SEMICONDUCTOR Industry Solutions

I DEC CORPORATION
Semiconductor Manufacturing Equipment Industry

With semiconductors now intrinsic in a growing range of areas from IoT and 5G to cloud computing, autonomous driving, imaging, and sensors, the market scale for semiconductor manufacturing equipment also continues to grow, accompanied by huge advances in miniaturization and stacking. In these circumstances, our customers need us to help boost reliability for high throughput in semiconductor manufacturing equipment components, downsize for a reduced footprint, and ensure safety and peace of mind. IDEC will continue to offer the solutions that help reduce COO (cost of ownership).
Semiconductor Manufacturing Equipment and IDEC

MORE PRODUCTS FOR BETTER EQUIPMENT PERFORMANCE

IDEC supplies a wide range of products for semiconductor manufacturing equipment, including front-end, back-end, and inspection processes. From start-up switches and bar code scanners for FOUP and tool information management to slim relays and push-in terminals that reduce installation space and wiring time, EMO switches, safety switches, safe laser scanners, and enabling switches, our products ensure operator safety while avoiding equipment damage. IDEC’s vast array of products helps achieve the best performance from customers’ equipment.

PURSUING 24-HOUR OPERATION

Downtime caused by unnecessary semiconductor manufacturing equipment stoppages means huge losses not only for semiconductor manufacturers (fabs) but also for semiconductor manufacturing equipment manufacturers. Reliability and ease of use are key to avoiding that downtime and its consequences. IDEC will continue to help improve COO and the cost of consumables by prioritizing both reliability and ease of use so that semiconductor manufacturing equipment and plants can operate 24 hours a day with no downtime.

ASSISTING GLOBAL DEPLOYMENT

SEMI standards bring consistency across the semiconductor industry. Safety is no exception, SEMI standards leading the way ahead of other industries. Because safety is in IDEC’s DNA, we have a strong record of SEMI standard compliance, including EMO switches and guards. IDEC will continue to help firms deploy semiconductor manufacturing equipment and plants globally with a close eye on changes in the semiconductor industry and its standardization developments.
New proposals to comply with SEMI standards and achieve downsizing

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Safety products to ensure safety to workers

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3 Smart RFID Reader KW2D
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Emergency Stop Switches
XA/XW/HW series

Safety Relay Module
HR6S

Safety Relay Modules
HR5S

Ethernet Switches
SX5E

Small footprint and labor saving inside panel products

Slim Relays/Universal Relays
RU/RJ/RV8

Controllers
FT1A

Operator Interfaces
HG series

Barcode Scanners
WB1F/WB2F

Programmable Controller
FC6A

Circuit Protectors
NC1V

Power Supplies
PSSR-V/PS6R

Front of panel products compliant with SEMI S2 and other standards

Push-in Switches & Pilot Lights
HW series

Flush Silhouette Switches
CW series

Flush Silhouette Switches
LB/LBW series
User authority and log control with RFID

- Flat design prevents dust and other particles from accumulating.
- Standard Ø22 mm panel cut-out enables easy installation.
- Device equipped with verification function. Easy tag registration using a software program.
- Ethernet communication (Modbus TCP, EtherNet/IP, and CC-Link IE Field Basic) allows easy communication with existing devices such as touch panels and PLCs.

**KW2D Smart RFID Reader**

**Series** | **Model** | **Rated Input Voltage** | **Operating Temperature** | **Storage Temperature** | **RFID Interface Specification** | **Supported Tags** | **Card** |
--- | --- | --- | --- | --- | --- | --- | --- |
KW2D | Without holder: KW2D-R100Q4E With holder: KW2D-RH100Q4E | 24V DC 2.4W max. | -25 to +55°C | Front unit: IP65/67 Back unit: IP20 | ISO/IEC14443 Type A (Type A), ISO/IEC18092 (Type F), JIS X6319-4 (Type F), ISO/IEC 15693 (Type V) | ISO/IEC14443 Type A. ISO/IEC18092, JIS X6319-4, ISO/IEC15693 |

**Strengthening security of production recipes and parameters**

**BEFORE**
Password might not be enough. (Security issues)

**AFTER**
Unauthorized and inadvertent access to devices are prevented. Security for recipes and parameters is enhanced.

An RFID reader is mounted on an operation panel with Ø22mm panel cut-out. The reader is then used to register workers and authenticate their ID cards.
**New Products**

### HR6S  Safety Relay Module

Full range of diagnostic functions reduce downtime for semiconductor manufacturing equipment

- Diagnostic results are **coded** and output as a pulse signal for easy and detailed monitoring of the safety system.
- Dial switching allows connection to **various input devices** and **selection of numerous start modes**, eliminating the need to use a different module with a different function.
- IDEC safety relay modules, including HRSS category 2 relay modules, cover all safety requirements from **categories 1 to 4**. Can be used for various safety applications.

### SA2E  Miniature Photoelectric Switches

De facto standard size with a full range of functions

- **11 × 31 × 20 mm** (W×H×D), de facto standard size.
- **Light On / Dark On** switching available to reduce maintenance parts inventory and make on-site setting changes possible.
- **Operating instructions** are printed on the packaging and laser marked on the body, reducing the use of paper in consideration for the environment.
- QR codes are printed on the products, enabling easy access to operating instructions from smartphones.

