



Smart RFID Reader

Manage user authority for machines and equipment Control and track access to production sites



Ø22 KW2D SERIES

Compact & smart design ideal for factory automation environments



IP65/67-rated to protect from washdowns and oil spills.



Designed to work on metal surfaces often used at factory automation sites.



Equipped with an LED easily visible from the side and an auxiliary buzzer, the RFID reader enables visible and audible feedback on operation status.

* Can be controlled from a host device (such as a touch panel or PLC).



PANEL MOUNT RFID READER

Holder feature available for mounting RFID tags



An Ethernet port enhances connection compatibility with host devices



With a verification function inside, the verified result can be communicated to the host device as data.

* If the verification function is not used, a communication error will occur if the result is not sent back to the RFID main unit.



APPLICATION EXAMPLES

Restricting the use of machines and devices

BEFORE

Anyone can operate the machines.



AFTER

Inadvertent operation and setting changes are prevented, reducing equipment malfunctions and failures.

Mount the RFID reader on the operation panel of a machine and register the workers in the RFID reader. ID cards can then be used to authenticate each worker.



Managing access to control rooms and inside safety fences

BEFORE

Do not know if workers are left inside.



AFTER

By recording entry/exit logs, workers can be prevented from being trapped or left behind in a work area.

Worker's names are linked to ID cards such as employee ID cards, and that data is sent when a card is read. Logs are recorded on the host device to track entry/exit.



Manage inspection history at production lines

BEFORE

Work sheets were written by hand.



AFTER

The operator can record their work history by holding the employee ID card over the reader.

The time and work details can be recorded by using the RFID reader together with a touch panel or PLC to ensure digital traceability.





CONFIGURATION TOOL KW RFID CONFIGURATOR

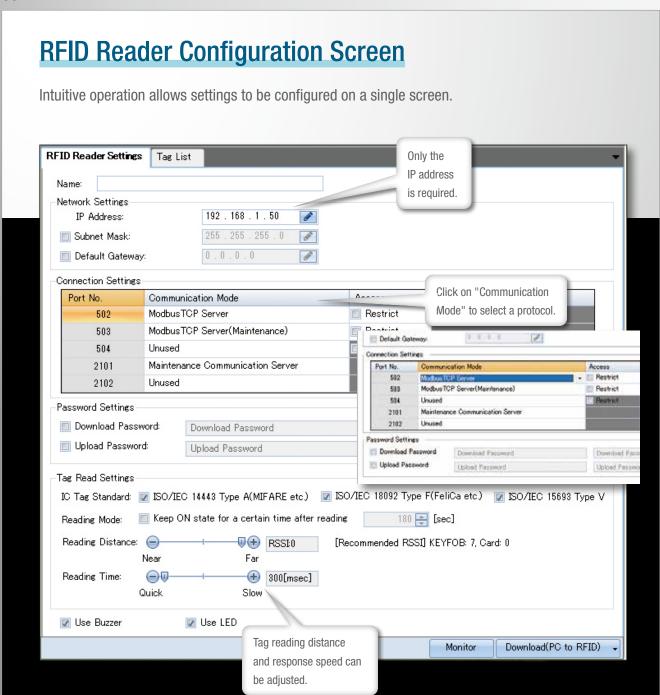
OPERATING ENVIRONMENT

| Item | Details |
|-------------|-------------------------------------|
| 0S | Windows10 |
| CPU | 1.0GHz or more |
| Memory | 1GB or more |
| Environment | Microsoft.NET Framework4.0 or later |



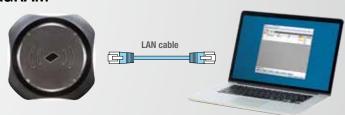
^{*} The configuration tool can be downloaded from the IDEC website.

