

D E S C R I P T I O N

PRODUCT COVERED:

Component Magnetic Motor Controllers, Part No. VE, followed by one or two digits -5 through 48, followed by H, may be followed by M, may be followed by S, may be followed by E or 5, may be followed by three digits -500 through -699 followed by K.

GENERAL CHARACTER AND USE:

These components are one-pole, double-throw magnetic motor controllers with DC operating coil and with normally open and normally closed contacts. Part No. with "M" suffix have one-pole, single-throw contacts arrangement with normally open contact. These components are provided with terminals for direct printed circuit mounting. These components are for use in Industrial Applications.

RATINGS:

Type	VE	VE()H-K	VE()HM-K	VE()H5-K	VE()HM5-K
*		VE()HE-K	VE()HME-K	VE()HS5-K	VE()HMS5-K
*		VE()HS-K	VE()HMS-K		
*		VE()HSE-K	VE()HMSE-K		
Contact arrangement	1 Form C	1 Form A	1 Form C	1 Form A	
Resistive DC Rating	5A, 30 V dc	5A, 30 V dc	5A, 30 V dc	5 A, 30 V dc	
AC Rating	3A, 250 V ac 5A, 250 V ac (N.O. Only)	5A, 250 V ac	5A, 250 V ac	5 A, 250 V ac	
HP Rating	1/14 hp, 125 V/250 V	1/12 hp, 125 V 250 V ac	1/10 hp, 250 V ac 1/10 hp, 125 V ac (N.O. Only) 1/14 hp, 125/250 V ac	1/10 HP, 125/ 250 V ac	
*Pilot Duty Rating	D300 (N.O. Only) D150	D300 (N.O. Only) D150	D300	D300	
Operating coil	5 through 48 V dc				
Coil Power		approx. 0.36 W at 20 C			
*		approx. 0.25 W at 20 C for Code S, position			
*		5 of nomenclature			

NOMENCLATURE:

- | Part No. | <u>VE</u> | <u>24</u> | <u>H</u> | <u>M</u> | <u>S</u> | <u>E</u> | <u>-500</u> | <u>-K^{oo}</u> |
|----------|-----------|-----------|----------|----------|----------|----------|-------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
1. Indicates relay type.
 2. Indicates coil voltage.
5 through 48 V dc are used.
 3. Indicates contact rating.
H 5A rating.
 4. Indicates contact configuration.
None 1 Form C.
M 1 Form A
 5. Indicates coil power.
None 0.36 W.
S 0.25 W.
 6. Indicates contact material.
None consists of copper alloy base overlaid with Ag-Ni, which may be further overlaid with gold.

E consists of copper alloy base overlaid with Ag-Ni.

S consists of copper alloy base overlaid with Ag-Cdo, movable contact may be Ag-Cdo.
 7. Indicates minor constructive variation.
-500 through -699 additional three digits used for special variation of construction as below.
 - A. Variations of coil resistance.
 - B. Variations of pick-up voltage, non-pick up voltage, drop-out voltage and hold voltage.
 - C. Variations of operate time or release time.
 8. Indicates relay construction.
-K sealed construction.
 9. Indicates manufacturer specifications.

*ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

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

This component has been judged on the basis of the required spacings in the Standard for Industrial Control Equipment (UL 508), Paragraph 47.1, Fourteenth Edition, which would cover the component itself if submitted for unrestricted Listing.

Conditions of Acceptability -

1. These devices should be used within their Recognized ratings as specified above.
2. Open type devices should be mounted in enclosures having adequate strength and thickness and in the intended manner and with acceptable spacings being provided.
3. The pin type terminals are not suitable for field wiring. The pin type terminals are to be factory-wired only and the suitability of the connection (including spacings between factory connectors) shall be determined.

CONSTRUCTION DETAILS:

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

Spacings - Spacings of not less than 1/16 in. (1.6 mm) through-air and 1/8 in. (3.2 mm) measured over surface of insulating material (including printed wiring boards), are maintained between any uninsulated live part and an uninsulated live part of opposite polarity, uninsulated grounded part other than the enclosure, or exposed metal part.

Marking - Recognized company, part number designation.
The electrical ratings are optional.

VE SERIES RELAYS - FIG. 1 (S87-6841)

1. Cover - R/C (QMFZ2). Overall 20.5 by 20.5 by 10.5 mm. Secured to base plate by snap-fit and adhesive. May be one of the following:

<u>Manufacturer</u>	<u>Type</u>
Union Carbide Corp.	B-322
	GF-130
G.E. Plastics Japan Ltd.	420-SEO
Dainippon Ink and Chemicals, Inc.	BT-2230
Toray Industries Inc.	1184G-30
Chang Chun Plastics Co., Ltd.	PBT-4130
Polyplastics Co., Ltd.	330EP
Nan Ya Plastics Corp.	1403G6
Teijin Ltd.	CRN7030
Polyplastics Co., Ltd.	3316
* Dainippon Ink & Chemicals, Inc.	BT-2330

