



1. APPLICATION

- A. Automatic network protectors are mounted on the secondary side of network transformers installed in below grade vaults and above grade vault rooms in the EWEB secondary grid network system.

2. REFERENCE STANDARDS

- A. The network protectors supplied shall be manufactured and tested according to the latest editions, revisions, and amendments to IEEE C57.12.44 and all other applicable standards of NEMA, ANSI, and IEEE except as modified herein.

3. PRODUCTS

A. Ratings

- 1) Voltage ratings: 216Y/125volts, or 480Y/277 volts.
- 2) Current ratings: The network protector shall carry full rated current continuously in an ambient temperature of 40°C and 60 Hertz. The temperature rise within the assembled unit shall not exceed values allowed by IEEE, ANSI or NEMA standards for each of the individual devices or wiring components contained therein.

The standard current ratings shall be as follows:

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Secondary Voltage	Transformer KVA	Protector Continuous Current Rating RMS Amperes	Protector Interrupting Current Rating RMS Amperes
216Y/126V	500/560	1875	30,000
	750/840	2825	60,000
480Y/ 277V	500/560	800	30,000
	750/840	1200	30,000

B. Construction and Assembly

- 1) The network protector shall be submersible rated, designed with a mechanically trip free motor operated mechanism, and suitable for mounting on the secondary throat of a vault type secondary network transformer. The protector shall be equipped with all the necessary mounting connections and hardware arranged so that the protector can easily be removed or installed in the field.
- 2) Spade terminals shall be provided for cable termination.
- 3) The network protector shall be a dead-front, draw-out design. Provision shall be made for easily disconnecting and removing the control devices for test, maintenance, repair or replacement. Self storing rails shall be provided for rolling out the removable element. Captive bolts and washers shall be provided.
- 4) The network protector shall have a positive identification of the position of the protector main contacts. This position indicator shall be independent of any lamp indication and shall be readily visible, without opening the housing.
- 5) The network protector cover shall be capable of being hinged on either side of the case. The cover shall be equipped with windows for easy inspection of position indicator operation counter, and visible break between bus stabs and network protector when in "Racked Out" position.
- 6) A manual operating handle shall be provided for each network protector and shall be interchangeable to either side of protector. Provision shall be made to padlock the handle in any position.
- 7) The network protector shall be equipped with a non-resettable five digit operation counter that increments each time the protector opens.

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- 8) The network protector shall be equipped with a stainless steel pressure gauge and pressure test fitting for making a test for water tightness and pressurizing the protector housing.
- 9) The network protector shall be equipped with two spare A and B contacts for remote monitoring.
- 10) Provide a terminal junction box mounted on the exterior wall of network protector rated for submersible duty for termination of wiring for remote monitoring and communication to network protector.
- 11) The network protector shall be equipped with a remote racking device, so an operator can remotely rack out the network protector with the door still bolted in place. The device shall be capable of operating both by communication control as well as a plug-in pendant. The remote racking device shall be equipped with a manual crank override.
- 12) The network protector shall be equipped with a submersible rated stack light utilizing LEDs for indication of breaker OPEN and CLOSED status, breaker RACKED IN and RACKED OUT position, and ARC REDUCTION TRIP MODE activation.
- 13) When required per the purchase order or request for quotation, provide network protector with an arc reduction trip mode that, when engaged, shall trip the network protector with no intentional delay when current reaches 2.5 times the protector nameplate rating in either direction. Activation of this mode shall be manual.
- 14) When required per the purchase order or request for quotation, provide network protector with removable bus links on each phase to disconnect the network protector from the network grid and provide a visible open on all three phases. These removable bus links shall be submersible rated and mechanically interlocked with the network protector to allow removal of any of the bus links only when the network protector is in the OPEN position.

C. Relays

- 1) All network protector relays shall be dual voltage 216Y/125 or 480Y/277 volt. Relays for 216 volt protectors shall be interchangeable with those provided with 480 volt protectors.
- 2) The network protector shall be supplied with microprocessor-based master and phasing relay equipped with remote communications capability.

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- 3) The network protector shall continuously monitor voltage across an open protector and current through a closed protector to perform the following automatic operations.
 - a) OPEN network protector when reverse power flow exists through the network protector or reverse flow of magnetizing current of associated transformer exists.
 - b) CLOSE network protector if voltage magnitude and phase angle are such that ensuing power flow will be into the network.

D. Fuses

- 1) The network protector shall be supplied with three fuses (one per phase) as backup protection in the event of network protector miss operation. Fuses current ratings shall be matched to the continuous current rating of the network protector. Fuses shall have characteristics compatible with both the network transformer and the network cable limiters.
- 2) Provide external fuses unless otherwise noted in the request for quotation or purchase order.
- 3) External fuses shall be current limiting sand fuses in individual housings.
- 4) When required provide internal lead alloy fuses.

4. TESTS

A. Factory Tests

- 1) Provide certification that all the components and units were subjected to and successfully passed the necessary tests to assure satisfactory working conditions.

B. EWEB Acceptance Tests

- 1) Upon receipt, or before installing the protector on the transformer, the protector will be inspected and tested for adherence to EWEB's material specification. All network protectors will be adjusted to suit permanent location and operating requirements. Network protectors found to be defective or not in compliance with the material specifications will be rejected and returned at the vendor's expense.

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5. WARRANTY

- A. Provide a warranty period of eighteen (18) months minimum after the date of final acceptance.
- B. Unless otherwise stated, all equipment shall be free and clear of any liens or encumbrances and shall be new and the current model and shall carry full manufacturer warranties.
- C. Vendor warrants to EWEB that any transformer furnished will operate and function in the manner represented by vendor and will achieve the performance stated in the material specification when operating within the design conditions described therein.
- D. Vendor warrants the equipment furnished is free from defects in material and workmanship, and agrees to repair or replace any unit that is unsuitable for operating or fails in operation during normal and proper use, including all parts and labor at no cost to EWEB.

6. PACKAGING AND DELIVERY

- A. The network protector and any exposed parts shall be suitably packaged to prevent damage. Any damage in transit is the vendor's responsibility.

7. SUBMITTALS

- A. Provide descriptive literature on installation, test, maintenance, trouble shooting, and details of the different components and operational characteristics of the network protector and its elements.
- B. Submit a recommended spare parts list, including the part number and description of each part.
- C. One complete set of drawings and instruction books shall accompany the network protector. When requested, an electronic copy of all instruction books shall be provided in pdf file format and an electronic copy of all drawings shall be provided in the latest version of AutoCAD®, or pdf file format.

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8. EWEB STORES INFORMATION

- A. This material specification shall be used to purchase the material with the following stock codes:

496-0003286 through 496-0003290

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