SCREEN 1

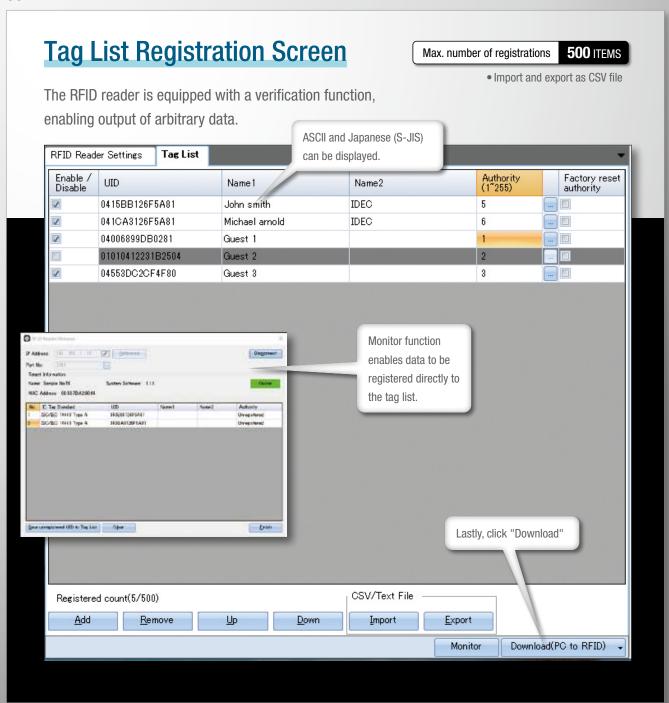


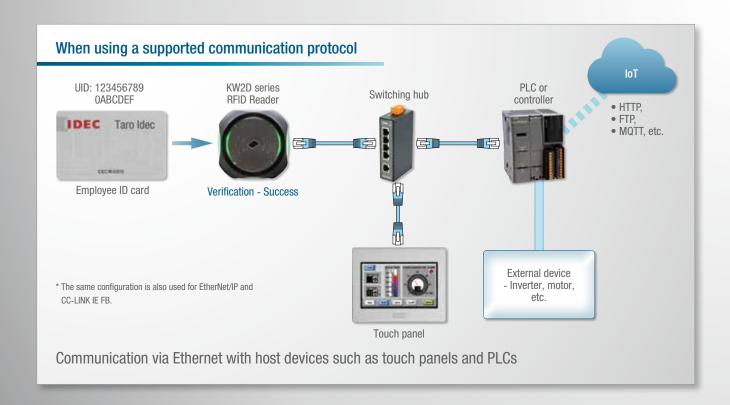
CONNECTION DIAGRAM

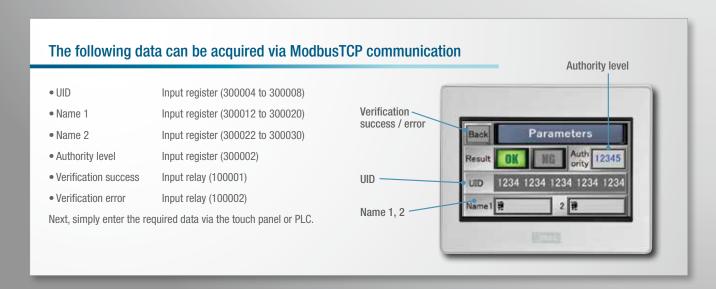
* Connect to a computer when configuring settings.



SCREEN 2







Supported character codes

UTF-8, ASCII, Japanese (Shift-JIS), Chinese (GB2312), Western Europe (ISO 8859-1)

KW2D Series Ø22 Smart RFID Reader

Compact RFID reader with integrated functions for the factory automation industry





Note: Approvals apply only to the main unit.

Without holder

• For more information about certified products, see the IDEC website.