### SX5E  (8-port model)  Ethernet Switches

Unmanaged switch available with 5-port or 8-port

- **High impact resistance** equivalent to PLC enables high reliability and stable operation.
- **Robust metal housing** for superior environmental resistance.
- **Compliant with Fast Ethernet** standards for high-speed communication.
- Equipped with various functions such as **QoS** (8-port model only) and **redundant power input** (2 power systems).
**HS6B/HS6E/HS5L**

Interlock Switches / Solenoid Interlock Switches

**Slim and compact interlock switches**

- Compact and built-in with 3 poles of contacts, easy mounting is possible on limited spaces as on chamber doors. (*)
- Solenoid switches ensure reliable safety by locking, with a thickness of only 15 mm. (**) 
- Integrated cable design minimizes wiring time. (**)
- Head removal detection function prevents malfunctions due to loosening of the head after changing the actuator insertion direction. (**)
- Complete with 2 models: spring lock and solenoid lock. (**)

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<th>Series</th>
<th>Contact Ratings</th>
<th>Mechanical Durability</th>
<th>Electrical Durability</th>
<th>Solenoid Unit</th>
<th>International Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS6B</td>
<td>Rated insulation voltage: 300V</td>
<td>1 million times min. (G5-ET-15)</td>
<td>100,000 times min. (AC-12 250V 1.5A, DC-12 250V 0.2A) Operating frequency: 1200 operations/h</td>
<td>–</td>
<td>○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>HS6E</td>
<td>Rated insulation voltage: 30V to 300V Rated continuous voltage: 0.5A to 2.5A</td>
<td>1 million times min. (G5-ET-19)</td>
<td>100,000 times min. (AC-12 250V 6A) 1 million times (24V AC/DC 100mA) Operating frequency: 950 operations/h</td>
<td>Rated voltage: 24V DC Rated current: 110mA</td>
<td>○ ○ ○ ○ ○</td>
</tr>
<tr>
<td>HS5L</td>
<td>Rated insulation voltage: 250V Rated continuous voltage: 2.5A</td>
<td>2 million times min.</td>
<td>100,000 times (operating frequency: 900 operations/h) 2 million times max. (24V AC/DC,100mA)</td>
<td>Rated voltage: 24V DC Rated current: 200mA</td>
<td>○ ○ ○ ○ ○</td>
</tr>
</tbody>
</table>

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Application: Interlock for protection covers on chambers

Compact size contributes to small footprint
HS7A/HS3A

Non-Contact Interlock Switches

Compact size (1) for stable detection even on rattling doors (2)

- Compact reed switches for easy mounting on chamber doors. (1)
- Satisfies safety requirements up to Category 4 when used with a safety relay module. (1)
- Compliant with up to PLe, Category 4, and SIL CL3 regardless of use with specific modules. (2)
- Maximum number of connections: 36 (1), 20 (2), Interlock switches can be integrated on multiple chamber doors.
- RFID feature ensures reliable detection even when mounted on rattling doors. (2)

Application: Interlock for protective cover on chambers

Compact size and RFID feature enables easy installation

<table>
<thead>
<tr>
<th>Series</th>
<th>Rated Voltage</th>
<th>Rated Current</th>
<th>Electrical Durability</th>
<th>Minimum Operation Distance when Safety Output is ON (Sao)</th>
<th>Minimum Operation Distance when Safety Output is OFF (Sao)</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS7A</td>
<td>24V DC</td>
<td>100mA</td>
<td>1.2 million operations min. (HS7A-DMP)</td>
<td>5mm (HS7A-DMC) 8mm (HS7A-DMP)</td>
<td>15mm (HS7A-DMC) 20mm (HS7A-DMP)</td>
<td>EN60947-5-1 (IFA approval) EN ISO 13849-1 EN62061 EN50204-1 (UL listed) CSA C22.2 No.14 (c-UL listed)</td>
</tr>
<tr>
<td>HS3A</td>
<td>24V DC ±15%</td>
<td>80mA (at no load)</td>
<td>13mm</td>
<td>58mm</td>
<td>EN60947-5-3 (IFA approval) EN ISO 13849-1 EN62061 GS-ET-14 (IFA approval) UL508 (UL listed) CSA C22.2 No.14 (c-UL listed)</td>
<td></td>
</tr>
</tbody>
</table>

(1) HS7A (2) HS3A

Operation Principle (Reed Switch)
As the actuator equipped with magnets approaches the non-contact interlock switch, the reed switch inside the interlock switch turns on (NO contact) or turns off (NC contact).

Identification Characteristics
Tamper-proof (unicode model)
Because multiple magnets are embedded, the interlock switch cannot be defeated by using other magnets or metal chips.

Identification
An actuator with an electronic code is assigned to a sensor head. This prevents tampering by using an unassigned spare actuator.
SE2L
Safety Laser Scanner

Compact safety laser scanner suitable for semiconductor manufacturing equipment

- Compact size suitable for installation near and integration with equipment. (85 × 85 × 95 mm)
- Using a configuration software and teaching function enables automatic area configuration by referring to walls and pillars.
- Troubleshooting is easy by displaying errors and detection logs on the unit or by connecting a PC.
- SE9Z- connection box (*1) equipped with a safety relay reduces maintenance time and wiring.

*1 Available soon

<table>
<thead>
<tr>
<th>Series</th>
<th>Performance Level</th>
<th>SIL</th>
<th>Response Speed</th>
<th>Power</th>
<th>Voltage</th>
<th>Power Consumption</th>
</tr>
</thead>
</table>
| SE2L   | PL=d              | SIL 2 | ON → OFF: 60 to 510 ms  
OFF → ON: 270 to 510 ms | 24V DC ± 10%: When using converter power supply  
24V DC -30%/+20%: When using battery | Without Output Load: 6W  
Maximum (without output load): 50W | |

International Standards
UL | CSA | TÜV | CE

Application: Detecting people in front of the load/unload area, intrusion detection

Non-contact, long-distance detection and compact size allow flexible mounting without affecting footprint
Easy implementation of Category 2 configuration, reducing installation time and cost

- Non-redundant safety system compliant with international standards.
- Reduces cost and installation space for safety control parts.
- The size of off-delay models reduced to half compared to conventional models.
- When emergency off switches or interlock switches are turned off, an alarm can be output in case of failure (Category 2 requirement). Therefore, machines with low-risk can operate without stopping.