2. Base Plate - R/C (QMFZ2). Overall 19.9 by 9.9 by 4.2 mm. May be one of the following:

<u>Manufacturer</u>	<u>Type</u>	<u>Min. Thickness</u>
G.E. Plastics Japan Ltd.	420-SEO	0.3 mm
Dainippon Ink and Chemicals, Inc.	BT-2230	0.3 mm
Toray Industries Inc.	1184G-30	0.3 mm
Chang Chun Plastics Co., Ltd.	PBT-4130	0.3 mm
Polyplastics Co., Ltd.	330EP	0.4 mm
Nan Ya Plastics Corp.	1403G6	0.35 mm
Teijin Ltd.	CRN7030	0.32 mm
Polyplastics Co., Ltd.	3316	0.35 mm
* Dainippon Ink & Chemicals, Inc.	BT-2330	0.35 mm

3. Coil Terminal - Copper alloy with tin or solder plating. Overall 0.4 mm diameter by 8.4 mm long. Encapsulated by bobbin.

Alternate - Same as above, except steel with copper plating and solder plating.

4. Base Plate - R/C (QMFZ2), may be one of the following:

Chang Chun Plastics Co., Ltd.	Type PBT-4130
G.E. Plastics Japan Ltd.	Type 420-SEO
Dainippon Ink and Chemicals, Inc.	Type BT-2230
Toray Industries, Inc.	Type 1184G-30
Nan Ya Plastics Corp.	Type 1403G6

Dimensions approximately 19.92 by 9.92 by 4.3 mm overall, minimum 0.3 mm thick.

Alternate - Polyplastics Co., Ltd., Type 330EP, minimum thickness 0.40 mm.

Alternate - Teijin Ltd., Type CRN7030, minimum thickness 0.32 mm.

5. Coil Terminal - Copper alloy with tin or solder plating. 0.4 mm diameter, 8.4 mm long. Encapsulated by bobbin.

VE SERIES RELAYS - FIG. 2 (S87-6840)

1. Bobbin - R/C (QMFZ2). Overall 18 by 19.4 by 9.4 mm, by minimum 0.35 mm thick. May be one of the following:

<u>Manufacturer</u>	<u>Type</u>
Mitsubishi Engineering-Plastics Corp.	GS-2020M GS-2020MR2 GS-2030M GS-2030MR2 GSN2020R2 GSV2020R2
Teijin Chemicals, Ltd.	G-3120 G-3130
*	
Teijin Ltd.	CRN-7030
Idemitsu Petrochemical Co., Ltd.	G-2520 G-2530 A-2250
Polyplastics Co., Ltd.	330EP 3316
GE Plastics Japan Ltd.	3412R
Nan Ya Plastics Corp.	5410G4 1403G-6

2. Yoke - L-shaped. Steel. Overall 15 by 11.1 by 7.1 by 1.4 mm thick.

- 2A. Spacer - Not shown - Optional. R/C (QMFZ2). Overall 11.8 by 8.9 mm. Secured between the Yoke and the Coil. May be one of the following:

<u>Manufacturer</u>	<u>Type</u>	<u>Min. thickness</u>
Dainippon Ink and Chemicals, Inc.	BT-2230	0.90 mm
Toray Industries Inc.	1184G-30	0.90 mm
GE Plastics Japan Ltd.	420-SEO	0.90 mm
Polyplastics Co., Ltd.	330EP	0.40 mm
Chang Chun Plastics Co., Ltd.	PBT-4130	0.74 mm
Teijin Ltd.	CRN-7030	0.32 mm
Nan Ya Plastics Corp.	1403G6	0.76 mm
Polyplastics Co., Ltd.	3316	0.75 mm

3. Coil - Polyurethane copper wire. Random wound. Crossover lead insulation provided by slot in bobbin.
4. Core - Magnetic steel, 15.5 by 3 mm diameter shaft, 7 mm diameter cap. Inserted through bobbin and riveted to yoke.
5. * Stationary Arm - Copper alloy. Terminals provided in different shapes. 0.4 mm thick, see ILL. 2 for shapes and dimensions.
6. Stationary Contact - One or two provided, silver alloy, suffix H or HE, 90% Ag, 10% Ni, suffix H5, 86% AG, 14% Cdo clad onto copper base measuring 0.1 mm. Contact measures 1.8 by 1.9 mm by 0.78 mm thick. Crimped to terminal. See ILL. 1, Fig. 11, for details.
7. Armature - Magnetic steel. 12.9 by 7 mm overall, 1 mm thick. Riveted to movable contact arm.
8. Movable Contact Arm (Spring) - Copper alloy, 22.76 by 12.24 by 7.5 mm, overall 0.25 mm thick. Provided with L-shaped arm portion, 12.75 by 9.5 by 4 mm wide. Riveted to armature and yoke.
9. Movable Contact - Single or double-sided silver alloy suffix H or HE: 90% Ag, 10% Ni, suffix H5, 86 AG, 14% Cdo, clad onto copper base or Ag-CdO (86% Ag, 14% CdO) measuring 0.1 mm thick, H may be with or without gold clad. Contact measures 1.9 by 1.9 by 1 mm thick. Crimped to movable contact arm, see ILL. 1, Fig. 10, and ILL. 1A, Fig. 10A, for details.
10. Stationary Arm - Used in Form C types.
11. Base Plate - Top view for reference only.