

# **Safety Edge Switch**

**HK2H Series (E30BK1 High profile caps type)**

**HK2L Series (E30BK1 Low profile caps type)**

**Original User's Manual**

# Contents

<b>1 Introduction</b> .....	<b>3</b>
<b>2 Safety Precautions</b> .....	<b>4</b>
2.1 Warning level .....	4
2.2 Safety precautions .....	4
2.3 Storage and transport .....	5
2.3.1 Storage .....	5
2.3.2 Transport .....	5
<b>3 General Precautions</b> .....	<b>6</b>
<b>4 Product Warranty</b> .....	<b>7</b>
4.1 Warranty period .....	7
4.2 Range of warranty .....	7
4.3 Limitation of liability .....	7
<b>5 Product Information</b> .....	<b>8</b>
5.1 Module number description .....	8
5.2 Nut fix configuration .....	9
5.2.1 HK2H Series (E30BK1 High profile caps type) .....	9
5.2.2 HK2L Series (E30BK1 Low profile caps type) .....	9
5.3 Screw fix configuration .....	10
5.3.1 HK2H Series (E30BK1 High profile caps type) .....	10
5.3.2 HK2L Series (E30BK1 Low profile caps type) .....	10
5.4 Product specifications .....	11
5.5 Technical data .....	11
5.6 Force-travel relationship .....	12
5.7 Chemical and oil resistant .....	12
5.8 The noise emission declaration .....	12
<b>6 Connection Wiring Diagram</b> .....	<b>13</b>
6.1 In combination with HR6S-AK safety relay module .....	13
6.2 In combination with HR6S-AK safety relay module + HR6S-EP extension module .....	14
<b>7 Installation</b> .....	<b>15</b>
7.1 Nut fix configuration .....	15
7.1.1 Confirming bundled items .....	15
7.1.2 Setup and installation .....	15
7.1.2.1 Making holes .....	15
7.1.2.2 Putting in product to mounting surface .....	16
7.1.2.3 Fixing product .....	16
7.2 Screw fix configuration .....	17
7.2.1 HK2H Series (E30BK1 High profile caps type) .....	17
7.2.1.1 Confirming bundled items .....	17
7.2.1.2 Setup and installation .....	17
7.2.1.2.1 Making holes and fixing aluminum channel .....	17
7.2.1.2.2 Fitting the sensor unit in the aluminum channel .....	18
7.2.2 HK2L Series (E30BK1 Low profile caps type) .....	19
7.2.2.1 Confirming bundled items .....	19
7.2.2.2 Setup and installation .....	19
7.2.2.2.1 Making holes and fixing aluminum channel .....	19
7.2.2.2.2 Putting the stopper into the channel .....	20
<b>8 Inspection</b> .....	<b>21</b>
<b>9 Information about residual risks</b> .....	<b>21</b>
9.1 Installation .....	21
9.2 Operation .....	21
9.3 Dismantling .....	21
<b>10 Disposal</b> .....	<b>22</b>
<b>11 EU Declaration of conformity</b> .....	<b>22</b>

# 1 Introduction

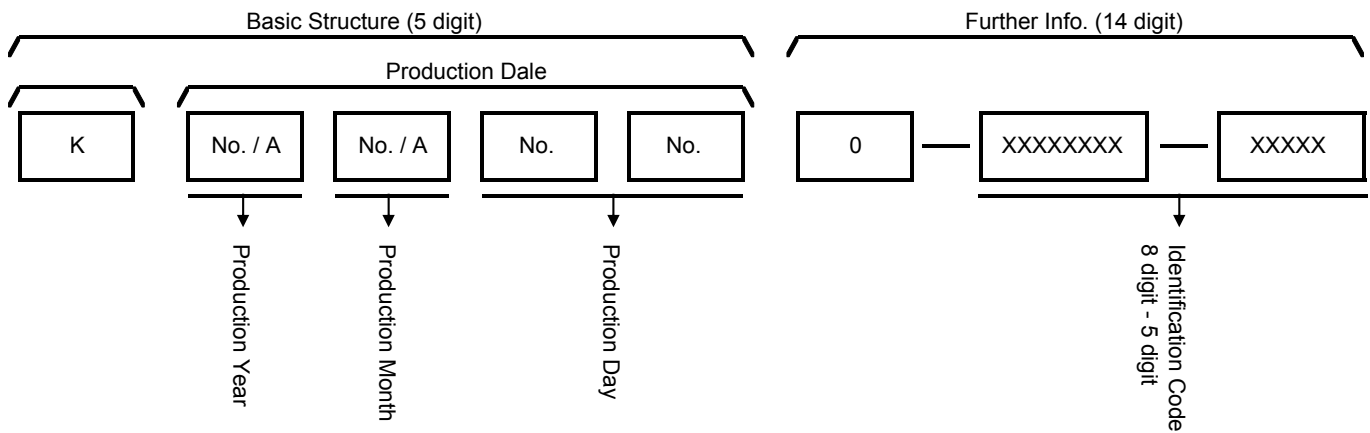
Thank you for purchasing our product Edge Switch.

