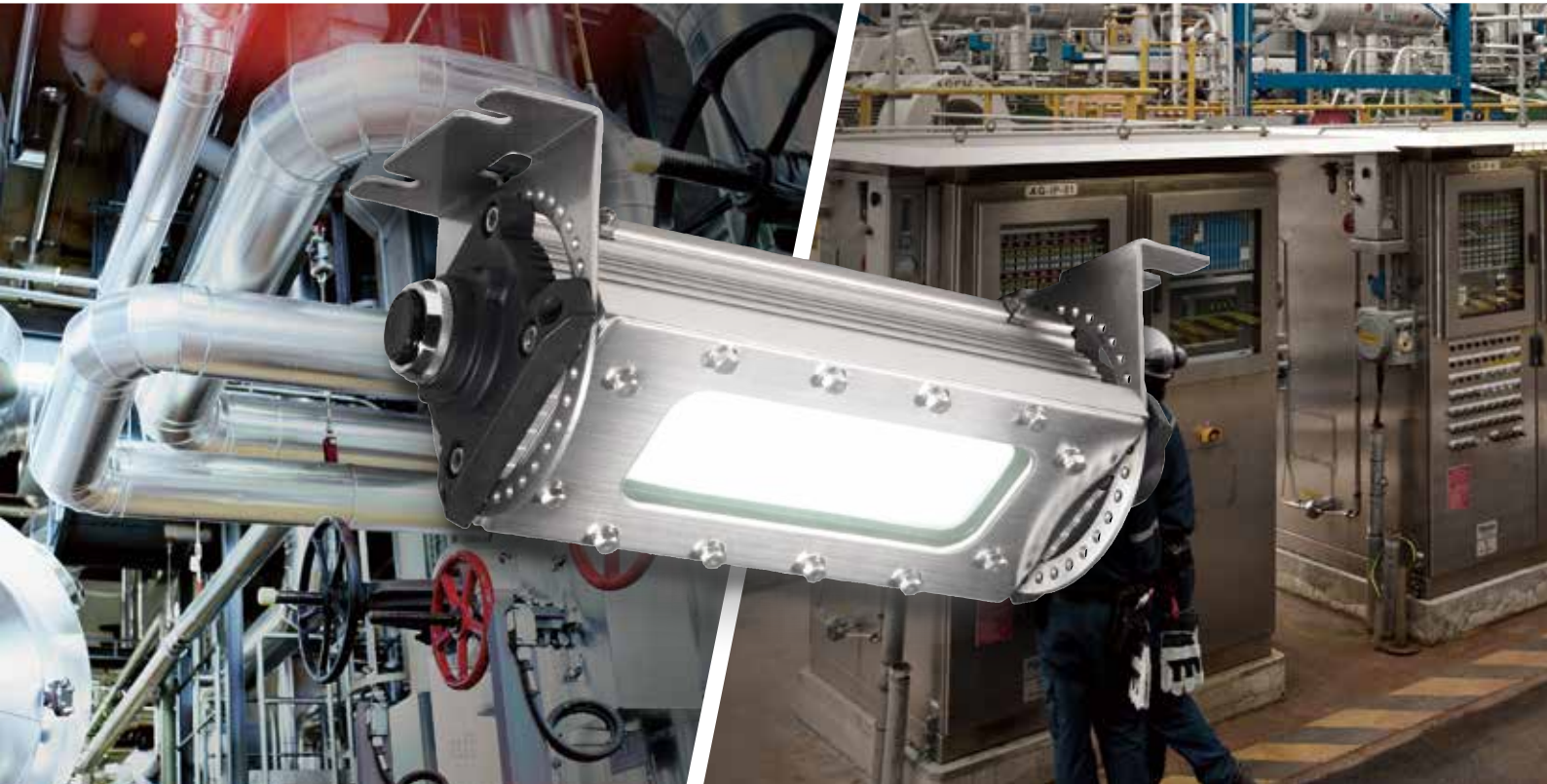




Flameproof LED Lighting

EF1A



LUMIFA™
Explosion-proof

Hazardous Location Lighting

Ideal for use in zones 1, 2, 21, and 22

IDEC CORPORATION

Ideal for use in zones 1, 2, 21, & 22. Twice as bright as conventional products!