Main Unit Package Quantity: 1

| Model | Appearance | Power Supply | Communication Interface | Approval | Part No. (Ordering No.) |
|----------------|------------|--------------|-------------------------|---|-------------------------|
| Without holder | | 24/20 | | IEC/EN61131-2 2007 (Zone B) EN301-489-3 UL61010-1/CAN/CSA C22.2 | KW2D-R100Q4E |
| With holder | | 24V DC | LAN | No. 61010-1-12 UL 61010-2-201 EN50364 | KW2D-RH100Q4E |

RFID Tags

When ordering, specify the Ordering No.

| Tag Type | Shape | Color | Part No. (Ordering No.) | Package Quantity | | |
|----------|-------|--------|-------------------------|------------------|------------|---|
| | | Green | KW9Z-T1X1G | 1 | | |
| | 65 | Yellow | KW9Z-T1X2Y | 1 | | |
| KEYFOB | (In | Red | KW9Z-T1X3R | 1 | | |
| | SOEC | SOEC | COEC . | Blue | KW9Z-T1X4S | 1 |
| | | Black | KW9Z-T1X5B | 1 | | |
| Card | Боес | N/A | KW9Z-T2X0 | 1 | | |

Maintenance Parts

When ordering, specify the Ordering No.

| | | | | | when ordering, specify the Ordering No. |
|------------------------|--------------------------------------|----------|--------------|------------------|--|
| Name/Appearance | Specification/Dimension | Part No. | Ordering No. | Package Quantity | Remarks |
| Cover (withot holder) | For KW2D-R | KW9Z-CV | KW9Z-CV | 1 | |
| Cover (with holder) | For KW2D-RH | KW9Z-CVH | KW9Z-CVH | 1 | |
| Gasket | Rubber (black) Nitrile rubber | HW9Z-WM | HW9Z-WMPN10 | 10 | t 0.5 |
| Locking Ring | Polyamide resin (black) | CW9Z-LN | CW9Z-LNPN05 | 10 | |
| Locking Ring Wrench | Metal (brass) Weigh: Approx. 150g | MW9Z-T1 | MW9Z-T1 | 1 | Used to tighten the locking ring when mounting onto a panel. 110 68 68 68 68 68 68 68 68 68 6 |

General Specifications

| | Rated Inpu | ıt Voltage | 24V DC |
|-------------------------------------|--|---|--|
| lm | Power Fluc | ctuation Range | 20.4 to 28.8V DC (incl. ripples) |
| lect | Power Cor | sumption | 2.4W maximum (24V DC) |
| rica | Rated Insu | lation Voltage | 50V DC |
| Electrical Specifications | Allowable Momentary Power Interruption | | 1ms (at rated power supply voltage) |
| fica | Withstand | Voltage | 500V AC, 1 minute |
| tions | Insulation | Resistance | $100 M\Omega$ or higher (500V DC insulation resistance tester) |
| | Inrush Cur | rent | 25A maximum |
| | Operating | Temperature | -25 to +55°C (no freezing) |
| 띩 | Storage Te | mperature | -40 to +80°C (no freezing) |
| ١ro | Operating | Humidity | 10 to 95% RH (no condensation) |
| lme | Storage Hu | umidity | 10 to 95% RH (no condensation) |
| inta | | Front Unit (*2) | IP65/67 (IEC60529) |
| Environmental Specifications | Protection (*1) | Back Unit | IP20 (IEC60529) |
| ficatio | Impact Test (*1) | Front Unit (*2) | 5J (Equal to IK08) |
| ns | Corrosion | Resistance | No corrosive gas |
| | Operating | Environment | Indoors |
| | Vibration F | Resistance | 5 to 55Hz, amplitude 0.5mm, on 3 mutually perpendicular axes |
| | Shock Resistance | | 100m/s², 11ms, six directions on 3 mutually perpendicular axes |
| | Power | Wire Pull Force | AWG24: 10N maximum AWG22: 15N maximum AWG20: 20N maximum AWG18: 30N maximum AWG16: 40N maximum |
| Mecha | Supply Terminal | Insertion/Removal Durability | 25 times minimum |
| Mechanical Specifications | | Recommended Operation Force of Pusher | 20N (40N maximum) |
| ificatio | Tag Holder | Insertion/Removal Durability | 10,000 times minimum |
| ns | Indicators | | LED colors (red: 2, green: 2 white: 4) |
| | Buzzer | | Single tone |
| | PCB | | FR, 94V-0 |
| | Cooo | Front Cover Back Cover | PBT |
| | Case Materials | Front Base Back Base | PA66 |
| | | Lens | PCT |
| | Weight (Ap | prox.) | 70g |
| *1 ID | norformana | and IK ratings are not s | subject to III, cortification |

^{*1} IP performance and IK ratings are not subject to UL certification.