Read this Installation & Instruction Manual carefully and use the product correctly.

- This product is custom made. If you received an exclusive drawing before purchasing ordering or contract, archive it with this Installation & Instruction Manual in a safe and accessible place so that you can read it easily.
- Confirm all of this Installation & Instruction Manual carefully before use. If you perceive abnormalities in use, stop using it immediately and contact the distributor or our company.
- Installation, maintenance, and inspection should be carried out by suitable trained and qualified personnel.
- You will need information on the “Purchase date” and “Serial number” to contact the distributor or us. Before use, note the “Purchase date” and “Serial number” in the column below.

<b>Purchase date</b>	<b>Month</b>	<b>Year</b>
<b>Serial number</b>		

Serial number structure is composed as explained below.



## Production Year Codes

Year	Code	Year	Code	Year	Code
2020	M	2030	0	2040	A
2021	N	2031	1	2041	B
2022	P	2032	2	2042	C
2023	R	2033	3	2043	D
2024	S	2034	4	2044	E
2025	T	2035	5	2045	F
2026	U	2036	6	2046	G
2027	V	2037	7	2047	H
2028	W	2038	8	2048	K
2029	X	2039	9	2049	L

Example: Year 2026 (The 1st of January, 2026 to the 31st of December, 2026).....U  
 Year 2036 (The 1st of January, 2036 to the 31st of December, 2036).....6

## Production Month Codes

Month	Code
January (from January 1 to 31)	1
April (from April 1 to 30)	4
October (from November 1 to 30)	X
November (from November 1 to 30)	Y
December (from December 1 to 31)	Z

## Production Month Codes

Day	Code
Day 1	01
Day 9	09
Day 10	10
Day 31	31

## 2 Safety Precautions

This section describes the items that must be observed for safe use of this product.

### 2.1 Warning level

The following symbols indicate the potential hazardous situation that may occur if you do not follow the instructions and you use the product incorrectly.

#### **Warning**

Warning indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.


#### **Caution**

Caution indicates a potentially hazardous situation which, if not avoided, may result in injury or property damage.


### 2.2 Safety precautions

In this manual, the following symbols are used in addition to “Warning” and “Caution”.

 : This symbol indicates “prohibited” content that must not be done.


 : This symbol indicates “instructions” that must be executed.

#### **Warning**


 Be sure to observe the followings before installing this product. Otherwise, there is a risk of serious danger to human life, body and property.


This product is a contact/impact detection switch for detecting contact and collision by the machine where this product is installed. Incorrect installation or usage may result in loss of function or inability to detect contact or collision with the machine being installed. In addition, depending on the machine installed, the damage situation of the assumed accident will change.


Before using this product, be sure to check carefully all the instruction manuals and specifications of the equipment to which this product is connected (product specifications, safety precautions, usage precautions, warnings, indications of Warning and Caution.)


 If you use this product for an application that may cause serious danger to human life, body or property in the event of breakdown or damage, be sure to check the following points on your own:

- “Foolproof design” and “Failsafe design” using other safety sensors are implemented.
- This product is properly wired and installed for the intended use.


 Consider the velocity and weight of the object to be detected, decide on the use of this product, and design the system. Depending on the specifications of the product used, an accident due to damage to the product may occur.

 Turn off the power to the machine where this product is installed before wiring. Do not touch the wiring while the power is on. There is a risk of electric shock and accidents due to malfunctions of connected devices.

