OMRON Corporation

Electronic and Mechanical Components Company
Company Profile

Overview
Company Profile — Overview

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1. Cooperate Overview

OMRON sells wide variety of products in 117 countries across a diverse set of industries including control devices, electronic components, social infrastructure, and healthcare.

Fiscal 2019 ¥678 billion

- Industrial Automation Business
  Factory automation – the main component of OMRON’s business that leads the way to innovation in manufacturing across the globe (e.g. sensors, controllers, robots)
- Electronic and Mechanical Components Business (EMC)
  Help improve the performance of home appliances and communications equipment (e.g. relays, switches)
- Social systems, Solutions and service Business
  Help develop various social infrastructure systems to realize safe, secure and comfortable society (e.g. automated ticket gates and vending machines, solar power conditioners, storage batter systems)
- Healthcare Business
  Help improve health around the world (e.g. digital blood pressure monitors, thermometers)
- Other business domains
  Corporate and elimination

OMRON sells wide variety of products in 117 countries across a diverse set of industries including control devices, electronic components, social infrastructure, and healthcare.
2. EMC Mission (Electronic and Mechanical Components Business)

With our devices and modules, Create customer value, and Contribute to the society.

EMC offers a wide range of relay, switch, connector and sensor types including advanced devices and module solutions for customers to suit a variety of application needs in factory automation, mobility, energy management, healthcare and office/home appliances.
3. EMC Sales Ratio - By Region and Product (fiscal year ending March 2020)

By Region:
- Asia/Pacific: 14%
- Greater China: 28%
- Americas: 17%
- Europe: 15%
- Japan: 26%

By Product:
- Other Electronic Components (Imaging sensing, sensors, etc.): 26%
- Relays, Switches, Connectors: 74%
As we advance towards a smarter society, our optimal devices and modules provide solutions for a variety of applications and evolving customer needs.

### Relays
- General-purpose Relays
- PCB Power Relays
- DC Power Relays
- MOS FET Relay Modules
- Solid-state Relays
- Power Latching Relays
- Surface Mount Detection Signal Relays
- Automotive Relays

### Switches
- General-purpose Basic Switches
- Trigger Switches
- Ultra-small Tactile Switches
- Keyboard and mouse switches
- Thumbwheel Rotary Switches

### Connectors
- FPC/FFC Connectors
- MIL Flat Cable Connectors
- DIN Connectors
- Terminal-Block for Printed Circuit Boards
- USB Connectors
- Easy-wire Connectors for Industrial Components

### Sensors
- MEMS Flow Sensors
- Environment Sensors / Seismic Sensors
- OKAO Vision Image Sensing Technology (Software)
- Photomicro Sensors
- MEMS Thermal Sensors
- Light Convergent Reflective Sensors / Air Quality Sensors
- Image Sensing Components
- Human Vision Components
- TOUCH SENSOR

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EMC’s core competencies consist of miniaturization, low profile, multi-functionality and high functionality.

Fine shape

MEMS

Processing control

Fine mechanical engineering

Collection of fine processing technology down to micron and submicron levels and mass replication technology

Smart sizing

Collection of hardware and software technologies that enable high-density packaging of various functional components
5. Core Technology

We continue to provide products and improve our technologies to drive innovation in society with our components.

Two core competencies

Fine mechanical engineering
Smart sizing

Move
- Forward and backward direction
- Rotate

Control
- Motor control
- Switching
- Visual sensation

Secure
- Lock mechanism
- Oil-resistant mechanism

Detect
- Fine particle detection
- Human face and body detection

Analyze
- Simulations
- Seismic sensor
- Multi-sensor data analysis

Measure
- MEMS sensors
- Quantification of tactile feedback
- Evaluation and testing equipment

Process
- Intricate spring shape
- Fine spring structure
- Precision parts, airtight structure

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5. Core Technology

"Detect" examples of our human image sensing technology and applications.

Detect

- Face detection
- Hand detection
- Eye detection

Detailed detection
- Human organ/facial contour detection
- Closing-eye prediction
- Gaze direction prediction

Face recognition
- Age/gender prediction
- Smile prediction
- Face emotion prediction

Face correction
- Red-eye removal
- OKAO Beauty before, after

Human body tracking
- Human body detection
- Human movement tracking (Under development)

Attribute data

Communication

Processed locally using low-end CPU

Required CPU power

Crowd control solutions

Want to avoid crowding hours, waiting in long lines
<Solution> Visualize crowd conditions

Energy-efficient solutions

Lights are on in unoccupied areas and air conditioner keeps getting colder.
<Solution> Control the infrastructure according to human presence (location) and occupancy number

Check the crowd condition from a smartphone or on digital signages before heading to the destination
5. Core Technology

“Control” examples of our optical control technology and applications.

On a single transparent panel, millions of micro-shapes are processed to control one million light beams one by one.

- Image formation (imaging)
- Display switching

- Touchless aerial switch in restrooms
- Transparent 7-segment message display at entrances
- Room occupancy condition display
- Display switching SW for vending machines
- 3D direction signage in hallways
- Illuminated Digital signage
- Dynamic image presentation
- Aerial display (combined with a switch function)
5. Core Technology

“Measure” × “Control” examples of our haptic control technology and applications.