Ethernet Communication Specifications

| Communicatio | n | Ethernet | |
|-------------------------|-------------------------------------|--|--|
| Electrical Char | acteristics | IEEE802.3 compliant | |
| | Connector | RJ45 | |
| | Pull Force | 15N | |
| Connector | Insertion/ Removal Durability | 100 times minimum | |
| Transmission S | Speed | 10BASE-T, 100BASE-TX | |
| | | Modbus TCP Server | |
| Communication Functions | | EtherNet/IP | |
| | | CC-Link IE Field Basic | |
| Cable | | CAT.5 STP, with a maximum length of 100m | |

RFID Interface Specifications

| Supported Tag Standards | | ISO/IEC14443 Type A (Type A), ISO/IEC18092 (Type F), JIS X6319-4 (Type F), ISO/IEC 15693 (Type V) | | |
|---------------------------|--------------------|---|--|--|
| | Type F (Felica) | 212kbps | | |
| Communication Speed | Type A (Mifare) | 106kbps | | |
| | Type V (I-CODE) | 26.5kbps | | |
| Carrier Frequen | су | 13.56MHz (HF band) | | |
| Wireless Standards | Supported Area | Japan, United States, Canada, EU, China, Taiwan, India, Thailand | | |
| Tag Reading | Card Type | 0 to 15mm | | |
| Distance (*1) KEYFOB Type | | 0 to 5mm | | |
| Tag Reading Position (*2) | | Center of tag stationary in center of front unit | | |
| Read Reaction Time | | 300 to 3000 [msec] (adjustable with [Reading Time] in the KW RFID Configurator) | | |

^{*1} The tag reading distance is a value that was measured using the tags listed in "Names of LSIs in Tested Tags" (on page 2-4 of the User's Manual) that IDEC has tested.

The tag reading distance will vary depending on the tag that is actually used and the operating environment.

Mounting Hole Layout

Drill a mounting hole in the panel with the dimensions shown in the following diagram

following diagram.

RFID Tag Specifications

| Applicable | Card | ISO/IEC14443 Type A | |
|-----------------------|--------|--------------------------|--|
| Standard | KEYF0B | 130/IEC 14443 Type A | |
| Operating | Card | 0°C to 50°C | |
| Temperature | KEYF0B | -25°C to 55°C | |
| Storage | Card | -20°C to 50°C | |
| Temperature KEYFOB | | -25°C to 75°C | |
| Operating | Card | 20% RH to 90% RH or less | |
| Humidity KEYFOB | | 60% RH or less | |
| Storage | Card | 90% RH or less | |
| Humidity KEYFOB | | 60% RH or less | |
| Reading Card | | 0 to 10mm | |
| Distance | KEYF0B | 0 to 5mm | |
| Operating Environment | | Indoors | |

^{*2} Front of the panel only.

^{*2} The tag reading position is the value using a standard IDEC tag placed near the center of the reader. The tag reading distance changes with the tag and operating environment.

^{*} See the manual for examples of mounting pitch.

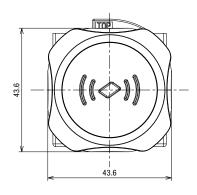
^{*} See the manual for minimum mounting pitch.