 The core of the VVC lead wire is an AWG24 robot cable, so be careful when wiring. A disconnection may cause an accident due to loss of function or malfunction.

 Be sure to observe the following while using this product. They may cause damage or deterioration of the product, and cause accidents due to loss of function or malfunction:

- Never use the edge switch in freezing temperatures.
- Never use the edge switch with a load that exceeds the rated value range. Usage under such a condition causes insulation failure, contact welding, and contact failure. If the voltage or current is smaller than the rated value, the contact resistance may increase due to the influence of the oxide film formed on the contact, resulting in contact failure.
- Do not apply heavy loads to this product for a long time. The switch mechanism may be deformed.
- Do not allow organic solvents or oils such as thinner or gasoline to adhere to this product. Deterioration or deformation of parts occurs due to adhesion of solvent.

 Splash, water and dust resistance are not permanent conditions and resistance might decrease as a result of normal wear. Do not use the product outdoors, in an environment where it may be splashed with water, or under high humidity conditions. Doing so may impair the specified performance or cause malfunction.

- ⊘ Stop using the product in the following cases. Damage or deformation of the product may cause loss of functions or accidents due to malfunctions:
  - When the product is modified such as drilling
  - If the appearance shows scratches or dents
  - When strong impact is given to the product by dropping or collision
- ! The packing box has been created for transport purposes. On arrival of the product, open the box immediately and place the product flat. If the product is stored in the packing box, damage or deformation of the product may cause loss of functions or accidents due to malfunctions.
- ! Use a dedicated channel to install this product. If you fix this product by any other method, damage or deformation of the product may cause loss of functions or accidents due to malfunctions. The product life will also be shortened.

### **Caution**

- ⊘ Do not place the wiring of this product in parallel with the power lines or power source line of motors and coils. Surge and noise components on power lines or power source line of motors and coils may jump to the wiring and cause an accident due to malfunction of the connected controller.
- ! Before installation, confirm the following points to prevent accidents due to damage or malfunction of the product:
  - Keep large working area.
  - Install this product on a flat surface. If it is installed on a surface with distortion, this product may be damaged or malfunction due to misalignment may occur.
  - Fix the screws, bolts and nuts with the specified tightening torque. A tightening torque other than that specified may cause damage to this product due to misalignment or malfunction.

## **2.3 Storage and transport**

### **2.3.1 Storage**

Keep the packaged product out of direct sunlight.

Keep storage temperature 0 to 60°C.

### **2.3.2 Transport**

If the length of this product exceeds 2,000 mm, carry it by two or more people so as not to bend the jacket or aluminum channel.

## 3 General Precautions

- **Usage environment**

Use this product within the specification limits.

- **Applicable conditions**

- When using our products in combination with other products, check the applicable standards, regulations, or rules.
- You should also confirm compatibility with the equipment, machine, and system to be used.

- **Usage applications**

Our products are developed and manufactured as a general-purpose product for general industrial products. We do not intend to use our products for the following purposes, and if you use them for these purposes, we do not guarantee our products unless there is a separate agreement between you and us.

- (1) Usage in applications that require a high degree of safety such as nuclear control equipment, transportation equipment (railroad, aviation, ship, vehicle, passenger equipment, etc.), space equipment, elevating equipment, medical equipment, safety equipment, and equipment and devices that endanger human life.
- (2) Usage in applications that require high reliability such as gas, water and electricity supply systems, payment systems and 24-hour continuous operation systems.
- (3) Usage in applications that may be handled or used outside the scope of specifications, conditions, and environments listed in the catalogs such as outdoor equipment and environments that may be chemically polluted or electromagnetically affected.

- **Regular test**

Test this product regularly according to usage conditions. Test work should be carried out by suitably trained and qualified personnel.

- **Change of product specifications**

The specifications of this product may be changed or production may be discontinued without prior notice.

- **Product disposal**

Dispose of this product as industrial waste.

- **Export management**

When exporting this product or technical documents, comply with the laws and regulations between Japan and each country regarding security trade control. If you violate laws and regulations, we may not be able to provide this product and technical documents.

## **4 Product Warranty**

### **4.1 Warranty period**

The warranty period for our products is one year after purchase.