Associating characteristic elements with design factors using high precision CAE

Stress and reversal behavior analysis
Vibration analysis

Characteristic elements and design factors

Use affective engineering methods and categorize emotions by words

Primary assessment axis
Secondary assessment axis

- Light, superficial
- No click feel
- Slow
- Cheap
- Strange feel
- Sticky
- Comfortable (High class feel)
- Sharpness
- Crisp click feel
- Heavy, in-depth
- Smooth
- Slow
6. Quality Assurance

We create close collaboration between product design and manufacturing processes from a scientific approach and thereby ensure product safety and security for our customers.

For intended applications, we added validation (accuracy of design (theory)) and verification (accuracy of manufacturing (fulfillment)) process to reduce the occurrence of defects.

(1) Validation

Have you guaranteed that the applicable product meets the application request?

(2) Verification

Have you guaranteed that product design meets the requested performance/quality?

What is the product performance required for the application?

What kind of design is required to meet the performance?

What kind of dimension or status is required to meet the design requirement?

What kind of equipment or condition control is required to meet the dimension or status?

Have you guaranteed that the adequate production output has been maintained?

Have you guaranteed that production equipment or reproducibility of work has been maintained?
7. R&D System

We incorporate QCD effects that support the chain of engineering events throughout design to production process.

Concept based on Validation and Verification actions
- Desired quality
- Process management
- Drawings/schematics
- Validation
- Verification
- Standardization of production process as proven by the results of Validation and Verification process

Design process
- Develop design methods using CAE tools and the knowledge

Standard design DB

Use and application of CAE tools
- Magnetics
- Advanced coupled analysis
- Mechanism

CAE development

Validation & Verification

Traceability system

Production process standardization

Production data used to further improve QCD and design standardization

Accumulate
- Feedback to Validation

Parts X Y Z → Product

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7 domestic and 5 overseas manufacturing bases
Approximately 7,000 employees are involved in making EMC products and delivered to our customers.

The manufacturing bases in Japan is in charge of producing high-quality products using state-of-the-art production systems, and function as mother factories to manage the overseas production. Furthermore, our global production system enables quick response to customers’ QCD demands.
9. Sales

In addition to our wide range of relay, switch, connector and sensor products, our global operations offer optimal product solutions that address customers’ unmet needs.

Operated by home offices and distributors

Europe
- U.K.
- Netherland
- France
- Spain
- Germany
- Slovakia
- Italy

Greater China
- Shanghai
- Hong Kong
- India
- Thailand
- Viet Nam
- Malaysia
- Philippines
- Indonesia
- Korea
- Taiwan
- Japan
- Shanghai
- Hong Kong
- India
- Thailand
- Viet Nam
- Malaysia
- Philippines
- Indonesia
- Korea
- Taiwan
- Japan

Asia・Pacific
- Australia
- New Zealand

North Central and South America
- Chicago
- U.S.A
- Brazil
- Mexico
- Brazil

In addition to our wide range of relay, switch, connector and sensor products, our global operations offer optimal product solutions that address customers’ unmet needs.
10. EMC challenges to reach the Medium-Term goals (VG2.0)

VG2.0 goal: “Customer value creation” that continuously help customers capture business value.

**EMC Challenge**

**Respond to the evolving customer needs**
- Standardize and build series of core products
- Combine core technologies

**Continuously help customers capture business value**
- Quality first
- Lot-free production
- Obtain and develop core technology

**Factory Automation**
- Labor shortages
- Response to change in manufacturing

**Mobility**
- Frequent accidents and traffic jams
- City's environmental degradation

**Energy management**
- Acceleration of global warming

**Health care**
- Acceleration of aging
- Medical inflation

**4 Social Issues that EMC focuses on**
We ensure industry-leading quality and productivity by strengthening the manufacturing capabilities and managing 4M changes at all the manufacturing bases.

- Strengthening the manufacturing capability in the field
  - Quality education
  - 5S activity
  - Continuous improvements required in the field
  - TPM/IE activity
  - Reduce and eliminate foreign objects

Industry-leading quality and productivity

- 4M change management
  - China
    - Shenzhen
  - Shanghai
  - Indonesia
  - Italy
  - Malaysia
  - Japan
  - Cooperate companies

Stable Production

Stable Quality
11. Organizational

Electronic & Mechanical Components Company (EMC)

- Strategy Planning Division
- Risk Management Division
- Quality Management Division
- Sales Division HQ
- Sales Bases
- Sales Industry Business Division
- Business Strategy Planning Division
- Business Management Division HQ
- Application Product Division
- Application Product Division HQ
- Diversified Products Division
- Diversified Products Division HQ
- Automotive Components Division
- Automotive Components Division HQ
- Amusement Application Division
- Amusement Application Division HQ
- Product Development Division
- Product Development Division HQ
- Engineering Division
- Engineering Division HQ
- Production Division HQ
- Production Engineering Center
- Industrial Component Production Center
- Parts Engineering Center
- Purchasing Center
- Global Inventory Management Dept.
- Manufacturing Bases
- Sales Industry Business Division HQ
- Business Management Division HQ
- Sales Division HQ
- Sales Bases
- Sales Industry Business Division
- Business Strategy Planning Division
- Business Management Division
- Application Product Division
- Application Product Division HQ
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Electronic and Mechanical Components Company
Strategy Planning Division

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