Brightness equivalent to Hf16 fluorescent lamps
and 200W incandescent lamps

Designed to suit various mounting applications

Various mounting styles available including direct mount, fixed angle mounting bracket type, and angle adjustable mounting bracket types. Angle adjustable mounting brackets can be adjusted in 10-degree increments, enabling flexible installation.



Safe light for the eyes

Featured with excellent optical design. Condensing lens (*1) illuminates small areas and diffused lens illuminates wide areas. Glare is reduced (translucent glass), allowing a comfortable working environment.

*1) Condensing lens (clear glass) only

Wide operating temperature of -20 to +50°C

Compliant with various global explosion-proof standards

Integrated on/off switch

A separate on/off switch box is not required, enabling simple installation.

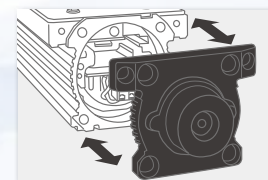


Robust design for environmental resistance

IP66/IP67 protection (without on/off switch). IP65 protection (with on/off switch). Aluminum enclosure with an anodized aluminum finish for superior environmental resistance. Ideal for various manufacturing applications such as pharmaceutical, chemical, cosmetic, and food manufacturing.

Easy wiring

Screw terminal and spring clamp terminal styles can be selected according to the wiring method.



For use in a variety of applications



Control panels at industrial plants



Printing factory



Inspection work

LUMIFA™ EF1A Flameproof LED Lighting

Explosion-proof



EF1A

Package quantity: 1

Power supply specification	Optical specification	With/Without on/off switch	Input side Wiring connection	①Mounting bracket	②Conduit size	Part No. (Ordering No.)	
100 to 240V AC	Clear glass (Condensed)	Without on/off switch	Spring clamp terminal block	Blank: Without mounting bracket A: With fixed angle mounting bracket B: With angle adjustable mounting bracket	N1: NPT 1/2 N2: NPT 3/4 M20: M20 ^{P1.5} M25: M25 ^{P1.5} M32: M32 ^{P1.5}	EF1A-12W①-②	
			Screw terminal block			EF1A-12WS①-②	
		With on/off switch	Spring clamp terminal block			EF1A-12WP①-②-A2	
			Screw terminal block			EF1A-12WPS①-②-A2	
		Clear glass (Diffused)	Without on/off switch			Spring clamp terminal block	EF1A-12W1①-②
						Screw terminal block	EF1A-12W1S①-②
	With on/off switch	Spring clamp terminal block	EF1A-12W1P①-②-A2				
			Screw terminal block			EF1A-12W1PS①-②-A2	
	Translucent glass (Diffused)	Without on/off switch	Spring clamp terminal block			EF1A-121W①-②	
			Screw terminal block			EF1A-121WS①-②	
		With on/off switch	Spring clamp terminal block			EF1A-121WP①-②-A2	
						Screw terminal block	EF1A-121WPS①-②-A2
24V DC		Clear glass (Condensed)	Without on/off switch	Spring clamp terminal block	Blank: Without mounting bracket A: With fixed angle mounting bracket B: With angle adjustable mounting bracket	N1: NPT 1/2 N2: NPT 3/4 M20: M20 ^{P1.5} M25: M25 ^{P1.5} M32: M32 ^{P1.5}	EF1A-11W①-②
				Screw terminal block			EF1A-11WS①-②
	With on/off switch		Spring clamp terminal block	EF1A-11WP①-②-A2			
			Screw terminal block	EF1A-11WPS①-②-A2			
	Clear glass (Diffused)		Without on/off switch	Spring clamp terminal block			EF1A-11W1①-②
				Screw terminal block			EF1A-11W1S①-②
	With on/off switch	Spring clamp terminal block	EF1A-11W1P①-②-A2				
			Screw terminal block	EF1A-11W1PS①-②-A2			
	Translucent glass (Diffused)	Without on/off switch	Spring clamp terminal block	EF1A-111W①-②			
			Screw terminal block	EF1A-111WS①-②			
		With on/off switch	Spring clamp terminal block	EF1A-111WP①-②-A2			
				Screw terminal block			EF1A-111WPS①-②-A2

Note) EF1A with cable glands are available for IEC Ex compliant models. Contact IDEC for details.

