

# Guide Form Specification for Medium Voltage Motor Surge Protectors

This specification is for a \_\_\_\_\_ kV medium voltage three phase motor surge protector that is designed to protect medium voltage motors from voltage surges due to lightning and switching events. The Motor Surge Protector will be placed on a \_\_\_\_\_ kV system (Line-Line Voltage) that is \_\_\_\_\_ grounded. (*ungrounded, solidly grounded, or resistance grounded*) The surge protector shall come fully assembled and ready for interconnection.

All exceptions to this specification shall be clearly stated with your bid. If no exceptions are taken, the bid should include the phrase "no exceptions have been taken".

## 1. Enclosure

1.1 The medium voltage motor surge protector shall be housed in a NEMA 1, 3R, 12 (*specify 4X when required and delete 1, 3R, and 12*) 11 gauge galvaneel steel all-welded enclosure. The base of the unit shall consist of C2 channel for floor mounting and skidding into place.

1.2 The enclosure shall be equipped with a hinged door for maintenance and termination. The hinged door shall bolt close with two 3/8"x16 stainless steel bolts. The hinges shall be stainless steel. The door shall be removable when in the open position.

1.3 High voltage warning signs and a nameplate showing rating information shall be located on the front of the enclosure.

1.4 The design shall accept bottom or top entry.

## 2. Capacitors

2.1 A low inductance three phase, all-film surge capacitor shall be provided for decreasing the slope of impending voltage surges. The capacitor shall be rated \_\_\_\_\_ micro-farads to ground and have a \_\_\_\_\_ voltage rating (*consult NEPSI's 700-00 literature for these ratings*).

2.2 The capacitor shall be equipped with discharge resistors that reduce the capacitor voltage to 50 volts in 5 minutes when disconnected from the source.

2.3 The surge capacitor shall be capable of operating in the temperature range between -40 degree Fahrenheit and +115 degree Fahrenheit.

## 3. Surge Arrester

3.1 The medium voltage motor surge protector shall be equipped with three heavy duty distribution class (*specify station class if desired*) lightning arresters for limiting the crest of impending voltage surges to safe values.

3.2 The surge arrester shall be silicone rubber housed and shall utilize MOV blocks. The arresters shall comply with ANSI/IEEE C62.11 standards.

3.3 The voltage rating and MCOV shall be appropriately rated for the system voltage and grounding as specified above.

#### **4. Differential Current Transformer** *(This option can be deleted if not desired)*

4.1 Differential current transformers shall be supplied to allow for differential protection of the motor. The differential current transformer shall be placed around solid Copper bus (not customer wiring) to see both the stator and rotor current of the motor.

4.2 Secondary leads from the current transformer shall be terminated on an isolated screw terminal block for connection to customer differential/motor protection relays. The differential current transformer(s) shall have a xxx/5 ratio.

#### **4. Current Transformers** *(This option can be deleted if not desired)*

4.1 Current transformers shall be supplied with the equipment to allow for over-current protection of the motor. The current transformer shall be placed around solid Copper bus and shall not interfere with customer wiring. The current transformer shall have a xxx/5 ratio.

#### **4. Connections**

4.1 The unit shall come fully assembled and ready for interconnection. Standoff insulators shall be provided for termination of customer phase conductors. Termination points shall accommodate a NEMA 2 hole compression lug.

#### **5. Submittals**

5.1 Upon issue of a purchase order, the supplier shall provide 3 copies of approval drawings. The submittals shall include:

- Installation Instructions
- Single Line and three line diagrams
- Pad and cable entry drawings
- Drawings showing component layout
- Data sheets for all internal components

#### **6. Bid Requirements**

6.1 Supplier must state all exceptions in the Bid. If no exceptions are taken, the supplier must state that there are no exceptions.

#### **7. Acceptable Product & Suppliers**

7.1 Suppliers must offer a minimum 2 year warranty and have available extended warranty programs.

7.2 Supplier must show that they are a regular supplier of medium voltage motor surge protection equipment.

7.3 Acceptable Manufacturer and Product:

MSP™ by Northeast Power Systems, Inc. (NEPSI)