### Performance of Category 2 system
- System that eliminates short-circuit fault detection when wiring from an input device.
- System with off-delay control system.

### Series Model Performance Level (PL) Contact Configuration Reaction time

<table>
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<tr>
<th>Series</th>
<th>Model</th>
<th>PL</th>
<th>Contact Configuration</th>
<th>Output without OFF-delay</th>
<th>Output with OFF-delay</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR5S-C2S</td>
<td>Simple model</td>
<td>c</td>
<td>2NO (Without OFF-delay): Safety output</td>
<td>0.02s max.</td>
<td>–</td>
<td>UL</td>
</tr>
<tr>
<td>HR5S-C2B</td>
<td>Standard model</td>
<td>d</td>
<td>1NO (Without OFF-delay): Auxiliary output + 1NO (With OFF-delay): Safety output</td>
<td>0.02s max.</td>
<td>0.25, 0.5, 1, 2, 4 sec</td>
<td>UL, CSA, TÜV, CCC, CE</td>
</tr>
<tr>
<td>HR5S-C2D</td>
<td>Off-delay model</td>
<td>d</td>
<td>1NO (Without OFF-delay): Auxiliary output</td>
<td>–</td>
<td>–</td>
<td>UL, CSA, TÜV, CCC, CE</td>
</tr>
</tbody>
</table>

**Application:** Building an interlock control circuit for equipment

**Contributing to COO (Cost of Ownership) by optimizing cost and space**
**RF1/RF2**

**Force Guided Relay**

Compact force guided relays help reduce installation space

- Force guided contact mechanism (EN50205 Type A TÜV approved).
- Pioneering 2-pole force guided relay.
- Contact configuration can be selected according to the circuit.
  - 4-pole: (2NO-2NC, 3NO-1NC),
  - 6-pole: (4NO2NC, 5NO1NC, 3NO3NC)
  - 2-pole: (SPST-NO+SPST-NC, DPDT)
- Shock resistance exceeding 200m/s².
- DIN-rail mount sockets with finger protection and PC board sockets available.

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<tr>
<th>Series</th>
<th>Contact Rating</th>
<th>Power Consumption</th>
<th>Electrical Life</th>
<th>Mechanical Life</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RF1</strong></td>
<td>Rated load: 250V AC 6A, 30V DC 6A</td>
<td>Approx. 0.36 (4-pole)</td>
<td>250V AC 6A resistive load: 100,000 operations min.</td>
<td>10 million operations min. (operating frequency 1200 per hour)</td>
<td>● ● ●</td>
</tr>
<tr>
<td>Allowable Switching Power: 1500 VA, 180W DC (30V DC max.)</td>
<td>Approx. 0.50W (8-pole)</td>
<td>30V DC 6A resistive load: 100,000 operations min. (operating frequency 1200 per hour)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable Switching Voltage: 250V AC, 120V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable Switching Current: 6A</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RF2</strong></td>
<td>Rated load NO contact: 240V AC 6A / 24V DC 6A</td>
<td>Approx. 0.7W</td>
<td>NO contact: 100,000 operations min. (operating frequency 1,800 per hour) at 240V AC / 6A resistive load or 2A inductive load (power factor 0.4)</td>
<td>10 million operations min. (operating frequency 18,000 per hour)</td>
<td>● ● ●</td>
</tr>
<tr>
<td>NC contact: 240V AC 3A / 24V DC 3A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable Switching Power: NO contact:1440VA/144W</td>
<td></td>
<td>100,000 operations minimum (operating frequency 1,800 per hour) at 24V DC / 6A resistive load or 1A inductive load (time constant 48ms)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO contact: 720VA / 72W</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Allowable Switching Voltage: 250V AC, 125V DC</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Allowable Switching Current: 6A</td>
<td></td>
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</table>

When Using RF2S-1A1BLD1-D24 & DIN Rail Socket

- Total cost reduced by approx. 40%.
- Installation Space reduced by approx. 30%.

* Compared to IDEC products. Total cost refers to the cost for relays and sockets.

Application: Building interlock circuit for equipment

Flexible construction of safety circuits in equipment.
FS1A
Safety Controller

Pre-programmed to easily build a safety system

- Equipped with 35 safety circuit logics for immediate use.
- Compliant with ISO13849-1 PLe.
- No need for programming; simply use a switch to select a built-in logic.
- Complies with international safety standards when connected to safety input/output device.
- Various functions integrated into one device.

Selecting a logic—that’s all you need!
SafetyOne lets you configure a system without any programming. Complies with international safety standards when connected to safety input/output device.

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<th>SIL / PL / Category</th>
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<th>Safety Input/Output Points</th>
<th>International Standards</th>
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<tr>
<td>FS1A</td>
<td>IEC61508 Safety Integrity Level 3, ISO13849-1 Performance Level e, ISO13849-1 Category 4</td>
<td>24V DC</td>
<td>48W</td>
<td>Safety input: 14, Safety output: 4</td>
<td>UL, CSA, TÜV, CE</td>
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Application: Building interlock control circuits for equipment

Reduced total cost, simplified system wiring
Stylish design with ergonomic visibility

- Universal design with oval shape and striped design enhances visibility.
- Variety of mounting patterns, easily replaceable LED units, and plug-in terminals.
- Steady / flashing (flashing cycle compliant with IEC standards / alarm types available).
- Unique powerful design with 360-degree sound field. Two alarm sound patterns available.
- Lens design for high visibility.

Unique lens offers high visibility
Three different illumination methods and a unique lens shape enable high visibility from all directions.