### **4.2 Range of warranty**

If the products fail due to our responsibility during the above warranty period, we will replace or repair the products free of charge at the store where you purchased or delivered the products or at our service base. However, this warranty does not apply if the cause of the failure falls under any of the following:

- When handling or using outside the range of conditions and environment described in the catalogs.
- For causes other than our products
- When modified or repaired by someone other than our company
- When used with a software program by someone other than our company
- When used for purposes other than the intended use of the products
- When replacement of maintenance parts, installation of accessories, etc. are not performed correctly according to the instructions in the instruction manual and catalogs.
- When it was unpredictable due to the scientific and technical level at the time of shipment from our company.
- Other cases due to causes not our responsibility (including cases due to irresistible forces such as natural disasters).

The warranty here covers only our products, and damages caused by failures of our products are excluded from the warranty.

### **4.3 Limitation of liability**

The warranty described here is the entire warranty for our products, and we are not responsible for any special damages, indirect damages, incidental damages, or negative damages caused by our products.

## 5 Product Information

This product is a contact/impact detection switch for detecting contact and collision by the machine where this product installed.

This product complies with ISO13856-2 listed with "HR6S-AK safety relay module" or "HR6S-AK safety relay module + HR6S-EP extension module".

### 5.1 Module number description

Model/number structure is composed as explained below.

HK2H	-	B	XXXX	NA/VF	-	4N	-	XXX												
<table border="1"> <tr><th>Serie</th></tr> <tr><td>High profile caps type</td></tr> </table>	Serie	High profile caps type		<table border="1"> <tr><th>Color</th></tr> <tr><td>B</td></tr> </table>	Color	B	<table border="1"> <tr><th>SW Length</th></tr> <tr><td>300~2,400mm 5mm increment</td></tr> </table>	SW Length	300~2,400mm 5mm increment	<table border="1"> <tr><th>Cable</th></tr> <tr><td>NA: VVC VF: VFF</td></tr> </table>	Cable	NA: VVC VF: VFF		<table border="1"> <tr><th>Wire type</th></tr> <tr><td>4N</td></tr> </table>	Wire type	4N		<table border="1"> <tr><th>Wire Length</th></tr> <tr><td>200~10,000mm 100mm increment Both wires</td></tr> </table>	Wire Length	200~10,000mm 100mm increment Both wires
Serie																				
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NA: VVC VF: VFF																				
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4N																				
Wire Length																				
200~10,000mm 100mm increment Both wires																				
HK2L	-	B	XXXX	NA	-	4N	-	XXX												
<table border="1"> <tr><th>Serie</th></tr> <tr><td>Low profile caps type</td></tr> </table>	Serie	Low profile caps type		<table border="1"> <tr><th>Color</th></tr> <tr><td>B</td></tr> </table>	Color	B	<table border="1"> <tr><th>SW Length</th></tr> <tr><td>300~2,400mm 5mm increment</td></tr> </table>	SW Length	300~2,400mm 5mm increment	<table border="1"> <tr><th>Cable</th></tr> <tr><td>NA: VVC</td></tr> </table>	Cable	NA: VVC		<table border="1"> <tr><th>Wire type</th></tr> <tr><td>4N</td></tr> </table>	Wire type	4N		<table border="1"> <tr><th>Wire Length</th></tr> <tr><td>200~10,000mm 100mm increment Both wires</td></tr> </table>	Wire Length	200~10,000mm 100mm increment Both wires
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Cable																				
NA: VVC																				
Wire type																				
4N																				
Wire Length																				
200~10,000mm 100mm increment Both wires																				

\* VFF is not available

Example

HK2H - B 1000 NA- 4N - 005  
 (1) (2) (3) (4) (5) (6)

(1) Series (2) Color (3) SW Length (4) Cable (5) Wire type (6) Wire Length  
 HK2H B: Black 1,000mm NA: VVC 4N 005: 500mm

Previous Model/number structure is composed as explained below.

