



REX POWER MAGNETICS

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GUIDE SPECIFICATION

Mini Power Centers

Note to User: Sections of the spec written in red font require modification by user. Whenever an * is used in the specification, it is to indicate that one of the following options in square brackets should be selected. The first option listed after the asterisk is the standard option which should be used if there is no preference. When [Other] is listed, the user may specify an unlisted alternative of their preference.

1 **GENERAL**

1.1 SCOPE

- A The Contractor shall furnish and install single-phase and three-phase general purpose individually mounted Mini Power Centers of the two-winding (Isolation) type, self-cooled, as specified herein, and as shown on the contract drawings.

1.2 RELATED DOCUMENTS

- A Drawing and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.3 REFERENCES

- A The mini-power center and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of UL, ANSI and NEMA.

1.4 QUALIFICATIONS

- A The manufacturer shall be ISO 9001 certified
- B The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years

1.5 SUBMITALS

- A The following information shall be submitted to the engineer:
 - i Outline Dimensions & Weights
 - ii kVA
 - iii Primary & Secondary Voltage
 - iv Voltage taps
 - v Insulation Class
 - vi Temperature Rise
 - vii Sound Level
 - viii Submit shop drawing and product data for approval and final documentation in the quantities listed according to the conditions of the contract. Customer name, customer location and customer order number shall identify all transmittals.

1.6 STORAGE AND HANDLING

- A Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from potential damage from weather and construction operations. Store so condensation will not form on or in the Mini Power Center housing and if necessary, apply temporary heat where required to obtain suitable service conditions.
- B Handle Mini Power Center using proper equipment for lifting and handling, use when necessary lifting eye and/or brackets provided for that purpose.

1.7 WARRANTY

- A The Mini Power Center shall carry a 12/18 month limited warranty.

2 **PRODUCTS**

2.1 ACCEPTABLE MANUFACTURERS

- A Rex Power Magnetics

The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer ten (10) days prior to bid date.

2.2 RATING

- A kVA Rating:
 - i Three Phase: *[9 – 40] kVA
 - ii Single Phase: *[5 – 30] kVA
- B # of Phases: *[1], [3]
- C Primary Voltage (Line to Line): *[120 – 600] Volts
- D Secondary Voltage (Line to line): *[208Y/120], [240/120] Volts
- E Transformer Winding Connection: *[1ph0], [Dyn1]
- F System Frequency: *[50], [60] Hertz
- G Units shall be designed for continuous operation at rated kVA, for 24 hours a day, 365 days a year operation, with normal transformer life expectancy as defined in ANSI C57.96
- H Typical transformer impedance at 60Hz and rated kVA: 1.0% to 3.0%

2.3 GENERAL CONSTRUCTION:

- A Each mini-power center shall include a primary main breaker, an encapsulated dry-type transformer and a secondary panelboard with secondary main breaker.
- B Primary main, secondary main and feeder breakers shall be enclosed with a pad lockable hinged door.
- C Transformer Insulation system:
 - i Transformer shall be insulated with a UL recognized 200 degrees C insulation system with *[130], [115], [80] degree C average winding temperature rise.
 - ii Required performance shall be obtained without exceeding the above indicated temperature rise in a 40 degrees C maximum ambient and a 24-hour average ambient of 30 degrees C
- D Primary Voltage Adjustment Taps:
 - i 9 kVA and Less: 2 x ± 5% (1FCAN, 1FCBN)
 - ii 10kVA to 45kVA: 4 x ± 2.5% (2FCAN, 2FCBN)
- E Core construction: High grade non-aging, fully processed silicon steel laminations or better.
- F Coil conductors: *[Copper], [Aluminum] windings, with terminations brazed, welded or bolted.
- G The core and coil assembly shall be completely encapsulated in a proportioned mixture of resin and aggregate to provide a moisture proof, shock-resistant seal. The core and coil encapsulation system shall minimize the sound level.
- H Average sound-pressure levels shall not exceed:
 - i 9 kVA and Less: 40dBA
 - ii 10kVA to 45kVA: 45dBA
- I BIL: 10 kV BIL for both MV and LV coils.
- J Ground core & coil assembly to enclosure with a flexible copper grounding strap or equivalent.
- K Nameplate: *[2 mil White Polyester Film], [Black Anodized Aluminum], [Stainless Steel]

2.4 WIRING/TERMINATIONS

- A All interconnecting wiring between the primary breaker and transformer, secondary main breaker and transformer and distribution section shall be factory installed.
- B All transformers shall be equipped with a wiring compartment suitable for conduit entry and large enough to allow convenient wiring.

2.5 MAIN PROTECTIVE DEVICES

- A Each mini-power center shall include a primary main breaker with a minimum interrupting rating of *[14], [18], [25], [35] kA at the rated incoming voltage
- B Each mini-power center shall include a secondary main breaker with a minimum interrupting rating of 10 kA at the rated secondary voltage.

2.6 PANELBOARD / FEEDER DEVICES

- A The secondary Panelboard section shall accommodate one-inch *[push on], [bolt on] breakers
- B Feeder breakers shall be rated with *[10], [22] kA interrupting capacity.
- C Secondary Panelboard bus shall be *[Aluminum], [Copper].

2.7 ENCLOSURE

- A The enclosure shall be made of heavy-gauge *[Steel], [grade 304 stainless steel], [grade 316 stainless steel].
- B The core of the transformer shall be grounded to the enclosure.
- C The enclosure shall be totally enclosed, non-ventilated, *[NEMA 3R], [Type 4,], [Type 4X] with wall mounting brackets and lifting provisions

2.8 FINISH

- A Steel enclosures shall be finished with *[ANSI 61], [Other] color, weather-resistant epoxy powder coat.

2.9 OPTIONAL ACCESSORIES

- A Electrostatic Shielding:
 - i An independent, single, full-width electrostatic shield consisting of a single open turn of Copper placed between each primary and secondary winding and grounded. [Option: double-shielding available]
- B Over Temperature Protection:
 - i Transformer shall be shall be supplied with a *[N.C.], [N.O.] over-temperature switch(s), wired to an internal terminal strip, specified for use with class 220°C insulation systems for high temperature protection.
 - ii Configuration: *[one switch: 170°C or 200°C on center coil], [two switches: 170°C and 200°C on center coil], [six switches: one 170°C and one 200°C on each of the 3 coils].

3 EXECUTION

3.1 FACTORY TESTING

- A The following standard factory tests shall be performed on the equipment provided under this section. All tests shall be in accordance with the latest version of ANSI and NEMA standards.
 - i Ratio tests at the rated voltage connection and at all tap connections
 - ii Polarity and phase relation tests on the rated voltage connection
 - iii Applied potential tests
 - iv Induced potential test
 - v No-load and excitation current at rated voltage on the rated voltage connection
- B Additional type test should be made available on request include:
 - i Sound level test
 - ii Temperature rise test (for transformer only)

3.2 INSTALLATION

- A The installing contractor shall install the Mini Power Center per the manufacturer's recommended installation practices as found in the installation, operation, and maintenance manual in compliance with all applicable national and local codes.
- B Mini Power Centers cannot be back (reverse) fed unless specifically designed for and marked accordingly.
- C Make sure that the Mini Power Center is levelled.
- D Check for damage and loose connections.
- E Mount Mini Power Center to comply with all applicable codes.
- F Coordinate all work in this section with all work of other sections.

3.3 FIELD ADJUSTMENTS

- A Adjust taps to deliver appropriate secondary voltage.

3.4 FIELD TESTING

- A Measure primary and secondary voltages for proper tap settings.