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<th>Power Consumption (Buzzer)</th>
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<th>LED Life</th>
<th>Alarm Volume</th>
<th>International Standards</th>
</tr>
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<tr>
<td>LD6A</td>
<td>24V AC/DC</td>
<td>LED: 0.6W (R,Y) 0.75W (S, G) 0.5W (W)</td>
<td>110mA max.</td>
<td>Approx. 105 flashes per minute (1.75Hz)</td>
<td>Approx. 30,000 hours</td>
<td>70 to 90 dB, at 1m (volume adjustable)</td>
<td>UL CSA CE</td>
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Application: Warning alert

Stylish design for devices
XA/XW/HW series

EMO Switches

Emergency Off (EMO) switches in compliance with SEMI standard S2

- Direct opening action function.
- IDEC Safe Break Action and reverse energy structure (XA/XW) satisfies the requirements of international safety standards.
- The switch guard is compliant with TÜV Rheinland when used with suitable SEMI S2 and SEMATECH products.

### Safe Break Action

When the contact block is detached from the operator, the NC contact opens (OFF).

- Operator
- Contact block

When the contact block is detached from the operator, the cam directly opens the NC main contacts (contacts are off). (Patented)

### Reverse Energy Structure

With X series, the potential energy level of the latched status is lower than that of normal status. In the event the switch is damaged due to excessive shocks, the NC contacts will turn off, thus stopping the machine (patented design).

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<th>Solder</th>
<th>Terminal Style</th>
<th>M3 Screw</th>
<th>Connector</th>
<th>Contact Ratings</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>XA (Removable contact)</td>
<td>ø16.2</td>
<td>ø40</td>
<td>●</td>
<td>Solder/Tab</td>
<td>●</td>
<td>IP65</td>
<td>Rated insulation voltage: 300V Rated continuous voltage: 5A</td>
<td>● ● ● ●</td>
</tr>
<tr>
<td>HW</td>
<td>ø16.2</td>
<td>ø40</td>
<td>●</td>
<td>Solder/Tab</td>
<td>●</td>
<td>IP65</td>
<td>Rated insulation voltage: 600V Rated continuous voltage: 10A</td>
<td>● ● ● ●</td>
</tr>
<tr>
<td>XW</td>
<td>ø22.3</td>
<td>ø40</td>
<td>●</td>
<td>Solder/Tab</td>
<td>●</td>
<td>IP65</td>
<td>Rated insulation voltage: 250V Rated continuous voltage: 5A</td>
<td>● ● ● ●</td>
</tr>
</tbody>
</table>

Application: Emergency shut down when abnormality occurs in a device

Suitable for section 12.1 of SEMI standard (S2 0706) EMO Circuit
Push-in terminals enable easy wiring and little skill is required.

- Approximately 55% less work time and improved efficiency compared to conventional screw terminals. Reduces downtime during manufacturing and maintenance.
- Because screws are not used, re-tightening of screws is not required, eliminating anti-vibration measures for semiconductor manufacturing equipment.
- Terminals with finger-safe protection enable safe maintenance and prevents accidents such as electrical shocks.

<table>
<thead>
<tr>
<th>Series</th>
<th>Applicable Wires</th>
<th>Applicable Wire Size</th>
<th>Mechanical Durability</th>
<th>Electrical Durability (*4)</th>
<th>Contact Ratings</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW</td>
<td>UL1007 H05V H07V JIS 3307(KV) JIS 3316(KIV)</td>
<td>0.25 to 1.5mm² (AWG16 to 24)</td>
<td>Pushbuttons, illuminated pushbuttons: Momentary 5,000,000 operations min, Maintained 500,000 operations min. Selector switch: 500,000 operations min. Key selector switch (disc tumbler): 500,000 operations min. Key selector switch (pin tumbler): 100,000 operations min.</td>
<td>Pushbuttons: Momentary 500,000 operations min. (1) Maintained 500,000 operations min. (2) Selector switch: 500,000 operations min. (2) Key selector switch (disc tumbler): 500,000 operations min. (2) Key selector switch (pin tumbler): 100,000 times min. (2)</td>
<td>Silver contacts rated insulation voltage 600V Rated operating Current: 16A</td>
<td>UL CSA TÜV CCC CE</td>
</tr>
</tbody>
</table>

*1) Depends on rated operating current  *2) Operating frequency 1200 operations/h, duty ratio 40%  *3) Switching frequency 900 operations/h, duty ratio 40%  *4) Load condition 220V AC, 3A (AC-15)

**Time saving & efficient**

- **Reduce wiring time**
  - Push-in connections are made simple by inserting the wire, reducing wiring time by approximately 55% compared to conventional screw terminals.
  - Wiring Procedure:
    - Push the wire straight in as far as it will go.
    - Connection is completed. Pull lightly to make sure it is firmly in place.

**Application:** Operation panel for devices

ø22mm switches & pilot lights with enhanced collecting mounting compared to ø30mm and ø25mm, while ensuring the same operability as ø30mm.
Flush mount switches with sleek design & Push-in technology

- **Flush design with 2.5mm thick bezel prevents particles and contaminants from accumulating.**

- **Push-in terminals and Screw terminal styles available.**

- **Screw terminal models have a short body in depth behind the panel, reducing installation space.**

- **A single LED supports 6 colors. When color changes are required, only the lens needs to be replaced. Eliminates the need to stock replacement LEDs in variety of colors.**

- **Approximately 55% less work time and improved efficiency compared to conventional screw terminals. Reduces downtime during manufacturing and maintenance.**

