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REPORT

on

MOTORS, SPECIALTY, FOR USE IN CLASS I, ZONES 0, 1 AND 2 HAZARDOUS LOCATIONS

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DESCRIPTION

PRODUCT COVERED:

Specialty motors for use in hazardous locations; Class I, Zone 1, AEx d IIC. Models ExRDM 3913/50 N UL 1,6A and ExRDM 3913/50 N Ei UL 1,6A; may be followed by PL50/100 and a ratio.

GENERAL (NOT FOR FIELD REPRESENTATIVE'S USE):

These are totally-enclosed nonventilated (TENV) DC stepper motors for use in hazardous locations. They have a wound field and a permanent magnet armature (rotor). They are intended to be controlled by a pulse-width-modulated (PWM) variable frequency drive. The motors draw constant DC current from the PWM drive under normal operating or locked rotor conditions. The operating torque of these motors is dependent upon the step frequency provided by the PWM drive.

The motors have twelve main poles, four poles for each phase. Each pole has 90 windings. The complete number of windings is 360 turns per phase. The rotor is constructed with an axially-directed permanent magnet in the form of a toothed wheel. Current flowing through the winding generates a magnetic field at the stator poles. Each main pole pair is individually excited and controlled with DC current. As current is applied in the stator pole winding, a torque is exerted on the rotor until a rotor tooth is opposite the stator pole. In this position, the rotor is magnetically latched one step. Each toothed section of the rotor is provided with 50 individual teeth yielding 500 steps for each complete revolution of the rotor in full step operation. This equates to a step angle of 1.8 to 0.036 degrees.

Each motor is provided with an installation and operating instruction manual specifying the type of PWM controller needed and the motor operating characteristics.

NOMENCLATURE:

The complete motor model number is as follows:

Example: Model $\frac{\text{ExRDM}}{1}$ $\frac{3}{2}$ $\frac{9}{3}$ $\frac{13}{4}$ / $\frac{50}{5}$ $\frac{N}{6}$ $\frac{\text{PL50-100}}{7}$

1 - Indicates basic series.

ExRDM - All motors

2 - Indicates number of phases.

3 - All motors

3 - Indicates approximate motor diameter in centimeters.

9 - All motors

4 - Indicates approximate stator frame length in centimeters.

13 - The actual length is 228 +/-1 mm

5 - Indicates number of rotor teeth.

50 - All motors

6 - Indicates Encoder options

N UL 1,6A - without encoder

N Ei UL 1,6A - with incremental encoder

7 - Gearbox suffixes with different ratio.

Blank - without gearbox

PL50/100 followed by the gear ratio - with gear box