATION	i) Case size: To be informed by vendor along with the offer.	Complied/ Not Complied
		ii) Cutout drawing enclosed.	Complied/ Not Complied
		iii) The Relay shall be mounted in flush mounted case, with rear access terminals.	Complied/ Not Complied
		iv) Terminals shall be suitable for connecting two wires of 1.5 mm Sq. cross section.	Complied/ Not Complied
		v) Special Lugs or sockets, if required shall be supplied in adequate quantity along with each relay.	Complied/ Not Complied
		vi) All contacts and coil connections shall be independently wired out to relay terminals without any common point.	Complied/ Not Complied
g.	CONTACTS	Minimum contacts combination i) Minimum 7 N/O S/R Contacts	Complied/ Not Complied
h.	WIRING DIAGRAM NO.	i) Wiring diagram enclosed.	Complied/ Not Complied
		ii) Drawing of terminal disposition viewed from terminal side enclosed.	
i.	APPLICABLE MODEL NO.	Complete Module No. for Offered Relay	Complied/ Not Complied
j.	RESISTOR IF APPLICABLE	Applicable : YES/NO In case of 'Yes' value of Resistor to be mentioned & supplied along with the relay.	Complied/ Not Complied

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ITEM NO.		005	Vendor Confirmation
a.	APPLICATION	Trip Ckt Supervision Relay (95) with CB Trip Coil pre-close & post close Supervision having time delay on drop-off of the order of 200ms	Complied/ Not Complied
b.	AUX. SUPPLY	Aux. Supply shall be provided by BHEL Lot wise during order execution stage	Complied/ Not Complied
c.	Type No.	VAX31 of GE T&D(Previously Alstom) make or equivalent.	Complied/ Not Complied
d.	OPERATING VOLTAGE	80% TO 110% of Rated Aux. Supply.	Complied/ Not Complied
e.	FLAG	Hand Reset Reverse Operation Indicator (Flag).	Complied/ Not Complied
f.	CASE & TERMINATION	i. Case size to be enclosed	Complied/ Not Complied
		ii. Cutout drawing to be enclosed.	Complied/ Not Complied
		iii. The Relay shall be mounted in flush mounted case, with rear access terminals.	Complied/ Not Complied
		iv. Terminals shall be suitable for connecting two wires of 1.5 mm Sq.mm cross section.	Complied/ Not Complied
		v. Special Lugs or sockets, if required shall be supplied in adequate quantity along with the each relay.	Complied/ Not Complied
		vi. All contacts and coil connections shall be independently wired out to relay terminals without any common point.	Complied/ Not Complied
g.	CONTACTS	Minimum contacts combination 1 N/O + 2 N/C Self Reset	Complied/ Not Complied
h.	WIRING DIAGRAM	i. Wiring diagram to be enclosed.	Complied/ Not Complied
		ii. Drawing of terminal disposition viewed from terminal side to be enclosed.	Complied/ Not Complied
i.	APPLICABLE MODEL NO.	Complete Model No. for Offered Relay to be enclosed	Complied/ Not Complied
j.	RESISTOR IF APPLICABLE	If applicable shall be supplied with each relay	Complied/ Not Complied

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BHEL BHOPAL SWE	Technical Specification of:- EM RELAYS		
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ITEM NO.		006 (80)	Vendor Confirmation
a.	APPLICATION	DC Supply Supervision Relay having time delay on drop-off of the order of 100 to 200ms.	Complied/ Not Complied
b.	AUX. SUPPLY	Aux. Supply shall be provided by BHEL Lot wise during order execution stage	Complied/ Not Complied
c.	Type No.	VAA11 of GE T&D(Previously Alstom) make or eq.	Complied/ Not Complied
d.	OPERATING VOLTAGE	70% TO 110% of Rated Aux. Supply.	Complied/ Not Complied
e.	FLAG	Hand Reset Reverse Operation Indicator (Flag).	Complied/ Not Complied
f.	CASE & TERMINATION	i) Case size: To be informed by vendor along with the offer.	Complied/ Not Complied
		ii) Cutout drawing enclosed.	Complied/ Not Complied
		iii) The Relay shall be mounted in flush mounted case, with rear access terminals	Complied/ Not Complied
		iv) Terminals shall be suitable for connecting two wires of 1.5 mm Sq. cross section.	Complied/ Not Complied
		v) Special Lugs or sockets, if required shall be supplied in adequate quantity along with the each relay.	Complied/ Not Complied
		vi) All contacts and coil connections shall be independently wired out to relay terminals without any common point.	Complied/ Not Complied
g.	CONTACTS	Minimum contacts combination i) 1 N/O + 2 N/C Self Reset	Complied/ Not Complied
h.	WIRING DIAGRAM	Wiring diagram enclosed.	Complied/ Not Complied
		Drawing of terminal disposition viewed from terminal side enclosed.	
i.	APPLICABLE MODEL NO.	Complete Module No. for offered Relay	Complied/ Not Complied
j.	RESISTOR IF APPLICABLE	Applicable : YES/NO In case of 'Yes' value of Resistor to be mentioned & supplied along with the relay	Complied/ Not Complied

