ROBOTICS INDUSTRY

IDEC has long served the robot industry by developing highly reliable products using the know-how that we have learned with our customers.

We offer a wide range of products to achieve downsizing, safety, durability, and robustness, required for robots, robot controllers, teaching pendants, and environments surrounding robots. Together with the development and growth of the robot industry, IDEC will relentlessly keep abreast with the latest market trends and technology advancement to provide products with extra values.
Robot Industry and IDEC

IMPROVING SAFETY
IDEC has consistently led the world in robotics safety, including developing the industry’s first enabling switch with three-position functionality (dead man switch) and supplying a third-generation emergency switch featuring revolutionary mechanism.

By promoting Safety 2.0, a next-generation concept that enables humans and machines to collaborate seamlessly and efficiently without barriers, IDEC delivers a wide variety of products such as safety laser scanners, safety light curtains, safety interlock switches, and forced guide relays, to ensure safety for robot systems.

ENHANCING QUALITY
Throughout our 75-year history, IDEC has continued developing and improving our products, and we constantly strive to improve usability and quality. The IDEC brand has earned the trust of numerous customers in the robot industry, and many of our products are used actively around robots. We continue to provide products with the quality required by our customers, and contribute to the quality of robot systems.

SERVING THE FUTURE
IDEC is working with the robotics industry to respond to the accelerated proliferation of IoT, workplace diversity, and other societal changes. We will respond to market needs with, for example, new products to add to safety the element of “peace of mind”, for which there will be even greater demand in the future, as well as new products that boost utilization of commercially-available tablets. IDEC will continue to identify robotics industry trends and supply our customers with viable solutions, contributing to the future of humankind.
Leading the way in HMI and collaborative safety for human and robots

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Optimum safety solutions for robots

3. Operator Interface Handheld Model HG1P

4. Enabling Switches HE2B/HE6B

5. Safety Grip Switches HE2G

6. Safety Controllers FS1A

7. Force Guided Relays RF1/RF2

8. Interlock Switches with Solenoid HS1T/HS5L
Push-in Switches & Pilot Lights
- HW/CW Series
- Emergency Stop Switches
- X Series

Surface-Mount Indicators
- LH1D

Tablet Mount Safety Device
- Safety Commander™

Optimal HMI proposals for robots
- LED SignaLight Towers
- LD6A
- Ultra-bright LED Pilot Lights
- AP22

LED Indicators
- Q Series
- Ø16/Ø22 Flush Silhouette Switches/
- Ø16 Switches & Pilot Lights
- LB/LBW Series

Pushbutton Switches
- IP/IS Series

Miniature Joysticks
- TS Series

Metal Switches
- AV Series

Improve production efficiency
- LED Lightings
- LF1B-N/LF2B

Relays/Push-in Sockets
- RU/RJ/SU/SJ Series
Safety Commander™

Tablet Mount Safety Device

Safety functions (enabling switch & emergency stop switch) ergonomically made available to commercially manufactured tablets

The device can hold tablets 8 to 11-inch for flexible mounting.

Pivoting mechanism allows the tablet to be used vertically or horizontally to display a variety of contents such as tables, graphs, and maps.

Ergonomic grip design ideal for long and fatigue-free operation.

Accessories include a wall mount hanger to enhance easy of use.

<table>
<thead>
<tr>
<th>Name</th>
<th>Operating Temperature</th>
<th>Operating Humidity</th>
<th>Degree of Protection</th>
<th>Supported Tablet Sizes</th>
<th>Supported Tablet Thickness</th>
<th>Switches</th>
</tr>
</thead>
</table>
| Safety Commander   | -20 to +55°C (-20 to +30°C (*1)) | 45 to 85% RH       | IP54                 | 8 to 11 inches         | 9 to 24 mm                 | Emergency stop switch: XA1E-LV302Q4R
|                    |                       |                    |                      |                        |                           | Enabling switch: HESB-M2PY       |

*1) USB charging

Ensuring safety in tablet operation in environments around robots

BEFORE

No access to safety control when tablets are used.

AFTER

Easy and safe control is available, allowing teaching operation in hazardous areas

Emergency stop switches and enabling switches are readily accessible while holding the tablet with one hand.
Diagnostic results are coded and output as a pulse signal for easy and detailed monitoring of the safety system.