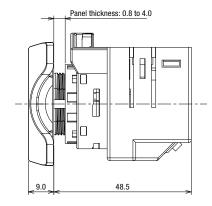
(Units: mm)

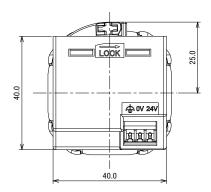
Dimensions

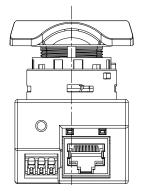
Main Unit

Without holder: KW2D-R100Q4E

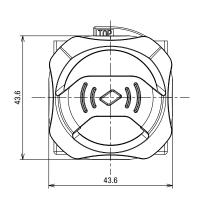


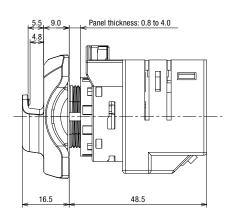


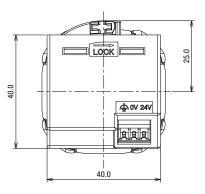


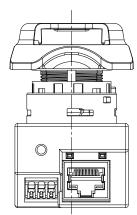


With holder: KW2D-RH100Q4E





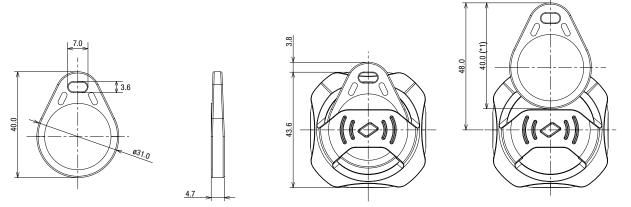




Dimensions (Units: mm)

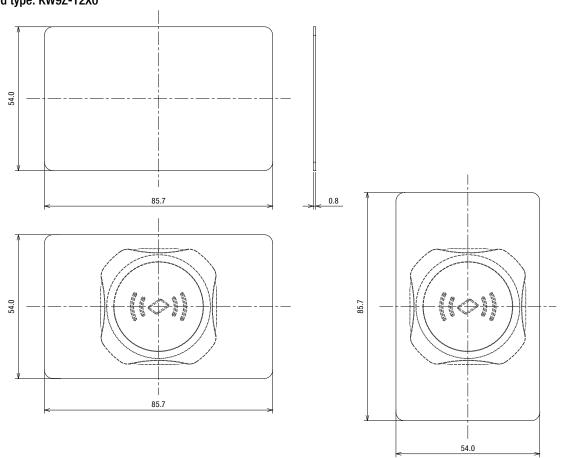
Tag

KEYFOB type: KW9Z-T1X1G, KW9Z-T1X2Y, KW9Z-T1X3R, KW9Z-T1X4S, KW9Z-T1X5B

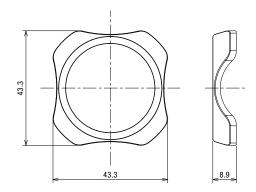


^{*1} Minimum size with KEYF0B attached.

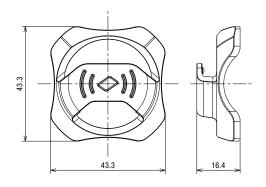
Card type: KW9Z-T2X0



Cover KW9Z-CV



KW9Z-CVH



Safety Precautions

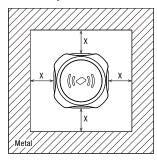
 Be sure to turn off the power before starting installation, removal, wiring, maintenance, and inspection work. Failure to turn power off may cause electrical shocks or fire hazard.

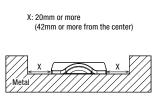
Precautions for Use

Installation and Wiring Precautions

Installation Space

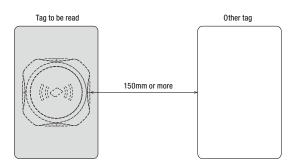
Metal around the front unit will affect the reading distance of RFID tags. If the front unit is surrounded with metal, separate the metal from the front unit by 20mm or more.





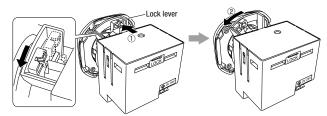
When Multiple Tags Are in the Reading Area

The wrong tag may be detected. Keep tags that should not be read 150mm or more from the area around the front unit.