---

**Series**

<table>
<thead>
<tr>
<th>Series</th>
<th>Applicable Wires</th>
<th>Applicable Wire Size</th>
<th>Mechanical Durability</th>
<th>Electrical Durability</th>
<th>Contact Ratings</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW</td>
<td>UL1007 H05V H07V JIS 3301 UV JIS 3316 XW</td>
<td>0.25 to 1.5mm (AWG16 to 24)</td>
<td>Pushbuttons, illuminated pushbuttons Momentary: 2 million operations min. (when single contact block is used) Maintained: 250,000 operations min. (when single contact block is used) Selector switches: 250,000 operations min. (when single contact block is used) Key selector switches: 250,000 operations min. (when single contact block is used)</td>
<td>50,000 operations min. or 100,000 operations min. (**)</td>
<td>50,000 operations min. or 100,000 operations min. (**)</td>
<td>Rated insulated voltage: 300V Rated continuous current: 10A</td>
</tr>
</tbody>
</table>

---

**Application: Operation panel for devices**

Flush Silhouette prevents contaminants and particles from accumulating, reducing maintenance work.
Flush mount switches with sleek design

- Stylish design with **2mm**-thick bezel prevents particles and contaminants from accumulating.
- **Removable contact block / single board mounting** available. Switches with guard available to prevent misoperation.

---

**Series**

<table>
<thead>
<tr>
<th>Series</th>
<th>Mechanical Durability</th>
<th>Electrical Durability</th>
<th>Contact Ratings</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>Momentary: 2,000,000 operations min. Maintained: 250,000 operations min. Selector/key selector sw: 250,000 operations min.</td>
<td>50,000 or 100,000 operations min. (*1) (*2)</td>
<td>Rated Insulation Voltage: 250V Rated Operating Current: 5A (silver contact) 3A (gold contact)</td>
<td>UL CSA CE</td>
</tr>
<tr>
<td>LBW</td>
<td>Momentary: 2,000,000 operations min. Maintained: 250,000 operations min. Selector/key selector sw: 250,000 operations min.</td>
<td>50,000 or 100,000 operations min. (*1) (*2)</td>
<td>Rated Insulation Voltage: 250V Rated Operating Voltage: 5A (silver contact) 3A (gold contact)</td>
<td>UL CSA CE</td>
</tr>
</tbody>
</table>

*1) Depends on rated operating current *2) Switching frequency - momentary: 1000 operations/hr. maintained: 1200 operations/hr. maintained including selector switches and key selector switches

---

**Application: Operation panel for devices**

Flush silhouette switches prevent contaminants and particles from accumulating and reduces maintenance work.
Semiconductor Industry Solutions

RU/RJ/RV8
Slim Relays / Universal Relays

Slim, compact relays save installation space

- **Compact size** with excellent durability and high allowable contact current.
- Circuit check can be performed without energizing the coil, enabling check up before applying power to the relay. (RU)
- The release lever easily holds and removes the relay and push-in terminals, reducing wiring time. (RU, RJ)
- Space-saving 6mm ideal for high density mounting. (RV8)
- Only 70mm from the DIN rail. Suitable for slim control panels and low-profile AGVs. (RV8)

### RU/RJ/RV8

**Slim Relays / Universal Relays**

Save up to 55% in wiring time

Wiring time reduced greatly compared with conventional screw terminals. (Compared with IDEC products)

- **Reduce maintenance work**
  - Push-in terminals eliminate the need for torque maintenance such as tightening of screws because screws are not used.

<table>
<thead>
<tr>
<th>Series</th>
<th>Allowable Contact Current</th>
<th>Contact Material</th>
<th>Electrical Life</th>
<th>Mechanical Life</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>RJ</td>
<td>1-pole: 12A 2-pole: 8A 2-pole (bifurcated contacts): 1A</td>
<td>AgNi (*1) AgNi (Au clad) (*2)</td>
<td>• AC: 200,000 operations min. DC: 100,000 operations min. Operation frequency 1800 operations/h (*1) • AC: 100,000 operations min. DC: 200,000 operations min. Operation frequency 1800 operations/h (*2)</td>
<td>• AC: 30,000,000 operations min. DC: 50,000,000 operations min. Operation frequency 18,000 operations/h (*1)</td>
<td>UL CSA TÜV CE</td>
</tr>
<tr>
<td>RJ</td>
<td>2-pole (RU2): 10A 4-pole (RU4): 6A 4-pole (RU42 bifurcated contacts): 3A</td>
<td>2-pole (RU2): Ag alloy 4-pole (RU4): Ag (Au clad) 4-pole (RU42 bifurcated contacts): Ag-Ni (Au clad)</td>
<td>100,000 operations min. (250V AC,10A/resistive load) 500,000 operations min. (250V AC, 5A/resistive load) 4-pole (RU4): 50,000 operations min. (250V AC, 6A/resistive load) 4-pole (RU42 bifurcated contacts): 100,000 operations min. (250V AC,3A/resistive load)</td>
<td>2-pole (RU2) / 4-pole (RU4): AC: 50,000,000 operations min. DC: 100,000,000 operations min. 4-pole (RU42 bifurcated contacts): 50,000,000 operations min.</td>
<td></td>
</tr>
<tr>
<td>RV8</td>
<td>6A</td>
<td>AgNi+Au plated</td>
<td>30,000 operations min. (NO contact) 10,000 operations min. (NC contact)</td>
<td>10,000,000 operations min. (Operation frequency 18,000 operations/h)</td>
<td></td>
</tr>
</tbody>
</table>

*1) 1-pole, 2-pole *2) 2-pole (bifurcated contacts) *3) 250V / DC30V AC 6A resistive load, operation frequency 1800 operations/h *4) RV8 only

Application: Building control circuit for equipment

Compact size with small footprints

**Time Saving & Efficient**

Highly conductive materials ensure stable electric conduction of current.

**Large Switching Capacity**

**Reduce maintenance work**

Push-in terminals eliminate the need for torque maintenance such as tightening of screws because screws are not used.