Performance characteristics

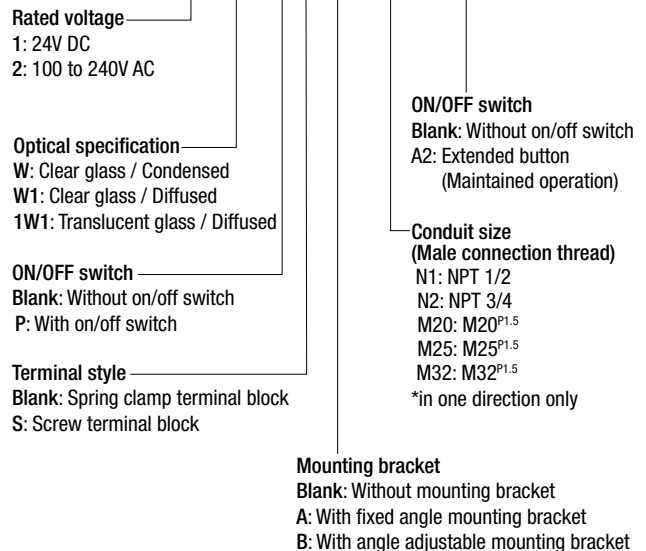
Model	EF1A-12	EF1A-11
Rated voltage	100 to 240V AC	24V DC
Operating voltage range	90 to 264V AC	21.6 to 26.4 DC
Rated power (Typ.) (at rated voltage)	19W	17W
Insulation resistance (input - FG) (*1)	100MΩ min.	50MΩ min.
Dielectric strength (input - FG)	2,000V AC, 1 min.	500V AC, 1 min.
Vibration resistance (damage limits)	Frequency 5 to 55Hz, amplitude 0.5mm	
Shock resistance (damage limits)	1,000m/s ²	
Operating Temperature	-20 to +50°C (no freezing)	
Operating Humidity	45 to 85% RH (no condensation)	
Storage Temperature	-35 to +70°C (no freezing)	
Life (*2) (Ta=25°C 45% max.)	50,000 hours min. (The illumination duration in which the brightness maintains a minimum of 70% of initial value at 25°C)	
Degree of Protection (IEC 60529)	IP66/67: Without on/off switch IP65: With on/off switch	
Material	Housing: Aluminum Front panel: Stainless steel Mounting bracket: Stainless steel Illuminating surface: Reinforced glass	
Weight (approx.)	2.9kg (without mounting bracket) 3.1kg (with mounting bracket)	

*1) at 500V DC megger

*2) Not a guaranteed value. The actual life may differ depending on the operating environment and conditions. Specifications are subject to change without notice. Ta = ambient temperature

Part no. development

EF1A-121W1PS①-②-A2



LED Specification

Optical specification	Clear glass Condensed	Clear glass Diffused	Translucent glass Diffused
Illumination color	Daylight		
Color temp. (typ.)	5,700 K		
Luminous Flux (typ.)	1,850 lm		
At 1.0m directly below (reference value)	3,280 lx	530 lx	460 lx

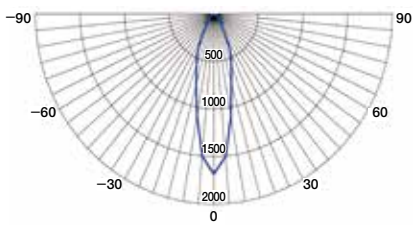
Certifications and Compliances

NEC and CEC	IEC
Class 1, Zone 1, Groups IIB	Zones 1 & 21 and 2 & 22
UL: Class I, Zone 1, AEx db IIB T4 Gb	-
c-UL: Ex db IIB T4 Gb X	IECEx: Ex db IIB T4 Gb Ex tb IIIC T 130°C Db IP67 (or IP65)
Certificate/file number: UL/c-UL E353024	Certificate numbers: IECEx UL 14.0048X

Optical dispersion (cd/1000 lm)