Dial switching allows flexible configurations in connection with various input devices and selection of numerous start modes, eliminating the need to use different modules for different functions.

Full range of diagnostic functions reduces downtime for robot systems

High EMI impulse rejection enables high reliability and stable operation.

Robust metal housing for superior impact and 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).

Compact size fits inside an aluminum frame used as safety fences around restricted areas to avoid collision with detected objects.

Advanced functions such as muting, fixed blanking, and floating blanking, are available.

Large operation indicators indicate the presence of the light curtain and prevents downtime due to inadvertent shading.

Compact, lightweight, and high performance. Ideal for detecting access to restricted areas in robot systems

Unmanaged switch available in 5-port or 8-port

HR6S Safety Relay Modules

SE4D-C Safety Light Curtains

SX5E (8-port) Ethernet Switches
**SAFETY SOLUTIONS**

**SE2L Safety Laser Scanner**

**Compact safety laser scanner for easy installation**

- **Area protection** and **access protection** for flexible and safe construction of robot systems.
- **Low-speed and stop zones** can be set to ensure **productivity** and **safety**.
- **SE9Z-** connection box equipped with a safety relay reduces **maintenance time** and **wiring time** (*1).

* *1 Coming Soon *

- **One scanner can monitor two separate areas**
  Dual protection function reduces maintenance and cost.

- **Ideal for collaborative robots**
  Two warning zones, in addition to one protection zone, can be configured to achieve slow speed areas.

<table>
<thead>
<tr>
<th>Series</th>
<th>Safety Category</th>
<th>Performance Level</th>
<th>Detection Characteristics</th>
<th>Power Supply Voltage</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE2L</td>
<td>Type 3 (IEC61496-1, IEC61496-3)</td>
<td>PL=d, SIL3</td>
<td>Protected area: Max. 5m, Detection angle: 270°</td>
<td>24V DC ± 10%: When using converter power supply, 24V DC -30%/+20%: When using battery</td>
<td>UL</td>
</tr>
</tbody>
</table>

**Application:** Intrusion detection, area monitoring

Safety scanner for robot systems achieves productivity and safety
**HG1P**

4.3” Touchscreen Programmable Operator Interfaces, Hand-held Model

**Lightweight and robust teaching pendant with optimal usability**

- **Ergonomic design and lightweight structure** suitable for long teaching operation.
- **Robust** design reduces damage even when dropped accidentally.

<table>
<thead>
<tr>
<th>HG1P</th>
<th>Lightweight and compact, weighs only 500g (*1) Enables stress-free operation even when the worker needs to move around.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ergonomic design ideal for long and fatigue-free operation Designed to fit comfortably in the hand by its ergonomic design.</td>
</tr>
<tr>
<td></td>
<td>Withstands drop from a height of 1.5 m Designed to withstand a drop test from a predictable height during hand-held operation or storage. (*2).</td>
</tr>
<tr>
<td></td>
<td>*2 Not resistant to excessive shock.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Series</th>
<th>Communication Interface</th>
<th>Cable Length</th>
<th>Display Screen</th>
<th>Operation Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>HG1P</td>
<td>RS422/RS485 or Ethernet</td>
<td>3, 5, 7m</td>
<td>4.3-inch TFT color LCD, 65,536 colors</td>
<td>Touch switch (analog resistive) Function switch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>International Standards</th>
<th>UL</th>
<th>CSA</th>
<th>CE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Application:** Hand-held operator interface for robots

**Human-robot cooperative safety**
## HE2B/HE6B Enabling Switch

**Suitable for international safety applications**

- **Wide variety** of models suitable for teaching pendants of various shapes and sizes.

### Ergonomic 3-Position Operation

By holding an enabling switch, an operator can avert danger when a machine operates unexpectedly. When the panicked operator either releases or grasps tightly the enabling switch, the switch disables the machine operation in either situations.

