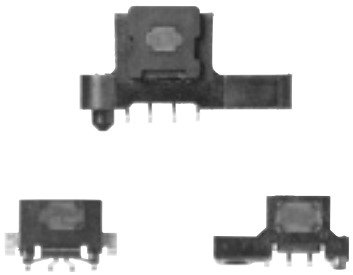
Magneto Resistive Elements (MR Elements)

Type: **EZMP**



Panasonic type EZMP are frequency generating sensors using a magneto resistive element that can be used for magnets printed at a density of 0.1 mm to 1.0 mm. By using this element, very accurate detection becomes feasible for various applications.

■ Features

- Flat surface
  (Precise and easy to assemble)
- Short turn around-time by standardized pitch and shape.
- High speed and accuracy control possible

■ Recommended Applications

- VCR capstan motors (Rotation speed)
- Video camera lens unit (Position)
- Typewriters, Printers (Printing timing)
- Tape counter (Number of rotations)
- Disc drive actuator (Position)

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11
E	Z	M	P	D	3	0	0	N	0	1

Product Code | Function | Design No. | MR Sensitivity | Shape

Product Code	
EZMP	Magneto Resistive Elements

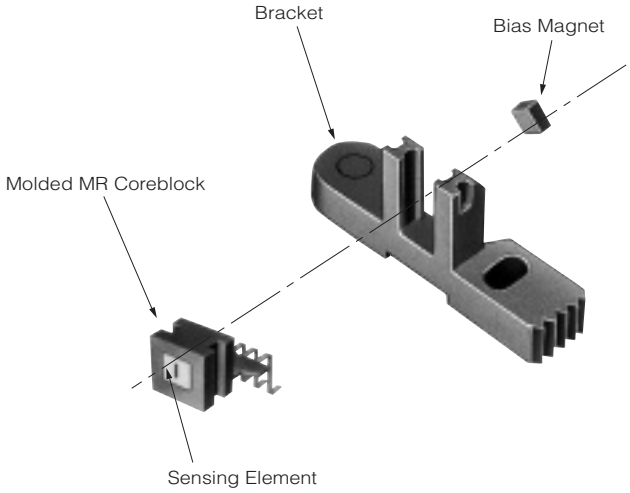
Function	
S	Single
D,H	90 °phase double
R,Z	180 °phase double

Design No.	
□□□	Design No.

MR Sensitivity	
N	Biased
P	Non-biased
H	Non-biased High sensitivity
M	Non-biased Super high sensitivity

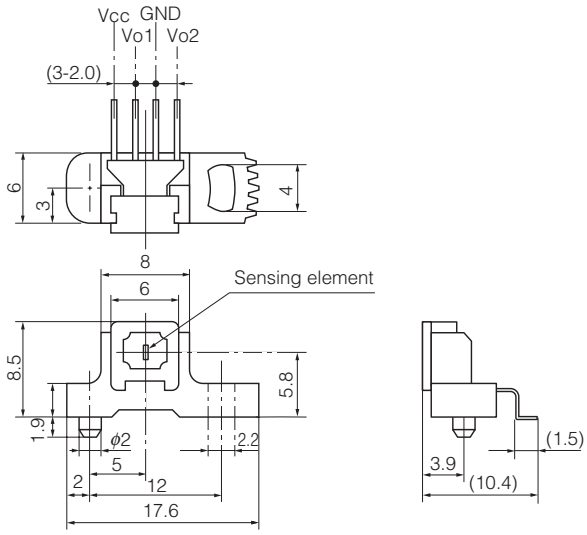
Shape
01
S8
SA
U1

■ Construction



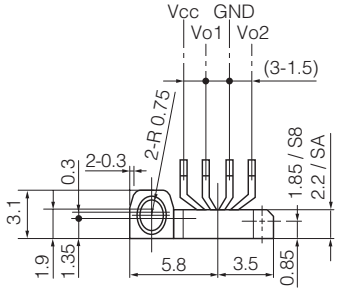
■ Dimensions in mm (not to scale)

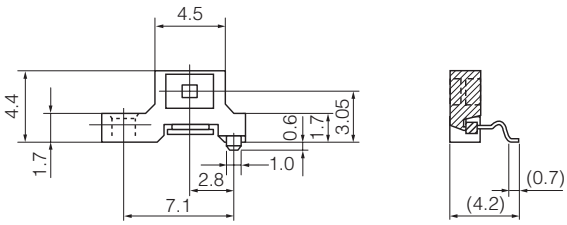
01 Bracket Assembly
- Available for both biased type and non-biased type



