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Project 08CA49010

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REPORT

ON

COMPONENT - MAGNETIC MOTOR CONTROLLERS

Dongguan Sanyou Electrical Appliances Co. Ltd.
Guangdong, China

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DESCRIPTION

PRODUCT COVERED:

USR/CNR - Across the line magnetic motor controllers, intended for use in industrial control applications, Type SMI, followed by the letter "-S" or "-SH", followed by the number -1 or -2, followed by 03 to 48, followed by the letters "D" or "L", followed by the letter "M" or Blank, followed by Blank, followed by -F, -B or Blank, maybe followed by any special codes.

GENERAL:

These devices are open type, magnetically operated, single pole, single-throw (SPST) for 1 Form A relays, and double pole, single throw (DPST) for 2 Form A relays, with normally open contacts and single pole, double-throw (SPDT) for 1 Form C relays, and double pole, double-throw (DPDT) for 2 Form C relays, with normally open and normally closed contacts.

ELECTRICAL RATING:

Contacts -

Single-Pole:

- & 10 A, 250 V ac, Resistive, 100K cycles, N.O., 85°C.
- 10 A, 250 V ac, Resistive, 50K N.C., 85°C.
- & 10 A, 250 V ac, General Use, 100K cycles, N.O., 85°C.
- 10 A, 250 V ac, General Use, 50K cycles, N.C., 85°C.
- 1/3 Horsepower, 120 V ac, N.O. & N.C., 30K cycles, 85°C.
- # 1/3 Horsepower, 125/250/277 V ac, N.O. & N.C., 30K cycles, 85°C.
- # Pilot Duty: 300 VA, 120/240/277 V ac, N.O. & N.C., 30K cycles, 85°C.
- 10 A, 30 V dc, Resistive, 100K cycles, N.O. & N.C., 85°C.
- & 5 A, 250 V ac, General Use, 100K cycles, N.O. & 50K N.C., 85°C.
- TV-3, 250 V ac, 25K cycles, N.O., 40°C.
- TV-2, 250 V ac, 25K cycles, N.O., 40°C.
- Pilot Duty: 250 VA, 250 V ac, N.O. & N.C., 85°C.
- # 12A, 277 V ac, Resistive/General Use, 100K cycles, N.O., 105°C
- # 8A, 277 V ac, Resistive/General Use, 50K cycles, N.C., 105°C

Double-Pole:

- & 5 A, 125/250 V ac, Resistive, 100K cycles, N.O., 85°C.
- 5 A, 125/250 V ac, Resistive, 100K cycles, N.C., 85°C.
- & 5 A, 125/250 V ac, General Use, 100K cycles, N.O., 85°C.
- 5 A, 125/250 V ac, General Use, 100K cycles, N.C., 85°C.
- 5 A, 24 V dc, Resistive, 100K cycles, N.O. & N.C., 85°C.
- & 2 A, 120 V ac, General Use, 100K cycles, N.O., 85°C.
- 2 A, 120 V ac, General Use, 100K cycles, N.C., 85°C.
- & 2 A, 240 V ac, General use, 100K cycles, N.O., 85°C.
- 2 A, 240 V ac, General use, 100K cycles, N.C., 85°C.
- Pilot Duty: 125 VA, 250 V ac, N.O. & N.C., 85°C.

Double-Pole: (Cont'd)

8A, 277 V ac, Resistive/General Use, 100K cycles, N.O., 105°C
5A, 277 V ac, Resistive/General Use, 50K cycles, N.C., 105°C
TV-3, 120 V ac, 25K cycles, N.O., 40°C
1/8 Horsepower, 125/250/277 V ac, N.O. & N.C., 30K cycles, 85°C.
& 5 A, 250 V ac, Resistive, 50K cycles, N.C., 85°C.
& 5 A, 250 V ac, General Use, 50K cycles, N.C., 85°C.
& 2 A, 120 V ac, Resistive, 50K cycles, N.C., 85°C.
& 2 A, 240 V ac, General Use, 50K cycles, N.C., 85°C.