<table>
<thead>
<tr>
<th>Series</th>
<th>Contact Rating</th>
<th>Rated Insulation Voltage</th>
<th>Contact Rating</th>
<th>Rated Current</th>
<th>Mechanical Durability</th>
<th>Electrical Durability</th>
<th>Weight</th>
<th>IP Rating</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE2B</td>
<td>250V</td>
<td>3A</td>
<td>Position 1 ⇒ 2 ⇒ 1: 1 million operations minimum</td>
<td>Position 1 ⇒ 2 ⇒ 3 ⇒ 1: 100,000 operations minimum</td>
<td>100,000 operations minimum</td>
<td>(without rubber cover), 30g (with rubber cover)</td>
<td>IP40 (without rubber cover)</td>
<td>(without rubber cover)</td>
<td>UL CSA TÜV CCC CE</td>
</tr>
<tr>
<td>HE6B</td>
<td>125V</td>
<td>3A</td>
<td>Position 1 ⇒ 2 ⇒ 1: 1 million operations minimum</td>
<td>Position 1 ⇒ 2 ⇒ 3 ⇒ 1: 100,000 operations minimum</td>
<td>100,000 operations minimum (rated load), 1,000,000 operations minimum (24V AC/DC 100 mA)</td>
<td>14g (without rubber cover), 17g (with rubber cover)</td>
<td>IP65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Application: Teaching pendant

Ensures human-robot collaborative safety
HE2G
Safety Grip Switch

Easy-to-grip ergonomic design

- Wide range of selections for a variety of robot systems.
- Lightweight, light force design enables stress-free operations.

Select from a wide variety of models
Equipped with different control units for various use.

<table>
<thead>
<tr>
<th>Series</th>
<th>Wiring Style</th>
<th>Rubber Boot Material / Color</th>
<th>IP Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE2G</td>
<td>Solder terminal, internal connector</td>
<td>Silicon rubber / yellow, NBR / PVC polyblend / gray</td>
<td>IP67</td>
</tr>
</tbody>
</table>

Actuators with plastic holders, applicable for HS5 series interlock switches, can be used with the HE2G

Example of automatic and manual operation modes when HS5D is used

Operation modes can be changed by inserting/removing the actuator with plastic holder installed to the HE2G into the HS5D. When the actuator is inserted, the operation is in automatic mode. When the actuator is removed, the operation is in manual mode.

Compact design fits comfortably in the hand
The curved grip and small-size makes operation comfortable. The light-weight (approx. 140g, HE2G-21SH) and compact size is suitable for operators with small hands and for use in tight working environments.

Application: Maintenance work inside safety fences

Achieves highly reliable safety
Robotics Industry Solutions

Safety Solutions

Pre-programmed to easily build a safe robot system

- With 35 safety circuit logics pre-installed in a compact housing, **no programming** is required.
- Connects to a wide variety of safety devices used to build safe robotic systems by simplified system wiring.

**Reduced Total Cost, Simplified System Wiring**

A single SafetyOne module can replace more than seven safety relay modules. Below is a comparison of systems (FS1A-C11S type, logic 104).

<table>
<thead>
<tr>
<th></th>
<th>When using safety relay module</th>
<th>When using SafetyOne</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before</strong></td>
<td>7 safety relay modules</td>
<td>1 FS1A</td>
</tr>
<tr>
<td></td>
<td>14 safety contactors</td>
<td>8 safety contactors</td>
</tr>
<tr>
<td></td>
<td>The system is complicated, and the interlocking of mode selector switch cannot be determined, resulting risks not satisfying the required safety performance.</td>
<td>Equipment and wiring costs are significantly reduced, and safe performance is ensured.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Series</th>
<th>SIL / PL / Category</th>
<th>Operating Voltage</th>
<th>Safety Circuit</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<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>Logic selection</td>
<td>-</td>
</tr>
</tbody>
</table>
RF1/RF2
Force Guided Relays

Compact force guided relays help reduce installation space

- 2- to 6-pole models enable flexible construction of safety circuits. Save cost and installation space by selecting the ideal contact configuration for robot system safety.
- Highly visible LED indicators to show operating status. Reduces maintenance time.