S8 Bracket Assembly
"S Petit Mold MR"
- Available for only non-biased type

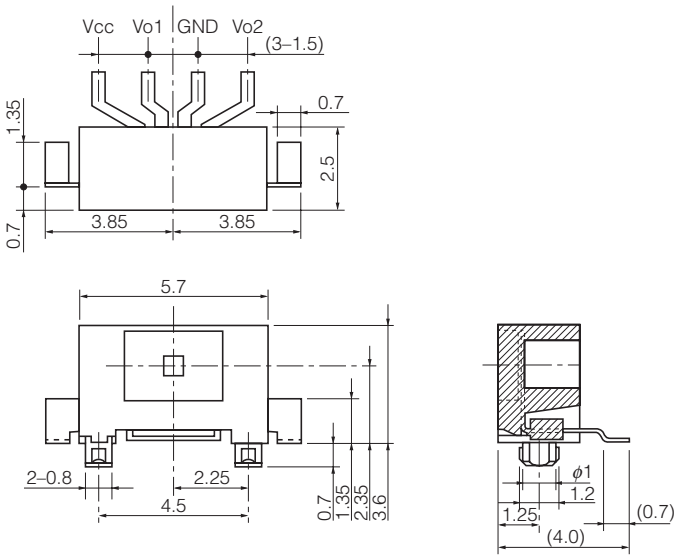
SA Bracket Assembly
"S Petit Mold MR"
- Available for only biased type



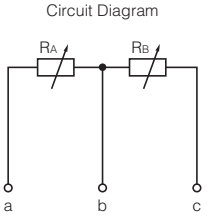


■ Dimensions in mm (not to scale)

U1 Bracket Assembly
"U Mold MR"
- Available for only non-biased type



■ Performance Specifications, Summary

Item	Characteristics
Resistance Value	1 kΩ (standard) ±30%
Sensing Range	1600 A/m to 16000 A/m
Pitch Density	0.1 mm min.
Category Temperature Range (Operating Temperature Range)	–30 °C to +70 °C
Applied Voltage	5 V (standard)
Resistance Change by Magnetic Force	N: 3 % min. (at ±16000 A/m) P: 2 % min. (at ±16000 A/m) M: 6 % min. (at ±16000 A/m)
Resistance Pair-Matching	$\frac{R_B}{R_A + R_B} = (50 \pm 0.6)$ % Circuit Diagram 

■ Packaging Methods

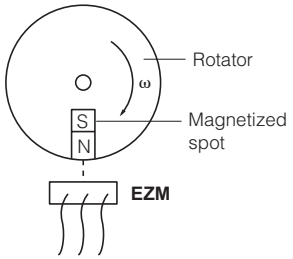
Part No.	Standard Quantity	Style	Mass (Weight) [g/pc.]
EZMP□□□□□01	3600 pcs./Box	Tray	0.58
EZMP□□□□□SA	15000 pcs./Box	Tray	0.12
EZMP□□□□□S8/U1	15000 pcs./Box	Tray	0.09

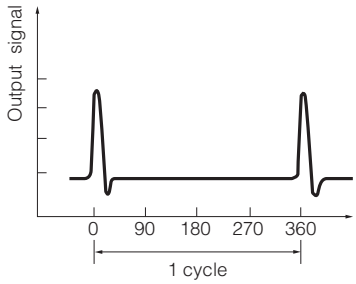
■ Application Examples

1. Detection of revolutions

(1)Detection of position

EZM detects the magnetized spot on a rotator.

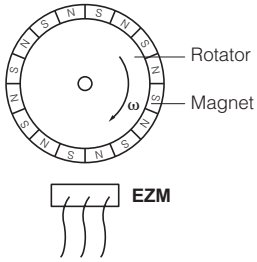


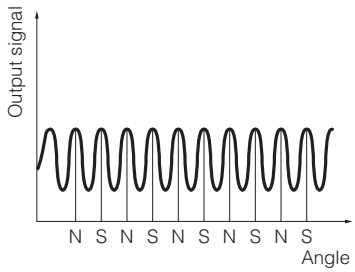


(2)Detection of rotation angle

The circumference of a rotator has been magnetized as shown in the figure on the right. EZM detects a rotation angle by analyzing wave forms through a differential and integral circuit and with an up-down counter.

(3)Detection of number of rotations.





■ Examples of Applications

- To sense movement without touching
- To sense a very small signal from a Hall element (Hall IC)
- To sense a loose signal from Hall element (Hall IC)
- To get more stabilized output voltage from ring head
- To substitute for optical sensor in dusty circumstances
- To sense at a higher speed than an optical sensor
- To sense at a higher speed or a higher accuracy than a stepping motor

⚠Safety Precautions

The following are precautions for individual products. Please also refer to the precautions common to EMI Filters, Fuses, and Sensors (MR Elements) shown on page EX2 of this catalog.