![RU/RJ/RV8 Slim Relays / Universal Relays](image)

RL, RJ, RV8
Slim, compact relays save installation space

- Compact size with excellent durability and high allowable contact current.
- Circuit check can be performed without energizing the coil, enabling check up before applying power to the relay. (RU)
- The release lever easily holds and removes the relay and push-in terminals, reducing wiring time. (RU, RJ)
- Space-saving 6mm ideal for high density mounting. (RV8)
- Only 70mm from the DIN rail. Suitable for slim control panels and low-profile AGVs. (RV8)

Series | Allowable Contact Current | Contact Material | Electrical Life | Mechanical Life | International Standards |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RJ</td>
<td>1-pole: 12A 2-pole: 8A 2-pole (bifurcated contacts): 1A</td>
<td>AgNi (*1) AgNi (Au clad) (*2)</td>
<td>• AC: 200,000 operations min. DC: 100,000 operations min. Operation frequency 1800 operations/h (*1) • AC: 100,000 operations min. DC: 200,000 operations min. Operation frequency 1800 operations/h (*2)</td>
<td>• AC: 30,000,000 operations min. DC: 50,000,000 operations min. Operation frequency 18,000 operations/h (*1)</td>
<td>UL CSA TÜV CE</td>
</tr>
<tr>
<td>RJ</td>
<td>2-pole (RU2): 10A 4-pole (RU4): 6A 4-pole (RU42 bifurcated contacts): 3A</td>
<td>2-pole (RU2): Ag alloy 4-pole (RU4): Ag (Au clad) 4-pole (RU42 bifurcated contacts): Ag-Ni (Au clad)</td>
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<td>2-pole (RU2) / 4-pole (RU4): AC: 50,000,000 operations min. DC: 100,000,000 operations min. 4-pole (RU42 bifurcated contacts): 50,000,000 operations min.</td>
<td></td>
</tr>
<tr>
<td>RV8</td>
<td>6A</td>
<td>AgNi+Au plated</td>
<td>30,000 operations min. (NO contact) 10,000 operations min. (NC contact)</td>
<td>10,000,000 operations min. (Operation frequency 18,000 operations/h)</td>
<td></td>
</tr>
</tbody>
</table>

*1) 1-pole, 2-pole *2) 2-pole (bifurcated contacts) *3) 250V / DC30V AC 6A resistive load, operation frequency 1800 operations/h *4) RV8 only

Application: Building control circuit for equipment

Compact size with small footprints
FT1A
Small Controller

Powerful controller with integrated I/O for optimal control

- Touch, Pro, and Lite: 3 models available to provide flexibility for a variety of applications.
- Touch panel + controller reduces installation space and wiring work by integrating the touchscreen unit and control unit.
- Ethernet, USB, and RS232C interfaces available for various host communication.
- Independent dual-axes is possible using 2 pulse outputs (only Pro/Lite models with pulse output).
- Relay output and transistor output for applications with frequent switching.

**Built-in Output Points (**1)**

<table>
<thead>
<tr>
<th>Series</th>
<th>No. of Inputs</th>
<th>No. of Digital Outputs</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Digital</td>
<td>Analog</td>
<td>Relay Output</td>
</tr>
<tr>
<td>FT1A Touch</td>
<td>6 points</td>
<td>2 points</td>
<td>4 points</td>
</tr>
<tr>
<td>FT1A Pro</td>
<td>6 to 30 points</td>
<td>2 to 8 points</td>
<td>4 to 12 points</td>
</tr>
<tr>
<td>FT1A Lite</td>
<td>6 to 30 points</td>
<td>2 to 8 points</td>
<td>4 to 12 points</td>
</tr>
</tbody>
</table>

*(1) Combination of I/O points differs depending on the part no.

Application: Building a control circuit for equipment and peripheral devices

Suitable for simple control and integrated functions, achieve small footprint
**Semiconductor Industry Solutions**

**HG series**

Operator Interfaces

Excellent visibility and usability with key features built for reliable operations

- With the WEB server function, location of AGVs and status of automated warehouses can be checked, and remote monitoring and operating of equipment is possible using a PC, tablet, or smartphone.
- Data inside operator interfaces can be sent in CSV file or screenshot using the email function allowing tracing of devices, data analysis, and sending early alerts to operators.
- **Remote maintenance** is possible by using the FTP server and client function to transfer project data and read history data.
- Maintenance time can be reduced with a long-life, high-performance LED backlight, reducing operation **costs**.
- Stress-free 1.5-second startup allows quick access to devices.