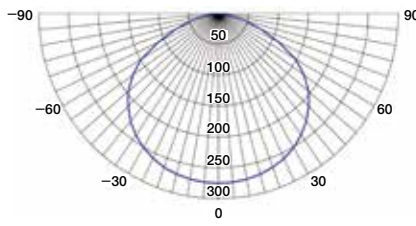
Condensed

Lens surface: Clear glass

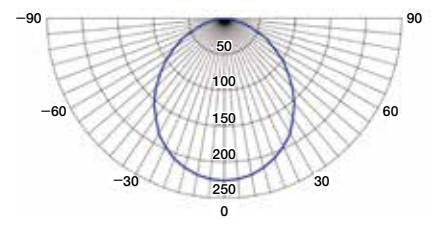


Diffused

Lens surface: Clear glass



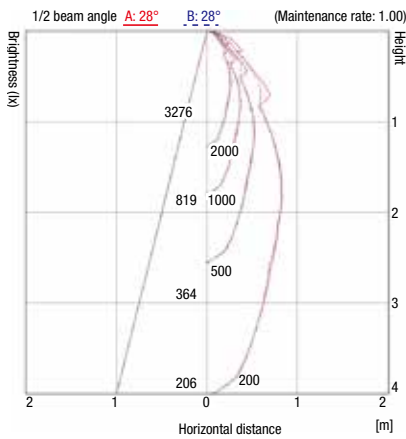
Lens surface: Translucent glass



Direct horizontal illuminance (1/2 illuminance angle: left side)

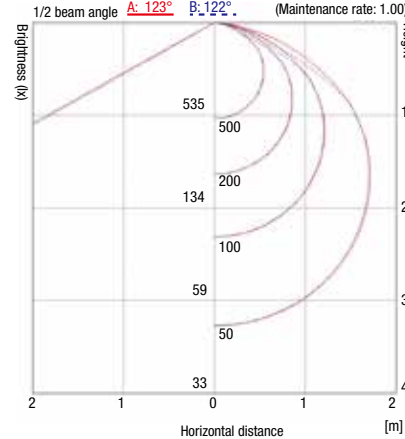
Condensed (unit: lx)

Lens surface: Clear glass

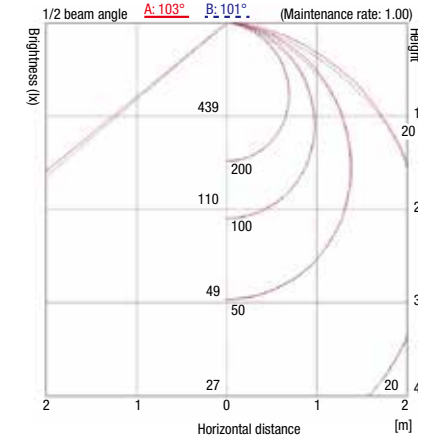


Diffused (unit: lx)

Lens surface: Clear glass



Lens surface: Translucent glass

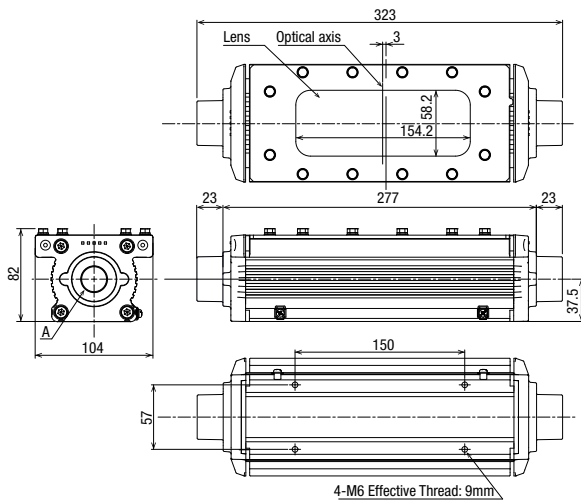


Accessories

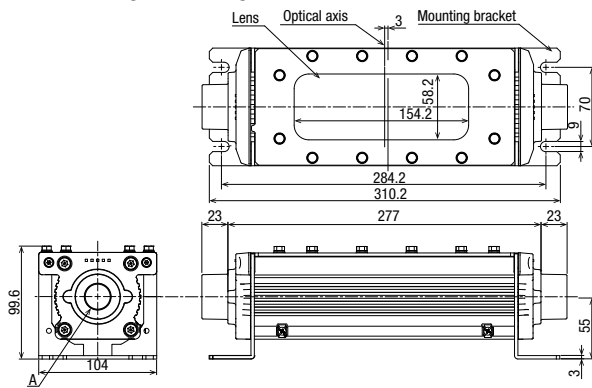
Name	Part no. (Ordering no.)	Package quantity	Remarks
Fixed mounting bracket	EF9Z-A	2	Mounting brackets for installing the EF1A Note) Used to change models without mounting brackets to fixed mounting bracket types and fixed mounting bracket types to angle adjustable mounting bracket types. Mounting brackets for units with on/off switches cannot be replaced or added later. Contact IDEC if replacement is required.
Angle adjustable mounting bracket	EF9Z-B	2	

