横店东磁
DMEGC
横店集团成员企业
A Member of HENGDIAN Group
Introduction of DMEGC

Three main industries

**Magnetic Material**
- Hard ferrite magnet
- Soft ferrite core
- Pre-sintered material
- Bonded rubber magnet
- Sintered rare earth magnet
- Bonded rare earth magnet

**Renewable Energy**
- Silicon wafer
- Alkaline battery
- Solar module
- Solar cells
- Automobile power battery
- PV power generation
- System engineering

**Terminal component**
- Haptic devices
- Linear motor
- Coin motor
- Cylinder motor
- BLDC
- Camera module
- Image component
Sales Revenue

Unit: hundred million RMB
Major Customers of DMEGC

- Bosch
- IBM
- Apple
- Huawei
- Samsung
- LG
- Toshiba
- Goldwind
- Brose
- Nidec
- Continental
- Microsoft
- Kone
- Valeo
- Siemens
- TRW
- Delta
- OSRAM
- CSR (China South Railways)
- Panasonic
- Würth
- Gree
- Philips
Customer Awards

- Bosch
- Pulse
- COOPER
- Brose
- Panasonic
- Nidec
- Mabuchi
- GREE
- FLEX
- EATON
Introduction of Electro-Mechanics Division

Professional Haptic & vibration devices vendor
Global largest production base

Founded in 1993  2,000 + employees  300 million capacity

Major customers of Electro-Mechanics Division
Global Market

Total shipment of vibration motor in 2015

Top6 Cell Phone Vendors Based on Market Share

- **Samsung**: 22.8%
- **Apple**: 11.5%
- **Huawei**: 9.4%
- **OPPO**: 5.6%
- **VIVO**: 5.4%
- **LG**: 5.3%

DEMGC’s share in Top6 Cell Phone Vendors

- **Samsung**: 20.8%
- **Apple**: 0%
- **Huawei**: 70.4%
- **OPPO**: 30%
- **VIVO**: 50%
- **LG**: 50%
**Status & Trend**

Vibration motor shipment of total market in 2015

- **LRA**: 30%
- **ERM**: 70%

Vibration motor applied to High-end models in 2015

- **ERM**: 20%
- **LRA**: 80%

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**2012～2018 Market share of LRA**

- 2012: 5%
- 2013: 10%
- 2014: 25%
- 2015: 30%
- 2016: 40%
- 2017: 60%
- 2018: 80%

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**LRA share of Top3 Vendors**

- **Apple**
- **Samsung**
- **Huawei**

<table>
<thead>
<tr>
<th>Year</th>
<th>Apple</th>
<th>Samsung</th>
<th>Huawei</th>
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<tbody>
<tr>
<td>2012</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2013</td>
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<td>2014</td>
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<td>2017</td>
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<td></td>
<td></td>
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<tr>
<td>2018</td>
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</table>
Haptic & Vibration devices

Eccentric Rotating Mass (ERM)

- Cylinder vibration motor
- Coin vibration motor

Linear Resonance Actuator (LRA)

- Z axis linear vibration motor
- X axis linear vibration motor
**Application**  *consumer electronics*

- **Haptics**
  - Watch
  - Pad / PC
  - Mouse
  - Printer
  - Band
  - Game stick
  - Handle
  - ATM
  - VR
  - Phone

**Application**

**consumer electronics**
## Product catalog

<table>
<thead>
<tr>
<th>Series</th>
<th>Size /mm</th>
<th>RPM r/min</th>
<th>Acceleration /g On 100g Jig</th>
<th>Temperature/℃</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM-YX406</td>
<td>Φ4×3×6.5</td>
<td>10000-15000</td>
<td>1.0</td>
<td>-40~85</td>
<td>Consumer electronics</td>
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<td>DM-B0834</td>
<td>Φ8×3.4</td>
<td>10000-15500</td>
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<tr>
<td>DM-B0825</td>
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<td>DM-YK407</td>
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<td>12500-17500</td>
<td>1.2</td>
<td>-40~85</td>
<td>Mid-end models of intelligent terminals, Intelligent home furnishing, Auto electronics</td>
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<tr>
<td>DM-B1003</td>
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<td>10000-15000</td>
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<tr>
<td>DM-B1005</td>
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<td>10000-15000</td>
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<tr>
<td>DM-B1002G</td>
<td>Φ10×3.0</td>
<td>10000-15000</td>
<td>1.5</td>
<td>-40~85</td>
<td>High-end models of intelligent terminals, Intelligent home furnishing, Auto electronics</td>
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<tr>
<td>DM-B1005G</td>
<td>Φ10×2.1</td>
<td>10500-15000</td>
<td>1.5</td>
<td>-40~85</td>
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<tr>
<td>DM-B0934</td>
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<td>3.0</td>
<td>-40~110</td>
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<td>DM-LM2080</td>
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<td>195 Hz</td>
<td>8.0</td>
<td>-40~110</td>
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<tr>
<td>DM-YK825</td>
<td>Φ8.5×25</td>
<td>30000 ~ 35000</td>
<td>10.0</td>
<td>-40~110</td>
<td>Intelligent home furnishing, Auto electronics (touch screen,steering wheel,shift lever,car seat)</td>
</tr>
</tbody>
</table>
Automotive  

**haptic feedback**

recommended product  **LM2080**

**Haptic feedback is the best choice of automotive HMI**

e.g. Cadillac XTS  There's no button or switch on central console. All functions are integrated on the touch screen/panel, generating pulsed vibration feedback when sliding or touching
Strength

*sharp response*

**Features:**
- LRA: Rising 0~100% in 50ms, Falling 100~0% in 70ms
- ERM: Rising 0~100% in 100ms, Falling 100~0% in 120ms

**Benefits:**
- Better reliability and durability without brush or shaft
Strength

Various haptic effect

Features:
- Sharp response, sensitive feedback
- Alterable amplitude, frequency, and pulse interval

Benefits:
- Simulate different touch senses
Automotive **warning function**

recommended product  **LM2080 & YK825**

- lane departure, lane keeping, driver drowsiness warning, overspeed alerting

  e.g. Daimler C260L/GLE warn the driver by steering wheel pulsed vibrating 1.5s when lane departure
Strength

violent vibration

<table>
<thead>
<tr>
<th>On 100_gram Load</th>
<th>Acceleration/g</th>
<th>Size/mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM2080</td>
<td>8.0</td>
<td>Φ20*8</td>
</tr>
<tr>
<td>YK825</td>
<td>10.0</td>
<td>Φ8.5*25</td>
</tr>
</tbody>
</table>

Features: smaller size occupy less space and provide larger vibration

Benefits: better warning function
lower cost
easy installation (double-sided adhesive, buckle or bolt)

Diamler C260L
original motor occupy more space and vibration is weak
Automotive switch feedback

recommended product YK825

New generation switch module

Touch panel & vibration motor replace traditional switch, but keep mechanical sense of switch feedback
Features: instant startup and generate large torque

Benefits: simulate mechanical sense of switch feedback
THANK YOU!