E30BK1	-	XXXX	L/H	C/F	-	XXX	-	XXX	-	4														
<table border="1"> <tr><th>Serie</th></tr> <tr><td></td></tr> </table>	Serie			<table border="1"> <tr><th>SW Length</th></tr> <tr><td>300~2,400mm 5mm increment</td></tr> </table>	SW Length	300~2,400mm 5mm increment	<table border="1"> <tr><th>Profile</th></tr> <tr><td>L: Low Profile H: High Profile</td></tr> </table>	Profile	L: Low Profile H: High Profile	<table border="1"> <tr><th>Cable</th></tr> <tr><td>C: VVC F: VFF</td></tr> </table>	Cable	C: VVC F: VFF		<table border="1"> <tr><th>Wire Length</th></tr> <tr><td>200~10,000mm 100mm increment</td></tr> </table>	Wire Length	200~10,000mm 100mm increment		<table border="1"> <tr><th>Wire Length</th></tr> <tr><td>200~10,000mm 100mm increment</td></tr> </table>	Wire Length	200~10,000mm 100mm increment		<table border="1"> <tr><th>Wire type</th></tr> <tr><td>4</td></tr> </table>	Wire type	4
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Wire Length																								
200~10,000mm 100mm increment																								
Wire Length																								
200~10,000mm 100mm increment																								
Wire type																								
4																								

\* LF combination is not available

Example

E30BK1 - 1000 L C - 5 - 5 - 4  
 (1) (2) (3) (4) (5) (6) (7)

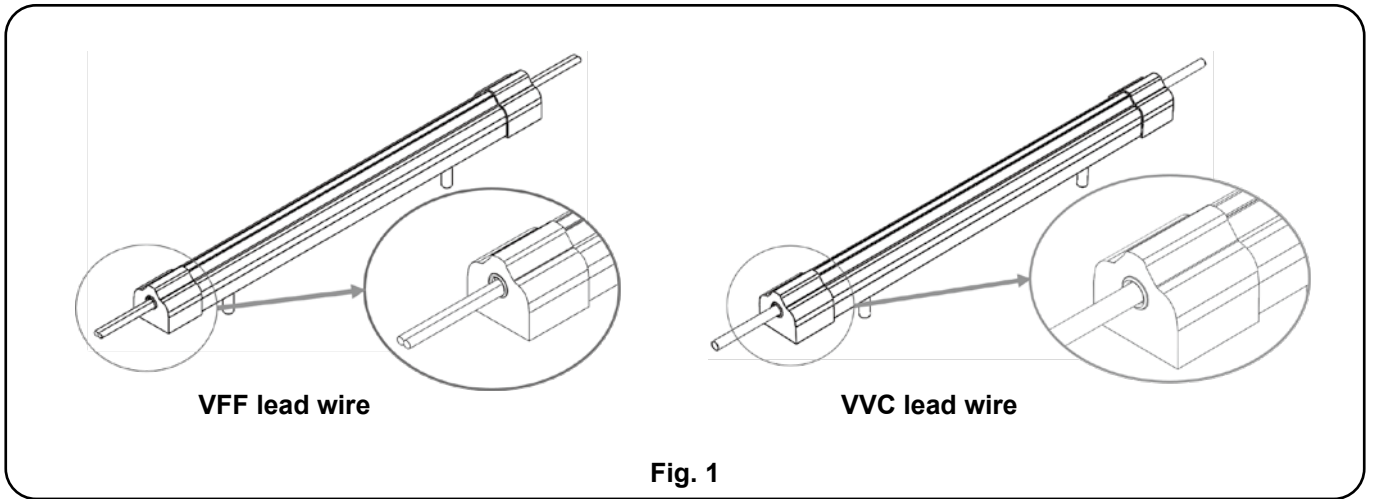
(1) Series (2) SW Length (3) Profile (4) Cable (5) Wire Length  
 E30BK1 1,000mm L: Low Profile C: VCC 5: 500mm  
 (6) Wire Length (7) Wiretype  
 5: 500mm 4