Removing the Back Unit

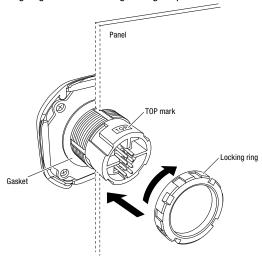
1) To remove the back unit from the front unit, press the lock lever (①) while turning it to the left.



2) To attach the back unit, align the TOP marks on the front unit and the back unit, and then insert the back unit into the front unit. Turn the lock lever to the right to lock it.

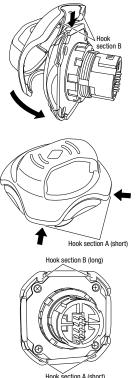
Panel Mounting Method

Insert the front unit into the mounting hole from the front side of the panel, and install the locking ring from the back side of the panel. Locking ring recommended tightening torque: 2.0N·m



Attaching the Front Cover

- 1) Attach hook section B (long) of the front cover to the front unit.
- 2) Push hook section A (short) onto the front unit.
- 3) The cover (without holder) and cover (with holder) are installed in the same way.



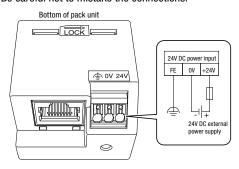
The front cover can be attached with a pitch of 90°.

Instructions

Applicable Wire

Power Supply Wiring

- The KW2D Series RFID Reader has a push-in style terminal block.
- An inrush current of 25A or lower (when input is 24V DC) flows when the power is turned on. Use a power supply with sufficient capacity.
- To prevent induction, keep the power line as short as possible, and as far away as possible from motor lines.
- The following table shows the signals that correspond to the signal codes. Be careful not to mistake the connections.



| Label/Symbol | Signal Wire |
|--------------|------------------------|
| 24V | Power supply (+24V) |
| 0V | Power supply (0V) |
| 4 | Functional ground (FE) |

When wiring, use the applicable wires shown below.

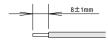
Applicable Wire and Specifications

| Applicable Wire | 0.25 to 1.5mm ² (AWG16 to 24) |
|------------------------|--|
| Wire Strip Length (*1) | 8 ± 1mm (*2) |
| Ferrule Size | H0.5 to H1.5 (without insulated cover) |
| (*1) | H0.25 to H0.75 (with insulated cover) |

 $^{\star}1$ For details on ferrules, see the "Wire Size and Recommended Ferrules" table below.

*2 Strip the sheath of the wire 8±1mm from the end.

Note: Make sure that the stranded wires do not loosen when using wiring without ferrules.



Wire Size and Recommended Ferrules

Ferrules with insulated covers

| Applicable Wire (Stranded Wire) | | Wire Strip Length | Part no. (Ordering no.) |
|---------------------------------|-----------------|----------------------|-------------------------|
| AWG | mm ² | Lengui | |
| 24 | 0.25 | 10mm | S3TL-H025-12WJ |
| 22 | 0.34 | 10mm | S3TL-H034-12WT |
| 20 | 0.50 | 10mm | S3TL-H05-14WA |
| 18 | 0.75 | 10mm | S3TL-H075-14WW |

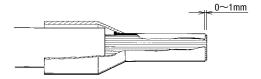
Recommended Tools (Optional)

The following recommended tools can be used.

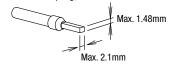
| Name | Part no. (Ordering no.) |
|-----------------------|-------------------------|
| Insulated screwdriver | S3TL-D04-25-75 |
| Crimping tool | S3TL-CR04T |
| Crimping tool | S3TL-CR06D |
| Stripping tool | S3TL-ST06 |

Crimping of Ferrules and Wiring

- Choose an appropriate ferrule for the wire.
- Cut the wire carefully to get a flat end.
- Make sure that ferrule sleeve is completely filled by the conductor.
 Depending on the cross section, the conductor should protrude approx. 0 to 1mm from the ferrule sleeve.