<table>
<thead>
<tr>
<th>Series</th>
<th>Display Size</th>
<th>Display</th>
<th>Color/Shade</th>
<th>Display Resolution</th>
<th>Brightness</th>
<th>Rated Voltage</th>
<th>Power Consumption</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>HG1G</td>
<td>4.3 inch</td>
<td>TFT color LCD</td>
<td>65,536</td>
<td>480 (W)×272 (H) pixels</td>
<td>65,536</td>
<td>12 / 24V DC</td>
<td>8W max.</td>
<td>UL CSA CE</td>
</tr>
<tr>
<td>HG2G-V</td>
<td>5.7 inch</td>
<td>TFT color LCD</td>
<td>65,536</td>
<td>640 (W)×480 (H) pixels</td>
<td>65,536</td>
<td>12 / 24V DC</td>
<td>18W max. (V)</td>
<td>UL CSA CE</td>
</tr>
<tr>
<td>HG2G-5T</td>
<td>5.7 inch</td>
<td>TFT color LCD</td>
<td>65,536</td>
<td>320 (W)×240 (H) pixels</td>
<td>65,536</td>
<td>12 / 24V DC</td>
<td>8W max. (5T)</td>
<td>UL CSA CE</td>
</tr>
<tr>
<td>HG3G-VA</td>
<td>10.4 inch</td>
<td>TFT color LCD</td>
<td>65,536</td>
<td>1024 (W)×768 (H) pixels</td>
<td>65,536</td>
<td>12 / 24V DC</td>
<td>25W max. (VA)</td>
<td>UL CSA CE</td>
</tr>
<tr>
<td>HG3G-V8</td>
<td>8.4 inch</td>
<td>TFT color LCD</td>
<td>65,536</td>
<td>1024 (W)×768 (H) pixels</td>
<td>65,536</td>
<td>24V DC</td>
<td>22W max. (V8)</td>
<td>UL CSA CE</td>
</tr>
<tr>
<td>HG4G-V</td>
<td>12.1 inch</td>
<td>TFT color LCD</td>
<td>65,536</td>
<td>1024 (W)×768 (H) pixels</td>
<td>65,536</td>
<td>24V DC</td>
<td>25W max.</td>
<td>UL CSA CE</td>
</tr>
<tr>
<td>HG5G-V</td>
<td>15 inch</td>
<td>TFT color LCD</td>
<td>65,536</td>
<td>1024 (W)×768 (H) pixels</td>
<td>65,536</td>
<td>24V DC</td>
<td>27W max.</td>
<td>UL CSA CE</td>
</tr>
</tbody>
</table>

**Application: Operation and monitoring of devices**

Fast, visible, and easy with various communication protocols.
WB1F/WB2F
Fixed Barcode Scanner

Compact size suitable for downsizing of equipment

- Wide viewing angle and wide reading depth.
- **CCD (WB1F)** and C-MOS image sensors (WB2F).
- Maintenance costs are reduced as there are no moving parts.
- Images are acquired when they are scanned, making it possible to distinguish reading errors such as disturbance of ambient light.

<table>
<thead>
<tr>
<th>Series</th>
<th>Rated Voltage</th>
<th>Consumption Current</th>
<th>Reading Distance</th>
<th>Number of Digits to be Read</th>
<th>Symbols to be read</th>
</tr>
</thead>
<tbody>
<tr>
<td>WB1F</td>
<td>5V DC ±0.25V (*1) USB Buspower (5V DC) (*2)</td>
<td>200mA maximum</td>
<td>35±10mm</td>
<td>64 digits maximum</td>
<td>EAN13/E (including add-on), UPC-A/E/E1 (including add-on), CODE39, Codabar (=NW7), Interleaved 2 of 5 (=ITF), Standard 2 of 5 (=Industrial 2 of 5), Matrix 2 of 5, Chinese Post Matrix, COOP 2 of 5, CODE93, Code128, GS1-128 (formerly: EAN-128), MSI/Plessey, Italian Pharmacy (=Code32), CIP39, Tri-Optic, TELEPEN, Code11, GS1 DataBar (formerly: RSS) (*3)</td>
</tr>
<tr>
<td>WB2F</td>
<td>5V±0.25V DC</td>
<td>500mA maximum</td>
<td>Barcode 50 to 100mm 2D code 50 to 150mm</td>
<td>Barcode: 64 digits maximum 2D code: 7,089 digits maximum</td>
<td>Barcode: EAN-13/E (including add-on), UPC-A/E/E1, (including add-on), CODE39, Codabar (=NW7), Interleaved 2of5 (=ITF), Standard 2of5 (=Industrial 2of5), Matrix 2of5, Chinese Post Matrix, COOP 2of5, CODE93, Code128, GS1-128 (formerly: EAN-128), MSI/Plessey, Italian Pharmacy (=Code32), CIP39, Tri-Optic, TELEPEN, Code11, GS1 DataBar (formerly: RSS) (Omnidirectional, Truncated, Limited, Expanded), IATA 2of5 2D code: QR Code/GS1 QR Code, Micro QR Code, DataMatrix (Data Code)/GS1 DataMatrix, PDF417, Micro PDF417, GS1 composite (CC-A, CC-B, CC-C), Japan Postal</td>
</tr>
</tbody>
</table>

*1) RS-232 type  *2) USB type  *3) Omni-directional, Truncated, Limited, Expanded

Application: Scanning ID Information such as FOUP ID on load ports

Reduces maintenance costs, compatible with SEMI E15.1 (WB2F)
**FC6A Programmable Controller**

**PLC suitable for the IoT era**

- **WEB server function** allows easy construction of a remote monitoring system.
- Data can be sent by CSV file or screenshot using the email function allowing tracing of devices, factor analysis, and sending early alerts to operators.
- **Remote maintenance** can be performed by using the FTP server and client function to transfer project data and read historical data.
- **Remote maintenance** supports standard communication protocols for the industry on CPU modules, communication modules, and communication cartridges. The communication monitoring function reduces debugging time and allows smooth communication with peripheral devices.
- **Removable terminal blocks** are labor-saving and maintenance-friendly, reducing equipment downtime.

<table>
<thead>
<tr>
<th>Series</th>
<th>Program Size</th>
<th>Max. I/O Points</th>
</tr>
</thead>
</table>
| FC6A   | FC6A All-in-one: 840KB maximum (80,000 steps)  
FC6A Plus: 800KB maximum (100,000 steps) | FC6A All-in-one: 520 points maximum  
FC6A Plus: 2060 points maximum (including 511 analog points) |

**Application:** Automated warehouse control, remote operation/monitoring

**Compact PLC achieves on-site control and remote operation**
Circuit protector for usability and safety

- The flat handle fits in the main body to prevent misoperation due to contact.
- Safe trip-free mechanism ensures that the circuit is cut-off even if the handle is operated immediately after an accident, in order to avoid an sudden restart.
- Integrated terminal covers achieve IP20 finger protection and prevent electric shock.
- AC / DC common models available. Reduces Stock control.