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

<table>
<thead>
<tr>
<th>Series</th>
<th>Contact Rating</th>
<th>Power Consumption</th>
<th>Electrical Life</th>
<th>Mechanical Life</th>
<th>Compliance with International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF1</td>
<td>Rated load: 250V AC/6 A, 30V DC/6A Allowable contact power: 1,500VA AC, 180W DC (30V DC or less) Allowable contact voltage: 250V AC, 125V DC Allowable contact current: 6 A</td>
<td>Approx. 0.36W (4 poles) Approx. 0.50W (6 poles)</td>
<td>100,000 operations or more at 250V AC/6A resistive load (operating frequency: 1200 times/hour) 100,000 operations or more at 30V DC/6A resistive load</td>
<td>10 million operations min. (operating frequency 10,800 per hour)</td>
<td>UL ● ● ● CSA ● TÜV ● CE ● ● ●</td>
</tr>
<tr>
<td>RF2</td>
<td>Rated load: NO contact: 240V AC/6 A / 24V DC/6A NC contact: 240V AC/3 A / 24V DC/3A Allowable contact power: NO contact: 1440VA/144W NC contact: 720VA/72W Allowable contact voltage: 250V AC, 125V DC Allowable contact current: 6A</td>
<td>Approx. 0.7W</td>
<td>100,000 operations or more (operating frequency: 1800 times/hour)</td>
<td>10 million operations min. (operating frequency 10,800 per hour)</td>
<td>UL ● ● ● CSA ● TÜV ● CE ● ● ●</td>
</tr>
</tbody>
</table>

Flexible construction of safety circuits

Application: Robot controller, robot system control panel
HS1T/HS5L
Interlock Switches with Solenoid

Superior robustness and safety

- Outstanding locking strength 5000N and compact body achieves safe construction of robot systems (HS1T).
- Highly **durable** and ideal for heavy doors that open and close frequently.
- Lock monitor circuits provide **reduction** in contacts and cost.

*Compared with conventional IDEC products*

**Locking Strength: 5000N minimum (Slim type: 40 mm wide)**

<table>
<thead>
<tr>
<th>Series</th>
<th>Type or Coding Level</th>
<th>Locking Strength</th>
<th>Mechanical Durability</th>
<th>Terminal Style</th>
<th>IP Rating</th>
<th>Rated Current</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS1T</td>
<td>Type 2 Interlock Device, Low Level Coded (EN ISO 14119)</td>
<td>5000N</td>
<td>2 million operations or more</td>
<td>Spring clamp</td>
<td>IP67</td>
<td>200 mA</td>
<td>UL</td>
</tr>
<tr>
<td>HS5L</td>
<td>Type 2 Interlock Device, Low Level Coded (EN ISO 14119)</td>
<td>1400N</td>
<td>2 million operations or more (Operation frequency: 900 times/hour)</td>
<td>Spring clamp</td>
<td>IP67</td>
<td>200 mA</td>
<td>UL</td>
</tr>
</tbody>
</table>

**Small and Slim**
Size is reduced by 13% from conventional models.* Mounts on small doors and aluminum frames of machines. Compact design with 2- and 4-contacts reduce installation space. Greater flexibility in machine design.

*Except two-conduit model.

**Slim in size!**

Volume ratio
Approx. **70% DOWN**

Conventional model HS5L volume: 715 cm³
Locking strength: 3000N

HS1T volume: 229 cm³
Locking strength: 5000N

**Dimensions in mm.**

<table>
<thead>
<tr>
<th>HS1T</th>
<th>Conventional model HS5E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>127</td>
</tr>
<tr>
<td>Height</td>
<td>140</td>
</tr>
</tbody>
</table>

**Dimensions in mm.**

<table>
<thead>
<tr>
<th>HS1L</th>
<th>Conventional product (HS1L) volume: 715 cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>88</td>
</tr>
<tr>
<td>Width</td>
<td>63</td>
</tr>
</tbody>
</table>

**Conventional model HS5E** volume: 6388 cm³
Locking strength: 3000N

**Conventional model HS1L** volume: 229 cm³
Locking strength: 5000N

**14**
Third generation emergency stop switches

**IDEC’s unique safety technology designed for high reliability performance required by the robot industry.**

1. **Reverse Energy Structure**
2. **Safe Break Action**

Emergency stop switches can be reset by pulling or turning. Turn reset / Pull reset built in one