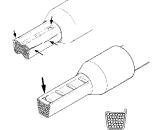


• When crimping, refer to the instructions of the crimping tool.



Faults which can occur during crimping:

- Cracks along the sides and die impressions
- · Splitting of the ferrules
- · Asymmetrical crimping shape
- Extreme burrs formed along the sides
- Ferrule not filled by conductor
- Single conductors pushed back by protruding from the insulated cover
- · Single conductors squeezed off
- Insulation cover damaged by the crimping jaw
- · Conductor insulation not pushed into the insulated cover
- Ferrule bent longitudinally after crimping



Formation of cracks at the sides, sides split open

Formation of cracks at the impressions of the crimping jaw

Asymmetrical crimping shape, burr formation on one side



Asymmetrical crimping shape, burr formation on one side



Single conductor squeezed off

Single conductor protruding

Ordering Terms and Conditions

Thank you for using IDEC Products.

By purchasing products listed in our catalogs, datasheets, and the like (hereinafter referred to as "Catalogs") you agree to be bound by these terms and conditions. Please read and agree to the terms and conditions before placing your order.

1. Notes on contents of Catalogs

- (1) Rated values, performance values, and specification values of IDEC products listed in this Catalog are values acquired under respective conditions in independent testing, and do not guarantee values gained in combined conditions.
 - Also, durability varies depending on the usage environment and usage conditions.
- (2) Reference data and reference values listed in Catalogs are for reference purposes only, and do not guarantee that the product will always operate appropriately in that range.
- (3) The specifications / appearance and accessories of IDEC products listed in Catalogs are subject to change or termination of sales without notice, for improvement or other reasons.
- (4) The content of Catalogs is subject to change without notice.

2. Note on applications

- If using IDEC products in combination with other products, confirm the applicable laws / regulations and standards.
 - Also, confirm that IDEC products are compatible with your systems, machines, devices, and the like by using under the actual conditions. IDEC shall bear no liability whatsoever regarding the compatibility with IDEC products.
- (2) The usage examples and application examples listed in Catalogs are for reference purposes only. Therefore, when introducing a product, confirm the performance and safety of the instruments, devices, and the like before use. Furthermore, regarding these examples, IDEC does not grant license to use IDEC products to you, and IDEC offers no warranties regarding the ownership of intellectual property rights or non-infringement upon the intellectual property rights of third parties.
- (3) When using IDEC products, be cautious when implementing the following.
 - i. Use of IDEC products with sufficient allowance for rating and performance
 - Safety design, including redundant design and malfunction prevention design that prevents other danger and damage even in the event that an IDEC product fails
 - Wiring and installation that ensures the IDEC product used in your system, machine, device, or the like can perform and function according to its specifications
- (4) Continuing to use an IDEC product even after the performance has deteriorated can result in abnormal heat, smoke, fires, and the like due to insulation deterioration or the like. Perform periodic maintenance for IDEC products and the systems, machines, devices, and the like in which they are used.
- (5) IDEC products are developed and manufactured as general-purpose products for general industrial products. They are not intended for use in the following applications, and in the event that you use an IDEC product for these applications, unless otherwise agreed upon between you and IDEC, IDEC shall provide no guarantees whatsoever regarding IDEC products.
 - i. Use in applications that require a high degree of safety, including nuclear power control equipment, transportation equipment (railroads / airplanes / ships / vehicles / vehicle instruments, etc.), equipment for use in outer space, elevating equipment, medical instruments, safety devices, or any other equipment, instruments, or the like that could endanger life or human health
 - ii. Use in applications that require a high degree of reliability, such as provision systems for gas / waterworks / electricity, etc., systems that operate continuously for 24 hours, and settlement systems
 - iii. Use in applications where the product may be handled or used deviating from the specifications or conditions / environment listed in the Catalogs, such as equipment used outdoors or applications in environments subject to chemical pollution or electromagnetic interference If you would like to use IDEC products in the above applications, be sure to consult with an IDEC sales representative.