Dimensions

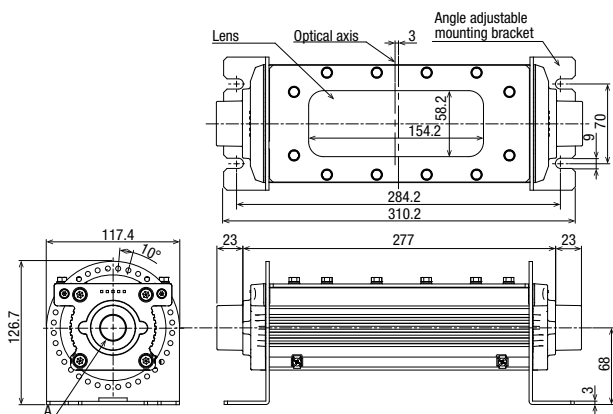
Without mounting bracket (direct mounting)



With fixed angle mounting bracket

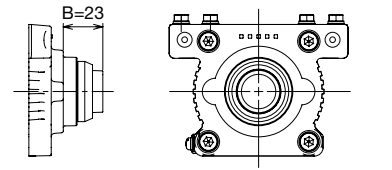


With angle adjustable mounting bracket



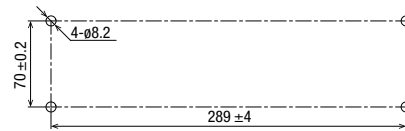
Symbol (Conduit entry size)	Dimension A
N1	1/2" NPT
N2	3/4" NPT
M20	M20 ^{P1.5}
M25	M25 ^{P1.5}
M32	M32 ^{P1.5}

With on/off switch

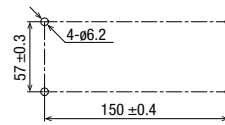


Panel Cut-out

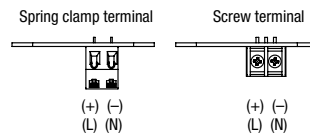
With mounting bracket



Without mounting bracket (direct mounting)



Connection style



Dimensions in mm.

Dimensions in mm.

⚠ Safety Precautions

- Turn power off before working on the EF1A, otherwise explosion, fire hazard, or electric shocks may result.
- Special expertise is required to install, operate, maintain, and inspect the EF1A. People without such expertise must not use the EF1A, otherwise it may cause damage to equipment or serious accidents.
- Do not disassemble, repair, or modify the product. Otherwise electric shock, fire, or malfunction may occur.
- Do not damage the lighting equipment. Contact with damaged lighting equipment may lead to damages or serious accidents.
- Be sure to ground the terminals. Otherwise, electrical shock, fire, or explosion may occur.
- When using the product, be sure to read this catalog or instruction manuals.
- This product cannot be installed in zones 0 and 20.
- When wiring, use a wire size appropriate for the applied voltage and current.
- Use heat-resistant wires of 75°C or more.
- Tighten the terminal screws (screw terminal type only) with the appropriate tightening torque. Incomplete wiring may cause abnormal heat generation, which may result in fire or explosion.
- Do not open the cover while the power is on. Failure to do so may result in electric shock, fire or explosion.
- When performing maintenance or inspection, be sure to turn off the power and do not open the cover for two minutes after power off.

Instructions

Precautions for use

- Be sure to observe the operating voltage range. Failure to do so may result in the destruction of the lighting equipment.
- Ensure correct operating temperature. Operating temperature is the ambient temperature where the product will be used. Temperature exceeding the specified value may cause rise in internal temperature and cause damage to the unit.
- Do not use or store the product in a place subject to vibration or shock. Otherwise, malfunctions may occur.

Installation location

- (1) Use the product in an operating temperature range of -20°C to +50°C. When the surface temperature may exceed +50°C due to direct sunlight, provide a shade to keep the surface temperature under +50°C.
- (2) Do not use in the following locations:
 - ① Exposed to direct sunlight, near heaters, high temperatures.
 - ② Locations that may be exposed to chemicals or corrosive gases.
 - ③ Locations with high humidity.
 - ④ Subject to condensation or freezing, such as cold storage warehouse or air cooler outlet (make sure that condensation or freezing do not occur).