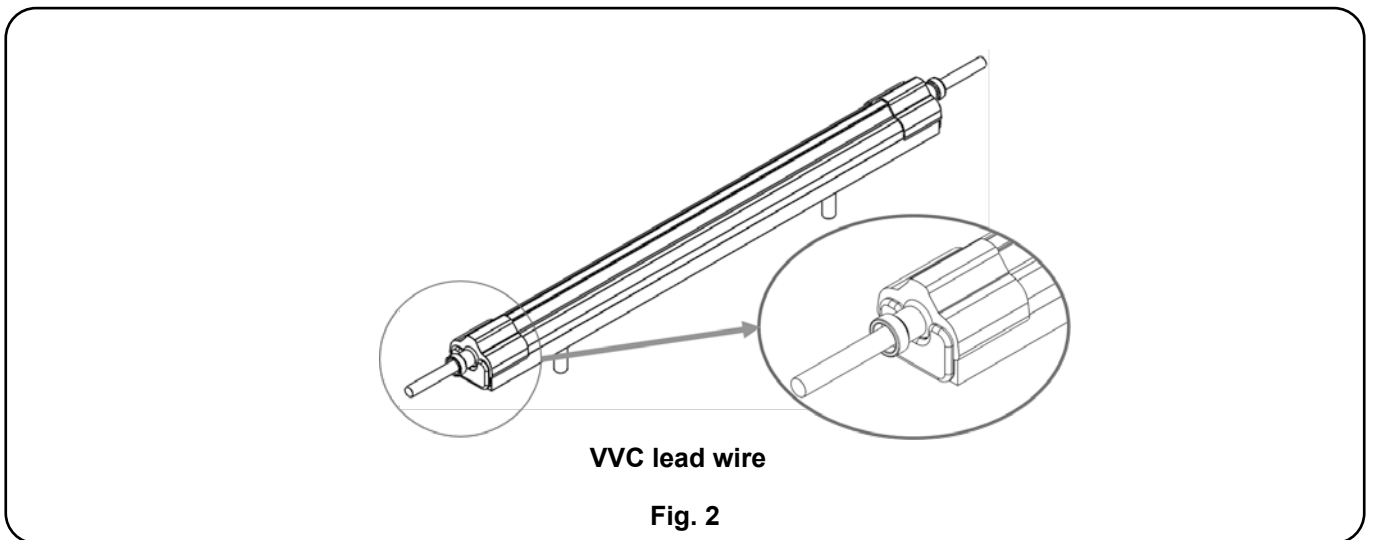
## 5.2 Nut fix configuration

This product has following configurations and layouts.