3. Inspections

We ask that you implement inspections for IDEC products you purchase without delay, as well as thoroughly keep in mind management/maintenance regarding handling of the product before and during the inspection.

4. Warranty

(1) Warranty period

The warranty period for IDEC products shall be one (1) year after purchase or delivery to the specified location. However, this shall not apply in cases where there is a different specification in the Catalogs or there is another agreement in place between you and IDEC.

(2) Warranty scope

Should a failure occur in an IDEC product during the above warranty period for reasons attributable to IDEC, then IDEC shall replace or repair that product, free of charge, at the purchase location / delivery location of the product, or an IDEC service base. However, failures caused by the following reasons shall be deemed outside the scope of this warranty.

- i. The product was handled or used deviating from the conditions / environment listed in the Catalogs
- ii. The failure was caused by reasons other than an IDEC product
- iii. Modification or repair was performed by a party other than IDEC
- iv. The failure was caused by a software program of a party other than IDEC.
- v. The product was used outside of its original purpose
- Replacement of maintenance parts, installation of accessories, or the like was not performed properly in accordance with the user's manual and Catalogs
- vii. The failure could not have been predicted with the scientific and technical standards at the time when the product was shipped from IDEC
- viii. The failure was due to other causes not attributable to IDEC (including cases of force majeure such as natural disasters and other disasters)

 Furthermore, the warranty described here refers to a warranty on the IDEC

ruthermore, the warranty described here refers to a warranty on the IDEC product as a unit, and damages induced by the failure of an IDEC product are excluded from this warranty.

5. Limitation of liability

The warranty listed in this Agreement is the full and complete warranty for IDEC products, and IDEC shall bear no liability whatsoever regarding special damages, indirect damages, incidental damages, or passive damages that occurred due to an IDEC product.

6. Service scope

The prices of IDEC products do not include the cost of services, such as dispatching technicians. Therefore, separate fees are required in the following cases.

- Instructions for installation / adjustment and accompaniment at test operation (including creating application software and testing operation, etc.)
- (2) Maintenance inspections, adjustments, and repairs
- (3) Technical instructions and technical training
- (4) Product tests or inspections specified by you

The above content assumes transactions and usage within your region. Please consult with an IDEC sales representative regarding transactions and usage outside of your region. Also, IDEC provides no guarantees whatsoever regarding IDEC products sold outside your region.

For details on installation, wiring, and maintenance, see the Instruction Sheet and User's Manual from the URL below.

URL: https://product.idec.com/?product=KW2D



Flush Silhouette Switches

USB/RJ45 Relay Ports

CW ø22



Projects only 2mm from the panel. Ideal for panels that require cleanliness and safety.

Ethernet Switches

SX5E



Rugged design. Suitable for a range of applications. Unmanaged Ethernet switches equipped with various features.

PLCs/Controllers/Operator Interfaces

FL1F

Smart Relays



Equipped with convenience and high functionality. Multiple power supply variations.

PLCs/Controllers

FC6A Plus/All-in-One



FC6A Plus is ideal for controlling not only large-size machines, but also entire small-size production lines. FC6A All-in-One has high performance and easy programming features.

PLCs/Controllers/Operator Interfaces

PLC / Controllers

FT1A Touch





Built-in LCD enables control and display with high visibility.

Operator Interfaces

HG



Excellent visibility by super-bright LED backlight. Withstands harsh environments.

Safety Commander™

HT3P



Easily attaches to tablets of various sizes, improving safety and operability. Rotatable grip allows both vertical and horizontal use.

- *) Photo shows the product mounted on a commercially available tablet.
- *) The tablet is not included with this product and must be prepared separately by the customer

Sensor Checker

USB Powered Portable Sensor Checker

SA₁P



An external USB battery can be used enabling easy device testing and continuity check for 24V DC devices without power outlets near by.

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