Finger-safe, spring-up terminal reduces wiring time. Ring terminal tabs can be installed easily, and screws are held captive.

Padlock Attachment
Locks the retractable actuator in the off position to prevent NC1V from being switched on inadvertently.

Main circuit terminals are finger-safe (IP20)
Spring-up, finger-safe structure requires no terminal cover.

Auxiliary/Alarm contact terminals are equipped with a terminal cover
Voltage coil terminals on the relay trip version are also equipped with a terminal cover as standard.

---

<table>
<thead>
<tr>
<th>Series</th>
<th>Rated Voltage (AC, DC) (*1)</th>
<th>Rated Short-circuit Capacity</th>
<th>Series Trip Characteristics</th>
<th>Dimensions (width)</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC1V</td>
<td>1-pole: 250V AC 50/60Hz, 65V DC</td>
<td>2,500A</td>
<td>Curve M (slow)</td>
<td>1-pole: 17.5mm</td>
<td>UL, CSA, TÜV, CCC, CE</td>
</tr>
<tr>
<td></td>
<td>2-pole: 250V AC 50/60Hz, 125V DC</td>
<td></td>
<td>Curve A (medium)</td>
<td>2-pole: 35.0mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3-pole: 250V AC, 50/60Hz</td>
<td></td>
<td>Curve S (instantaneous)</td>
<td>3-pole: 52.5mm</td>
<td></td>
</tr>
</tbody>
</table>

*1) 3-pole type is for AC voltage only.

Application: Protection from damage due to overload and short circuit in devices and circuits in equipment

Reduce wiring work and eliminate lost screws achieving cost reduction
LF1B-N/LF2B/LF3D

LED Lighting

Compact LEDs for a wide variety of applications

- Available in 2 cover types, 6 colors, and 6 lengths. (LF1B-N)
- Yellow for LF1B-N uses wavelength band that is not sensitive to resist material.
- AC universal input for global use. (LF2B)
- Slim compared to conventional IDEC products. (LF3D)
- Excellent wide light distribution characteristics, with dimmer function. (LF3D)

 IDEC's yellow uses only short wavelength. Therefore, the LED can be used for many years without concern of change in wavelength.

<table>
<thead>
<tr>
<th>Series</th>
<th>Rated Voltage</th>
<th>Power Consumption</th>
<th>Reference Illuminance</th>
<th>Life</th>
<th>Illumination Color</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF1B-N</td>
<td>24V DC</td>
<td>1.0 to 17.3W</td>
<td>9lx to 1350lx</td>
<td>40,000 hours</td>
<td>Daylight, warm white, yellow, red, green, blue</td>
<td>UL</td>
</tr>
<tr>
<td>LF2B</td>
<td>24V DC, 100 to 240V AC</td>
<td>2.2 to 15.9W</td>
<td>265 lx to 1520lx</td>
<td>40,000 hours</td>
<td>Daylight</td>
<td>(1)</td>
</tr>
</tbody>
</table>

*1) DC type only

Application: Lighting for various equipment such as that used for maintenance purposes

Suitable for SEMI S8 requirements
### Switching Power Supplies

**PS5R-V**

- **Efficient conversion of 93%**. (PS5R, 230V AC input)
- **Compact 10W DC-DC converter** allows various uses. (PS5R)
- **IDEC’s SS terminal** enables ease of use and safety.
- **EN61204-3 compliant (DC power supply) EMC Standard Class B**
- **Long-term 5-year warranty** (PS5R: 3 years) reduces maintenance costs.

*1) SS terminal (save & safety terminal): The screw keeps in a spring-up state, so there is no need to loosen or remove the screw. This also prevents the screw from falling off, improving work efficiency.

### Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>Rated Input Voltage</th>
<th>Output Capacity</th>
<th>Rated Voltage / Current</th>
<th>Dimensions (Width)</th>
<th>Efficiency (TYP.) (rated output)</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS5R-V</td>
<td>100 to 240V AC</td>
<td>10 to 240W</td>
<td>PS5R-VB: 5V/2.0A, 12V/1.3A, 24V/0.65A PS5R-VC: 12V/2.5A, 24V/1.3A PS5R-VD: 24V/2.5A PS5R-VE: 24V/3.75A</td>
<td>22.5 to 60mm</td>
<td>77 to 89% (100V AC) 73 to 90% (230V AC)</td>
<td>UL CSA TÜV CE</td>
</tr>
<tr>
<td>PS6R</td>
<td>100 to 240V AC</td>
<td>120 to 480W</td>
<td>PS6R-F: 24V/5A PS6R-G: 24V/10A PS6R-J: 24V/20A</td>
<td>37 to 85mm</td>
<td>90 to 91% (100V AC) 90 to 93% (230V AC)</td>
<td>UL CSA TÜV CE</td>
</tr>
</tbody>
</table>

*1) When in a stable state at the rated value.

### Application

- **Supplying power to various devices mounted on equipment**

Compliant with SEMI-F47 standard certified for an input voltage of 208V AC
We make the point of contact, where people interface with machines, easy, safe and secure. We create new possibilities.

One of our corporate principles is to conduct business with consideration for social responsibilities. Since its founding, IDEC has developed and introduced the world to numerous products and services centered on its control technology. Today, our products are used not only in factories, but in a wide range of settings in people’s everyday lives where customers desire safety, ease of use, reliability and a smaller environmental footprint.
<table>
<thead>
<tr>
<th>Location</th>
<th>Company Name</th>
<th>Contact Details</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Tel: +81-6-6398-2527 <a href="mailto:idec@cn.idec.com">idec@cn.idec.com</a></td>
</tr>
</tbody>
</table>

Specifications and other descriptions in this brochure are subject to change without notice.
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