1. Solder Magneto Resistive Elements (hereafter called the MR Elements) at their terminal tips at 260 °C or lower for no more than 10 seconds.
2. Do not apply excessive shock, such as a drop impact, to the MR Elements' bodies or terminals.
3. Do not use any corrosive adhesives, such as those made of acid, alkali, or base, or any adhesives that apply stress to the MR Elements.
4. Do not wash the MR Elements with organic solvents.

MR Elements Inquiry Work Sheet

Please fill out the following items and send with your request.	
Your name	
Please give your adress and phone number to our sales staff.	
Sensing Item	1)Rotation speed 2)Rotation position 3)Linear speed 4)Linear position 5)Approach 6)Flow 7)Direction 8) Current
Application Set.	1)VCR 2)Camera 3)Motor 4)Water-flow-meter 5)Other ( )
Projected Quantity	Projected Qty. _____ , Monthly Rate _____ /M
Manufacturing Schedule	E.S._____ , P.P _____ , M.P. _____ Engineering sample Pilot production Mass production
Detecting (FINE) Pitch	_____ μm or _____ mm
Sample Required	EZM _____ x _____ pcs.
Additional Comments:	
Questions:	
If you couldn't use MR elements, What's alternative?	1)Hall Element/IC 2)Magnetic head 3)Coil 4)Coil pattern 5)Optical sensor 6)Eddy current 7)Other ( )
We appreciate your input. Thank you.	

⚠Safety Precautions (Common precautions for EMI Filters, Fuses, and Sensors[MR Elements])

- When using our products, no matter what sort of equipment they might be used for, be sure to make a written agreement on the specifications with us in advance. The design and specifications in this catalog are subject to change without prior notice.
- Do not use the products beyond the specifications described in this catalog.
- This catalog explains the quality and performance of the products as individual components. Before use, check and evaluate their operations when installed in your products.
- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other significant damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/gas equipment, rotating equipment, and disaster/crime prevention equipment.

✻ Systems equipped with a protection circuit and a protection device
✻ Systems equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault

(1) Precautions for use

- These products are designed and manufactured for general and standard use in general electronic equipment (e.g. AV equipment, home electric appliances, office equipment, information and communication equipment)
- These products are not intended for use in the following special conditions. Before using the products, carefully check the effects on their quality and performance, and determine whether or not they can be used.
  1. In liquid, such as water, oil, chemicals, or organic solvent
  2. In direct sunlight, outdoors, or in dust
  3. In salty air or air with a high concentration of corrosive gas, such as Cl_2, H_2S, NH_3, SO_2, or NO_2
  4. Electric Static Discharge (ESD) Environment
     These components are sensitive to static electricity and can be damaged under static shock (ESD).
     Please take measures to avoid any of these environments.
     Smaller components are more sensitive to ESD environment.
  5. Electromagnetic Environment
     Avoid any environment where strong electromagnetic waves exist.
  6. In an environment where these products cause dew condensation
  7. Sealing or coating of these products or a printed circuit board on which these products are mounted, with resin or other materials
- These products generate Joule heat when energized. Carefully position these products so that their heat will not affect the other components.
- Carefully position these products so that their temperatures will not exceed the category temperature range due to the effects of neighboring heat-generating components. Do not mount or place heat-generating components or inflammables, such as vinyl-coated wires, near these products (except Thermal Cutoffs).
- Note that non-cleaning solder, halogen-based highly active flux, or water-soluble flux may deteriorate the performance or reliability of the products.
- Carefully select a flux cleaning agent for use after soldering. An unsuitable agent may deteriorate the performance or reliability. In particular, when using water or a water-soluble cleaning agent, be careful not to leave water residues. Otherwise, the insulation performance may be deteriorated.

(2) Precautions for storage

The performance of these products, including the solderability, is guaranteed for a year from the date of arrival at your company, provided that they remain packed as they were when delivered and stored at a temperature of 5 °C to 35 °C and a relative humidity of 45 % to 85 %. (Micro Chip Fuses: Guaranteed for 6 months from the date of arrival at your company)
The performance of EMI Filters is guaranteed for 6 months or a year from the outgoing inspection date indicated on the packages, provided that they are stored at a temperature of -5 °C to +40 °C and a relative humidity of 40 % to 60 %. Check the guarantee period in the specifications. The performance of Thermal Cutoffs is guaranteed for a year from the outgoing inspection date indicated on the packages, provided that they are stored at a temperature of -10 °C to +40 °C and a relative humidity of 30 % to 75 %.

Even within the above guarantee periods, do not store these products in the following conditions. Otherwise, their electrical performance and/or solderability may be deteriorated, and the packaging materials (e.g. taping materials) may be deformed or deteriorated, resulting in mounting failures.

1. In salty air or in air with a high concentration of corrosive gas, such as Cl_2, H_2S, NH_3, SO_2, or NO_2
2. In direct sunlight

<Package markings>
Package markings include the product number, quantity, and country of origin.
In principle, the country of origin should be indicated in English.