**Safe Break Action**

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

**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 become open, thus stopping the machine (patented design)

<table>
<thead>
<tr>
<th>Series</th>
<th>Mounting Hole Size (mm)</th>
<th>Head Size (mm)</th>
<th>Solder</th>
<th>Terminal Style</th>
<th>M3 Screw</th>
<th>Connector</th>
<th>IP Rating</th>
<th>Panel Depth (mm)</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>XW</td>
<td>ø22.3</td>
<td>ø40</td>
<td>⚫</td>
<td>Solder/Tab</td>
<td>⚫</td>
<td>⚫</td>
<td>IP65</td>
<td>48.7</td>
<td>UL/CSA/TÜV/CCC/CE</td>
</tr>
<tr>
<td>XW (indicator type)</td>
<td>ø22.3</td>
<td>ø38</td>
<td>⚫</td>
<td>Solder/Tab</td>
<td>⚫</td>
<td>⚫</td>
<td>IP65</td>
<td>46.4</td>
<td>UL/CSA/TÜV/CCC/CE</td>
</tr>
<tr>
<td>XA (unibody)</td>
<td>ø16.2</td>
<td>ø30</td>
<td>⚫</td>
<td>PC Board</td>
<td>⚫</td>
<td>⚫</td>
<td>IP65</td>
<td>19.5</td>
<td>UL/CSA/TÜV/CCC/CE</td>
</tr>
<tr>
<td>XA (removable contact block)</td>
<td>ø16.2</td>
<td>ø40</td>
<td>⚫</td>
<td>PC Board</td>
<td>⚫</td>
<td>⚫</td>
<td>IP65</td>
<td>27.9</td>
<td>UL/CSA/TÜV/CCC/CE</td>
</tr>
<tr>
<td>X6</td>
<td>ø16.2</td>
<td>ø30</td>
<td>⚫</td>
<td>PC Board</td>
<td>⚫</td>
<td>⚫</td>
<td>IP65</td>
<td>19.5</td>
<td>UL/CSA/TÜV/CCC/CE</td>
</tr>
</tbody>
</table>

**Application:** Robot controller/Teaching pendant

**Short-body / Safe and highly reliable**
**Robotics Industry Solutions**

### LD6A

**LED Signal Light Towers**

**Striped design for clear visibility and improved contrast**

- Multiple lenses and light guide offer **highly visible** robot operating status from a wide range of angles.
- **Striped design** less susceptible to external light ensures clear visibility.

### Lens Shape for High Visibility

3 illumination patterns for high visibility from any direction.

### Characteristics of the lenses and light

1. Illumination through diffusing lens
2. Illumination through condensing lens
3. Illumination through light guide

### Clear Difference between On/Off, and Visibility Improved

- By combining a diffusing lens, which diffuses the light broadly, with a condensing lens, a super bright area is created for high visibility. Also, the illumination through the light guide enhances the visibility when the Signalight is viewed from below.

### LD6A Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>IP Rating</th>
<th>Rated Voltage</th>
<th>Rated Current (per tier)</th>
<th>Power Consumption (per tier)</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD6A</td>
<td>IP54/IP65</td>
<td>24V AC/DC</td>
<td>25 mA (R, Y) 30 mA (S, G) 20 mA (W)</td>
<td>0.6W (R, Y) 0.75W (S, G) 0.5W (W)</td>
<td>UL ● CSA ● CE ●</td>
</tr>
</tbody>
</table>

### Application: Robot operating status indicator

**High visibility and innovative design**
Compact LEDs for a wide variety of applications

- Various lengths are offered to meet space requirements and illumination coverages.
- With a long lifespan 40,000 hours, and approximately 54% less power consumption compared to fluorescent tube lighting, reducing maintenance work.
- IP65 protection (waterproof/dustproof), suitable for use in wet areas.

<table>
<thead>
<tr>
<th>Series</th>
<th>Cover</th>
<th>IP Rating</th>
<th>Rated Voltage</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF1B-N</td>
<td>Clear / White</td>
<td>IP65</td>
<td>24V DC</td>
<td>UL: ●</td>
</tr>
<tr>
<td>LF2B</td>
<td>Clear / White</td>
<td>IP65</td>
<td>12/24V DC, 100 to 240V AC</td>
<td>UL: ●</td>
</tr>
</tbody>
</table>

*1 12/24V DC only

Application: Lighting inside robot controllers, lamps for indicators, control panels for robot systems

Small and easy-to-mount inside equipment
Suitable for indicating the operation status of robots

- **No mounting holes required**, enabling easy mounting on manipulators.
- 7 color variations available to indicate the operating status of robots, such as servo ON/OFF.
- **IP67** protection for use in harsh environments.
- Highly flexible, UL-compliant robot cable.