Double-Pole (Code V: L):

8A, 125 Vac/250 Vac/277 Vac, Resistive/General Use, 100K cycles,
N.O., 105°C/40°C.
8A, 125 Vac/250 Vac/277 Vac, Resistive/General Use, 6K cycles, N.C.,
105°C/40°C.
Coil - 3-48 V dc

- Only for the alternate construction described in follow report, and
only uses class 155(F) insulation system.

& - For both original construction and alternate construction described
in follow report, and only with Class 155(F) insulation system.

- Only uses class 155(F) insulation system.

Nomenclature -

$\frac{SMI}{I}$	-	$\frac{S}{II}$	-	$\frac{1}{III}$	$\frac{12}{IV}$	$\frac{D}{V}$	$\frac{M}{VI}$	$\frac{Blank}{VII}$	-	$\frac{F}{VIII}$	-	$\frac{XX}{IX}$
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I. Series Designation

II. Protective construction

SH: Sealed type washable
S: Sealed type

III. Number of poles

1: 1 pole
2: 2 poles

IV. Coil Voltage

Any voltage between 3 V dc to 48 V dc.

V. Coil sensitivity

D: 0.72 W
L: 0.54 W

VI. Contact form

* Blank: **Form C**
* M: **Form A**

VII. Contact material

Blank: Silver-tin oxide (AgSnO₂)

VIII. Insulation System

B: Class 130(B)
F: Class 155(F)
Blank: Standard Type (Class 105)

IX. Special Code

Additional numbers or letters, which don't affect construction or ratings.

ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Use - For use only in (or with) complete equipment where the acceptability of the combination has been determined by Underwriters Laboratories Inc.

USR indicates investigation to the Standard for Industrial Control Equipment, UL 508, 17th Edition.

CNR indicates investigation to the Standard for Industrial Control Equipment, CAN/CSA C22.2 No. 14-05, 10th Edition.

This device has been judged on the basis of the required spacings in the Standard for Industrial Control Equipment, UL 508, Seventeenth Edition, revision dated July 11, 2005, which would cover the component itself if submitted for unrestricted Listing.

Conditions of Acceptability -

1. A suitable enclosure should be provided for these devices in the end product.
2. The relay terminals are not suitable for field wiring. The relay terminals are to be factory wired only, and the suitability of the connection (including spacings between factory connectors) shall be determined.

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3. Only units with model designations ending in "M" (Form A, N.O.) shall be considered suitable for use at TV-2/TV-3, at 250 V ac.
4. **Series SMI with the following contact ratings were conducted with dielectric voltage 5000Vac between Contact Terminal and Coil Terminal, and with dielectric voltage 1000Vac between Movable Contact Terminal and Stationary Contact Terminal.**
5. **The endurance test for SMI series with HP rating of 1/8 Horsepower, 125/250/277 V ac, N.O. & N.C., 30K cycles, 85°C for double-pole, and 1/3 Horsepower, 125/250/277 V ac, N.O. & N.C., 30K cycles, 85°C for single-pole were conducted under the test condition with on/off cycle rate 0.5s/0.5s for the first 1,000 cycles, and 1s/9s for remnant 29,000 cycles. The suitability shall be determined for the end use application.**

CONSTRUCTION DETAILS:

The product shall be constructed in accordance with the following description.

Tolerances - Unless specified as maximum or minimum, all indicated dimensions are nominal.

Corrosion Protection - All ferrous metal parts are suitably protected from corrosion by painting, plating, or equivalent.

Markings - Recognized Company's name, and/or file number, or trademark, and model number, or catalog number.

* Spacings - **For SMI-2P series, a minimum spacing of 1.6 mm through air, and 3.2 mm over the surface; for SMI-1P series, a minimum spacing of 6.4 mm through air, and 9.5 mm over the surface,** shall be maintained between uninsulated live parts of the opposite polarity and dead-metal parts.

Illustrations - Reference ILL.1 and ILL.2 for overall relay assembly, and ILL.3 for stationary and moveable contact construction and dimensions for relay models SMI-1P and SMI-2P series.