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ITEM NO.		007 (98)	Vendor Confirmation
a.	APPLICATION	FUSE FAILURE RELAY MIN 2 SR CONTACTS	Complied/ Not Complied
b.	AUX. SUPPLY	<i>Aux. Supply shall be provided by BHEL Lot wise during order execution stage</i>	Complied/ Not Complied
c.	PT SECY.	110V AC (Phase TO Phase) 63.5V AC (Phase TO Neutral)	Complied/ Not Complied
d.	OPERATING VOLTAGE	80% TO 110% of Rated Aux. Supply.	Complied/ Not Complied
e.	FLAG	Hand Reset Operator Indicator (FLAG)	Complied/ Not Complied
f.	CASE & TERMINATION	i) Case size: To be informed by vendor along with the offer.	Complied/ Not Complied
		ii) Cutout drawing enclosed.	Complied/ Not Complied
		iii) The Relay shall be mounted in flush mounted case, with rear access terminals	Complied/ Not Complied
		iv) Terminals shall be suitable for connecting two wires of 1.5 mm Sq. cross section.	Complied/ Not Complied
		v) Special Lugs or sockets, if required shall be supplied in adequate quantity along with the each relay.	Complied/ Not Complied
		vi) All contacts and coil connections shall be independently wired out to relay terminals without any common point.	Complied/ Not Complied
g.	CONTACTS	Minimum contacts combination i) 1NO + 1NC SR	Complied/ Not Complied
h.	WIRING DIAGRAM	Wiring diagram enclosed.	Complied/ Not Complied
		Drawing of terminal disposition viewed from terminal side enclosed.	
i.	APPLICABLE MODEL NO.	Complete Module No. for offered Relay	Complied/ Not Complied
j.	RESISTOR IF APPLICABLE	Applicable : YES/NO In case of 'Yes' value of Resistor to be mentioned & supplied along with the relay	Complied/ Not Complied
k.	PRINCIPLE	Operate on Voltage Balance Principle.	Complied/ Not Complied

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	GENERAL NOTES :	
1	All relays shall comply with relevant IS/IEC.	Confirm
2	Relay shall have rear access terminals suitable for taking two wires of at least 1.5 square mm size for DC wiring and 2.5mm square for CT/PT and auxiliary AC supply wiring.	Confirm
3	All contacts and coil connections of relay shall be independently wired out to relay terminals without any common point.	Confirm
4	Special lugs / combiflex sockets required for wire terminations on the relay shall be supplied in adequate quantity with each relay, considering two terminations at each terminal. These shall be provided in the relay packing case itself and shall not have any separate price implication.	Confirm
5	Five copies each of bound manuals comprising commissioning manuals, descriptive leaflets, wiring diagram and guaranteed technical particulars of each item shall be furnished before dispatch of equipment for submission to customer.	Confirm
6	The vendors shall furnish two sets of type test reports with the order acceptance for approval / review by customer. In case any discrepancy or inadequacy is found by the customer during approval, the same shall be resolved by supplier with customer with no binding on BHEL and without any price implication.	Confirm
7	Vendor shall furnish 2 sets of descriptive catalog, panel cutout, overall dimension drawings, electrical connection drawing, complete model number and technical particulars for each item along with the offer.	Confirm
8	2 copies of routine test certificates are to be furnished at the time of delivery.	Confirm
9	Relays shall be guaranteed for satisfactory operation for 60 months from the date of commissioning.	Confirm
10	Vendor to provide sticker mentioning PO on every relay	Confirm