### LH1D Surface-Mounted Indicators

- **Application:** Robot operating status indicator
- **Easy mounting and highly visible**

### Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>Color Options</th>
<th>Cable Length</th>
<th>Rated Voltage</th>
<th>IP Rating</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>LH1D</td>
<td>1-color / 2-color alternate / 3-color alternate (*1)</td>
<td>Cable type: 1m, 3m, 5m M12 connector type (*1): 30 cm</td>
<td>Cable type: 24V AC/DC M12 connector type (*1): 24V DC</td>
<td>IP67</td>
<td>UL</td>
</tr>
</tbody>
</table>

* (*1) Large dome only

*UL, CSA, TÜV, CE are international standards for safety and compliance.*
AP22
Ultra-bright LED Indicator

Outstanding visibility to indicate the robot operating status

- Robot operating status highly visible from a wide range of angles
- 6 color selections to indicate operation status, such as servo ON/OFF and cooperative mode operation
- IP66 protection allows installation in harsh environments

Series | Rated Voltage | Operating Temperature | Dimensions (mm)
--- | --- | --- | ---
AP22 | 24V | -25 to +55°C (No freezing) | Panel thickness: 0.8 to 6

Application: Robot operating status indicator

Reliable and high visibility from wide range of angles
LED indicators with outstanding protection performance, suitable for a wide temperature range

- Wide operation temperatures ranges from -40 to +85°C, for flexible installation of robots (reed wire models).
- IP67 protection for use in environments exposed to water.
- Available in sizes ranging from ø6 to 22 mm.

<table>
<thead>
<tr>
<th>Series</th>
<th>Mounting Hole Size (mm)</th>
<th>Bezel Shape</th>
<th>Terminal Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>ø6, 8, 10, 12, 16, 22</td>
<td>Prominent, flush</td>
<td>solder lug, faston, reed wire</td>
</tr>
</tbody>
</table>

Application: Robot operating status indicator

Achieves high visibility
**LB/LBW Series**

**ø18 ø22 Flush Silhouette Switches & Pilot Lights**

**For stylish design of panel surfaces**

- **Short body** switches for slim and sleek teaching pendants
- **Improved design** of robot controller

<table>
<thead>
<tr>
<th>Series</th>
<th>Mounting Hole Size (mm)</th>
<th>Bezel Size (mm)</th>
<th>Panel Depth (mm)</th>
<th>Screw</th>
<th>Terminal Style</th>
<th>IP Rating</th>
<th>International Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB</td>
<td>ø18.2 x 18.2</td>
<td>ø22 x 22</td>
<td>27.9</td>
<td>Solder/Tab</td>
<td>UL, CSA, TÜV, CCC, CE</td>
<td>IP65</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18.2 x 24.2</td>
<td>18 x 22</td>
<td></td>
<td>PC Board</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBW</td>
<td>ø22.3 x 22.5</td>
<td>ø26 x 26</td>
<td>27.9</td>
<td></td>
<td>IP65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Application: Robot controller / teaching pendant**

**For sleek and refined style**
**Easy wiring with Push-in technology**

- **Push-in** terminals reduce wiring and maintenance time.
- **Highly visible LEDs** allow the transmission of reliable information.
- **Self-cleaning wiping action contacts** ideal for robot systems requiring high reliability.

### High visibility with new LED

<table>
<thead>
<tr>
<th>HW series</th>
<th>CW series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional LEDs</td>
<td>Conventional LEDs</td>
</tr>
<tr>
<td><strong>NEW LED</strong></td>
<td><strong>NEW LED</strong></td>
</tr>
</tbody>
</table>

- **ISO3864-4 Safety color compliant**
  (Corresponding colors: R (Red), Y (Yellow), G (Green), PW (Pure white))
  Safety colors are defined with ISO standards.
  The bright and clear colors are effective for emergency situations.

### 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.

### Wiping, self-cleaning action contacts

- **Wiping** action

<table>
<thead>
<tr>
<th>Series</th>
<th>Mounting Hole Size (mm)</th>
<th>Bezel Size (mm)</th>
<th>Terminal Style</th>
<th>IP Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW</td>
<td>ø22</td>
<td>ø30</td>
<td>Screw</td>
<td>IP65</td>
</tr>
<tr>
<td>CW</td>
<td>ø22</td>
<td>ø30</td>
<td>Push-in</td>
<td>IP65</td>
</tr>
</tbody>
</table>

---

Application: Robot controllers

**Improve wiring efficiency with push-in technology**
Environment-resistant and compact switches for use in tight spaces

- Short body/compact design achieves **downsizing** of direct teaching devices.
- Ergonomic click feel for **safe operation**.

