



SPECIFICATION FOR EARTH FAULT PASSAGE INDICATOR (EFPI)

Specification No. 1570117

1. System Description:

The electrical distribution system of the Undertaking consist of 110/33kV, 110/11kV, 33/11kV, 22/11kV Receiving Substations (RSS) situated at different localities in Mumbai. The power is distributed through different 11kV/415V, DSS to the consumers of Mumbai city. The 11kV, underground network is a ring cable network normally operated in radial. The over current and earth fault protection are provided on 11kV feeders at DSS. The power at 11kV is stepped down to 415V 3-phase at the DSS where various sizes of 11kV / 415V, Delta Star transformer of Vector group, Dyn11 are installed. The star point of these transformer is solidly earthed and is also brought out to an insulated terminal for the 3-phase, 4-wire distribution system. The 415V 3-phase /240V 1-phase secondary distribution system comprises of a vast network of underground 4 core cables suitably interconnected by means of Distribution Pillars to which service lines are Teed off to supply power to medium and low voltage consumer.

2. Scope:

2.1 The Earth Fault Passage Indicator is required to detect passage of fault current through 11kV HV underground network. The core balance CT will be installed on 11kV, 3C x 300 sq mm A1 PILC, 3 C x 240 sq mm Al XLPE at the cable end compartment and indicating device will be installed on front side of 11kV switchgear panel.

2.2 The tenderers shall have to supply, Earth Fault Passage Indicator (EFPI) with its accessories like, Core Balance Current Transformer (CBCT) with copper cable connections between EFPI and CBCT along with PVC sleeve and cable tie pack, other accessories if any which is necessary for installation of EFPI.

2.3 The successful tenderer shall carryout installation and commissioning of the fault passage indicator in our system and also impart the necessary training to the undertaking staff.

3. Requirement:

Sr.No.	Description	Quantity
1	Earth Fault Passage Indicator with CBCT and its associated accessories suitable for 11kV, 3C x300 sq mm A1 PILC/ 3 C x 240 sq mm Al XLPE conductor with armor / PVC outer sheath.	



4. **Technical Specification:**

The specification covers supply of fault passage indicator and core balance current transformer (CBCT) for identification of the faulty section of the radial main HV network under short circuit and earth fault. The EFPI will be retrofitted in the existing indoor VCBs. In view of the restricted dimensions available on instrument panel door of VCB, EFPI shall have compact dimensions. The EFPI shall be flush / wall mounted type. The CBCT shall be split open type CT so that it can be mounted without cable disconnection. The CBCT shall have strap on facility for mounting on the existing cable. The EFPI shall be digital type and shall operate as soon as the current exceed the set value. EFPI shall have flashing indication for fault indication. The indication shall be with red LED with one (1) flash every one (1) sec. The EFPI shall have settable resetting time. The EFPI shall be suitable for remote setting, self resetting after the preset time and manual resetting. EFPI shall preferably get reset automatically after restoration of supply. EFPI shall have 1NO + 1NC potential free contact for remote indication. EFPI power supply unit shall use lithium battery. EFPI shall continue to function even after main feeder has tripped. The cable connecting the CBCT with EFPI shall be copper cable of with minimum 5 meters length along with PVC sleeve and cable tie pack. The cable shall be pre-moulded on the CBCT side. The EFPI shall be compatible for Distribution Automation so that fault passage indication can be extended to remote control room through wired-up/wireless communication SCADA system. **In addition to that additional cable of CAT-5/CAT-6 with RJ-45 connectors are required for communication between EFPI & AMR project unit. The required length of cable is 1 meter/DSS.**

5. **Schedule of Guaranteed Performance & Other Particulars (GPP):**

Sr.No.	Feature	BEST's requirement	Offered
1	CBCT		
(a)	Type	Split core type	
(b)	Mounting arrangement	Strapping belt	
(c)	CBCT connection to EFPI	Copper cable of suitable size	
2	Earth fault Passage indicator		
(a)	Sensing current	120A +/- 20%	
(b)	Sensing time	50ms +/- 20%	
(c)	Indication	Red flushing LED with flashing 1 flash every 1 second.	
(d)	Reset time	Settable at site (30 minutes minimum).	
(e)	Resetting facility	Self reset / manual / remote resetting.	
(f)	Remote indication facility required		
(g)	Output contact	1 NO + 1NC	



(h)	Contact rating	1 Amp at 230Volt	
(i)	Auxiliary Power Supply	Lithium battery with 1000 blinking hours.	
(i)	Degree of protection	IP54	
(k)	Mounting arrangement	Surface or flush mounting.	
(l)	Ambient temperature	- 20 to 55° C `	
(m)	Dimensions of indicator	Compact dimensions shall be preferred.	

6. General:

6.1 Bidder shall attach technical details and catalogue for the model offered. Bidder shall also include any other accessories, if required but not mentioned in the specification to make the system complete.

6.2 Bidder may submit performance certificate preferably along with his offer, where the equipment has been installed and working satisfactorily. Bidder shall include all terms and conditions in their commercial offer including the delivery period.

6.3 Bidder shall submit routine test certificate of the fault passage indicator at the time of supply which includes operation of fault passage indicator by current injection test.

7. Guarantee:

The supplier will have to guarantee satisfactory operation of EFPI and its accessories for a period of 18 months from the date of commissioning and 24 months from date of supply, during which any defects arising out of faulty workmanship or faulty design shall be rectified by the supplier on free of cost, to the entire satisfaction of the Undertaking. In case, any part of the EFPI and its associated accessories fail within the guarantee period, the repaired unit of EFPI shall carry a guarantee of 18 months from the date of last repaired.

8. Packing:

All items that comprise a single unit of fault passage indicator such as CBCT, metallic cable tie / clamp, nylon cable tie (necessary hardware for fixing CBCT/fault passage indicator), cable between CBCT and fault passage indicator itself, etc. shall be supplied in a separate sealed box along with packing list.



9. Deviation:

Deviations, if any, from the specification shall be clearly brought out while submitting the offers. Reasonable deviations, subject to adaptability in our system shall be accepted at the discretion of the Undertaking.