Installation

- (1) For direct mounting, fasten with four M6 bolts. For mounting bracket type, use M8 bolts or a method of equivalent strength. The thickness of the mounting bracket is 3 mm. (Refer to the dimensions.) The recommended tightening torque is M6: 3.9 to 5.4 N·m, M8: 10 to 13.5 N·m.
- (2) If the mounting bolts may loosen due to vibration, use a spring washer to prevent loosening.

Installing/removing the cover

- (1) When removing the cover, use a hexagon wrench (size: 5) supplied with the EF1A to remove the cover bolts (hex socket head cap bolt). Do not lose the end cover bolts. Hex socket head cap bolts made of stainless steel (M6x18, with spring washer and plain washer) are used.
 - (2) The cover is inserted into the housing. When installing or removing the cover, make sure that the cover is inserted or removed horizontally.
 - (3) When installing the cover, observe the following:
 - No foreign objects on the gasket or on joint surface.
 - The gasket is in place.
 - The wires are not caught between the joint surfaces.
 - Install the cover slowly and tighten screws securely to a torque of 3.9 to 5.4 N·m.
- (Note:) Check whether the bolts are tightened securely.

Wiring

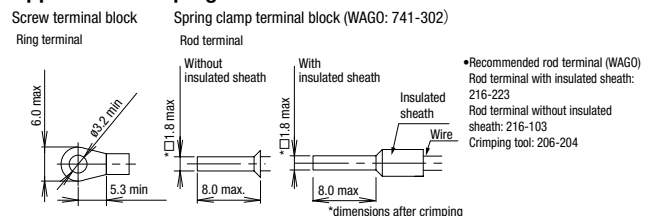
Applicable Wire

Stranded wire: 0.5 to 2.0mm², Solid wire: ø0.5 to ø2.0mm² (AWG20-14)

Note: Do not connect more than two wires to one terminal. When connecting an insulated wire to the terminal block, use a crimping terminal with insulation sheath. Bare crimping terminal must be insulated with an insulation tube or marking tube.

Make sure not to apply excessive force to the terminal block when installing the end cover.

Applicable Crimping Terminal



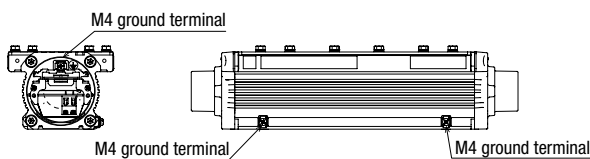
Recommended tightening torque of terminal screw

Screw terminal block (M3): 0.5 to 0.8N·m

Instructions

Protective grounding

- Ground the EF1A according to the environment and ratings of the application where the EF1A is used. Observe the standards and regulations in each country and region.
- Use the M4 grounding terminal inside and make sure that the ground resistance value is under 100Ω .
- In wire wiring, use one core as grounding wire to connect to the grounding terminal.
- When not using the M4 grounding terminal inside, use the external M4 grounding terminal.
- Recommended tightening torque (M4): 1.4 to 2.0 N·m
- Use a wire in size and material which is durable against the maximum grounding current expected. Properly protect the ground wire from external damage.



Warranty

- The warranty period is one year after delivery to the specified location.

*Exceptions to warranty coverage

The warranty period is reduced to six (6) months if the product is run continuously over 20 hours.

- In the event of a failure caused by our responsibility within the above period, we will replace the product free of charge at the place where the product was purchased or delivered.

* Does not include expenses required for mounting, replacing, or installation work.

- The warranty does not apply if the product is used outside of the conditions described in the instruction manual and specification

- LED lighting have a product life.
- Because internal elements deteriorate after 8 to 10 years of installation even if they have no defects in appearance, inspection and/or replacement are recommended. Operation condition: temperature 30°C, 3,000-hour operation per year (10 hours per day). (JIS C 8105-1)
- Product life is shortened under high operating temperature or when it is lit for long hours.
- Inspection by contractors is recommended every 3 years.

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

- (1) 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
 - ii. Safety design, including redundant design and malfunction prevention design that prevents other danger and damage even in the event that an IDEC product fails
 - iii. 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
 - vi. 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 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.

- (1) 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.

IDEC CORPORATION

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EMEA APEM SAS

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Thailand IDEC Asia (Thailand) Co., Ltd.
India IDEC Controls India Private Ltd.

China IDEC (Shanghai) Corporation
IDEC Izumi (H.K.) Co., Ltd.
Taiwan IDEC Taiwan Corporation

Japan IDEC Corporation

 www.idec.com

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EP1756-3