<table>
<thead>
<tr>
<th>Series</th>
<th>Mounting Hole Size (mm)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP</td>
<td>ø13.6</td>
<td></td>
</tr>
<tr>
<td>IS</td>
<td>ø13.6</td>
<td></td>
</tr>
</tbody>
</table>

*1 Dimensions of IP series, momentary type (illuminated round shape, soldered terminal).
For other types, please see IDEC website.

Application: Direct teaching

Effective use of space with small and environment-resistant switches
For intuitive teaching operation

- **Short body** switches for slim pendant design.
- **Intuitive** axis operations for simplified teaching.

### TS Series

**Miniature Joysticks**

**HMI Solutions**

**Application:** Hand guide / Teaching pendant

**Achieves intuitive operability**

<table>
<thead>
<tr>
<th>Series</th>
<th>Durability</th>
<th>Output Type</th>
<th>Supply Voltage Range</th>
<th>IP Rating</th>
<th>EMC Immunity Level</th>
<th>EMC Emission Level</th>
<th>ESD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS</td>
<td>1 million operations</td>
<td>Single, dual, analog, PWM, USB</td>
<td>5.00V DC ± 0.01</td>
<td>IP67/IP69K</td>
<td>EN61000-4-3</td>
<td>EN61000-6-3: 2001</td>
<td>EN61000-4-2</td>
</tr>
</tbody>
</table>
### Metal AV Series

**Metal switches for use in harsh environments**

#### Key Features:
- **Metal** design resistant against cleaning agents for washing robots.
- **Metal appearance** gives a **high-class** impression to the robot.

#### Specifications:

<table>
<thead>
<tr>
<th>Series</th>
<th>Mounting Hole Size (mm)</th>
<th>Output Type</th>
<th>Electrical Durability</th>
<th>Mechanical Durability</th>
<th>IP Protection Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV</td>
<td>ø22 to ø30</td>
<td>Contact output</td>
<td>500,000 operations</td>
<td>1 million operations</td>
<td>IP65/IP67/IP69K</td>
</tr>
</tbody>
</table>

*1 Differs depending on model.

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**Application:** Direct teaching

**Robust and smart design**
**RU/RJ/SU/RJ Series**

**Relays/Push-in Sockets**

**High-performance easy-to-use relays/sockets**

- Push-in terminals save up to 55% in wiring time.*1
- RJ relays with large switching capacity, Slim and compact design (12.7 mm) achieve downsizing of panel boards.
- Push-in terminals reduce maintenance work such as tightening of screws.

*1 Compared with conventional screw terminal (Based on IDEC research)

---

**Time saving & efficient**

<table>
<thead>
<tr>
<th>Series</th>
<th>Allowable Switching Current</th>
<th>Mechanical Durability</th>
</tr>
</thead>
<tbody>
<tr>
<td>RJ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RJ15S (1 pole)</td>
<td>12 A</td>
<td>AC coil: 30 million operations minimum (operating frequency: 18,000 operations per hour)</td>
</tr>
<tr>
<td>RJ2SS (2 poles)</td>
<td>8 A</td>
<td>DC coil: 50 million operations minimum (operating frequency: 18,000 operations per hour)</td>
</tr>
<tr>
<td>RU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RU2 (2 pole)</td>
<td>10 A</td>
<td>RU2, RU4: AC: 50 million operations or more, DC: 100 million operations minimum</td>
</tr>
<tr>
<td>RU4 (4 pole)</td>
<td>6 A</td>
<td>RU42: AC: 50 million operations or more, DC: 50 million operations minimum (operation frequency: 18,000 operations per hour)</td>
</tr>
<tr>
<td>RU42 (4-pole)</td>
<td>3 A</td>
<td></td>
</tr>
</tbody>
</table>

---

**Safe & easy**

- Equipped with a release lever
  - The release lever easily holds and removes the relay.
  - Push-in terminals eliminate the need for torque maintenance such as tightening of screws because screws are not used.

---

**Application:** Robot controller, robot system control panel

Improve workability and efficiency with Push-in sockets
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 contribution. Since its founding, IDEC has developed and introduced to the world 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.