**APPLICATION SPECIFICATION FOR CLiP®**

# CURRENT LIMITING PROTECTOR

This specification pertains to the CLiPovercurrent protection device, generically referred to as a Triggered Current Limiter (TCL) or an Is-Limiter. It is applied for the purpose of current limiting circuit protection where the continuous current ampacities or performance criteria cannot be met by traditional current limiting fuses that rely solely upon meltable elements. We need the following information in order to provide a quote for the appropriate CLiP­® unit and to select the appropriate trigger level.

**PROJECT INFORMATION**

 COMPANY NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 ENGINEERING CONTACT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PHONE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 CONSULTANT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 PURCHASER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 JOB SITE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**THE APPLICATION IS FOR (check one or more):**

Bus Tie \_\_\_\_\_\_\_\_\_\_\_\_\_

Energy Limitation \_\_\_\_\_\_\_\_\_\_\_\_\_

Feeder Protection \_\_\_\_\_

Reactor Bypass \_\_\_\_\_

Arc Flash Limitation \_\_\_\_\_\_

Generator Limitation \_\_\_\_\_\_

**COMMENTS ON THE APPLICATION:**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**SYSTEM CHARACTERISTICS**

Voltage \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Continuous Current\_\_\_\_\_\_\_\_\_\_\_

Frequency\_\_\_\_\_\_\_\_\_\_\_\_

 Maximum available short circuit current

 in RMS Symmetrical Amperes at nominal

 voltage **to the fault *(worst case)***

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Maximum available short circuit current

 in RMS Symmetrical Amperes at nominal

 voltage **through the CLiP *for the above***

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Interrupt rating of protected equipment

 in RMS Symmetrical Amperes (breaker rating)

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Momentary (peak) rating of protected equipment

 in RMS Symmetrical Amperes

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Peak inrush values from:**

Transformers \_\_\_\_\_\_\_\_\_\_\_

Motors/Generators\_\_\_\_\_\_\_\_

Capacitor Banks\_\_\_\_\_\_\_\_

**Please provide a One-Line Diagram of the system and short-circuit simulation study. Model the CLiP as both an open and closed switch in the short-circuit study.**

**ENVIRONMENT**

 Location \_\_\_\_\_\_Indoor \_\_\_\_\_\_Outdoor \_\_\_\_\_\_Submersible

 Enclosure \_\_\_\_\_\_No \_\_\_\_\_\_Yes by other \_\_\_\_\_\_ Yes by CLiP Manufacturer

 Ambient Temperature Max. \_\_\_\_\_\_\_\_°C Min. ­\_\_\_\_\_\_\_\_°C

 (if < -40 or > +40°C)

 Altitude (if over 1000m) \_\_\_\_\_\_ meters

 Air-borne Corrosives? (describe)

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**EQUIPMENT**

Three (3) phase CLiP rated:

 \_\_\_\_\_\_\_ kV, \_\_\_\_\_\_\_ Amperes Continuous Current,

 \_\_\_\_\_\_\_ kV BIL, \_\_\_\_\_\_\_ kA rms, sym. Interrupt.

 \_\_\_\_\_\_\_ kA maximum instantaneous trigger level range

The following items shall be included for a complete 3-phase system:

 a. Three Interrupters, which shall employ a multiplicity of gaps to be severed in the interruption process. This is for dielectric integrity, speed and improved recovery times during commutation.

 b. The severing of gaps in the interrupter must not be accomplished with piston or other sliding means for operating integrity over a long life.

 c. The components of the limiter must have a projected functional life of 20 years minimum.

 d. The manufacturer will be required to furnish the user with a computer-generated plot of the 1st cycle performance of the limiter to ensure that it will meet the current limitation requirements for its intended duty.

 e. Interrupters used on a 60Hz system shall have been tested per ANSI/IEEE C37.41 at 60Hz to ensure proper commutation. Tests at 50Hz are not acceptable for 60Hz duty.

 f. Units are suitable for outdoor as well as indoor applications without need for enclosures or heaters from -40 thru +40°C.

 g. Mounting system shall incorporate 7ga. stainless steel bases.

 h. Isolation or Pulse Transformers shall have porcelain housings.

 i. Bus supports shall be porcelain.

 j. The product must be fully rated for "Power" as opposed to "Distribution" duty.

 E.g.: 110kV BIL for 15.5kV gear, not 75 or 95kV.

 k. Sensing and Firing Logics use threshold sensing. "Rate-of- rise" sensing is not acceptable due to susceptibility to response from transformer inrush, harmonics and transients.

 l. Sensing, Logic and triggering functions must be performed at high voltage on the user's bus to avoid pick-up of extraneous signals.

 m. The Sensing and Firing Logic unit shall be field adjustable.

 n. The user must be able to disarm the unit when its protection function is not required.

 o. The unit must incorporate an electric control signal feedback means from each interrupter to indicate when it has operated. The response to the user's controls or indicating circuits shall be via relays in the control box within 3 cycles.

 p. An optional Field Test Unit must be available for user's maintenance personnel to verify that the TCL is fully functional, without incurring a manufacturer's service call.

 q. Exposed busbars shall be tinned and include a NEMA pad for bus or cable connection.

 r. Local Indication of Operation striker pin projecting from one end of an interrupter indicates an operation has occurred.

 s. Three (3) Phase Remote Indication of Operation. One relay per phase includes 2 N.O. and 2 N.C. (form C) contacts for user's fault sensing circuits (located in the control box).

 t. IP66 or NEMA Type 4, powder coated, welded steel Remote Control Box. This contains terminal blocks for user's power supply and alarm connections.

 u. Control voltage monitor relay with 2 N.O. and 2 N.C. (form C) contacts.

 v. The control box shall include surge protection from transients in the user's supply.

 w. Units must be shipped with Material Safety Data Sheets.

 x. The manufacturer must be registered with Chemtrec.

 y. The manufacturer must abide by United States Department of Transportation and International Air Transport Association requirements for shipment of Hazmat goods to ensure availability of replacement interrupters to the customer at any time.

**APPLICABLE STANDARDS**

The Triggered Current Limiter shall conform to applicable portions of the following standards:

 IEC 60282 -- High-Voltage Fuses

 ANSI/IEEE C37.40 through C37.48

 NEMA SG2 -- High Voltage Fuses

 Code of Federal Regulations Number 49 parts 100 to 199

**APPROVED EQUIPMENT:** G&W Electric Co. CLiP® Current Limiting Protector or engineering approved equivalent. The CLiP is commonly applied where Is-Limiter is referenced.