### 5.2.1 HK2H Series (E30BK1 High profile caps type)

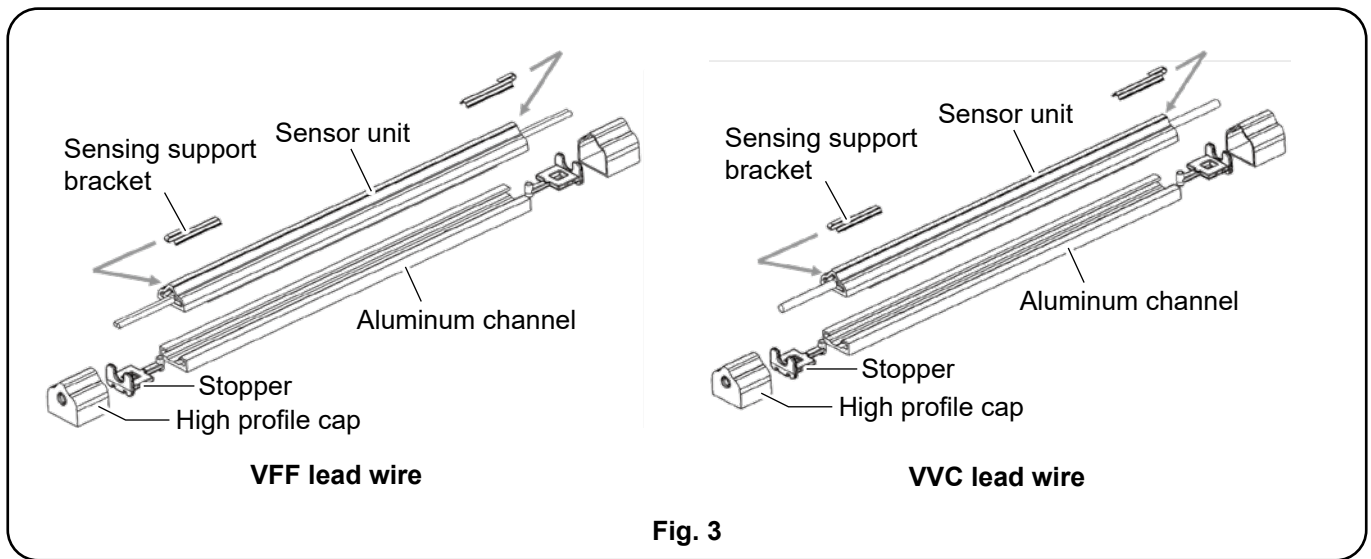


### 5.2.2 HK2L Series (E30BK1 Low profile caps type)



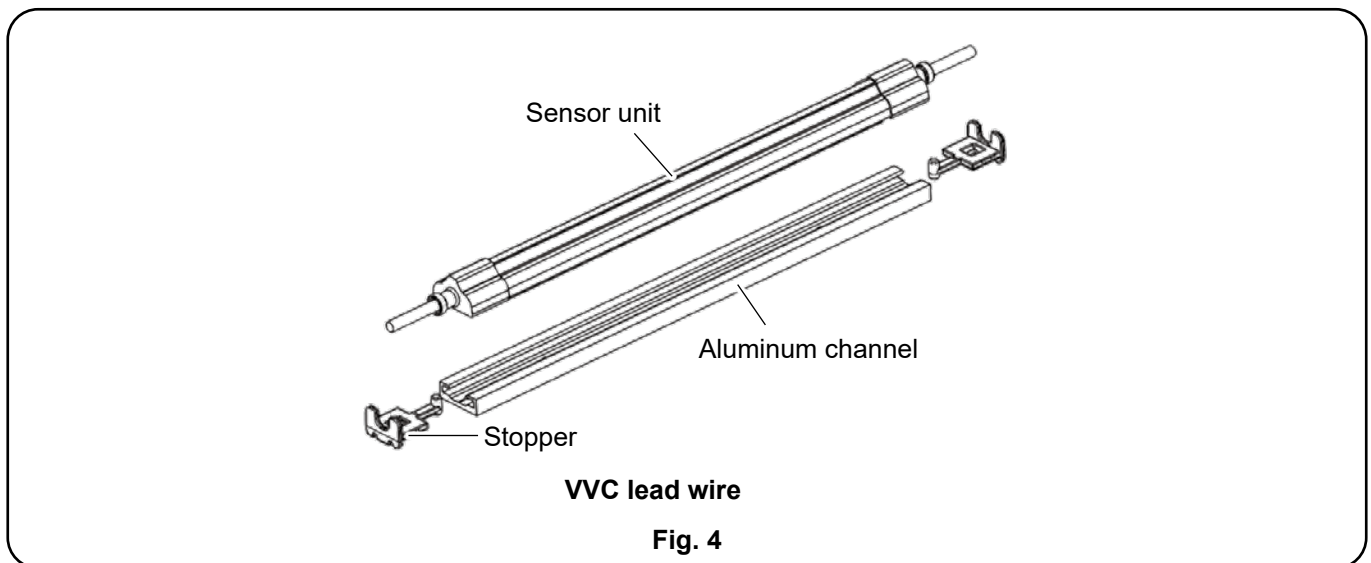
### 5.3 Screw fix configuration

#### 5.3.1 HK2H Series (E30BK1 High profile caps type)



\* Sensing support brackets are put inside of outer jacket

#### 5.3.2 HK2L Series (E30BK1 Low profile caps type)



## 5.4 Product specifications

Model number	HK2H Series/HK2L Series (E30BK1 Series)	
Height x width	Approx. 20mm×22mm (Aluminum channel width: 22mm)	
Weight	Approx. 0.6kg/m (Sensor unit with aluminum channel)	
Material of jacket & color	NBR, Black Hardness: 70°(Shore durometer Type A)	
Material of end caps & color	NBR, Black	
Material of aluminum channel	Aluminum	
Length	300 to 2,400mm	
Sensor combination	Serial Connection max. 24 edges (Total lead wire length max. 48,000mm)	
Lead wire	VFF lead wire	Wire: VFF 0.5mm <sup>2</sup> Cable jack material: PVC (soft)
	VVC lead wire	Wire: Two core AWG24×2, Cable diameter: approx. 1.2mm Cable jacket material: PVC
		Outer jacket diameter: approx. Ø4.3 mm Outer jacket material: PVC

Table. 1

## 5.5 Technical data

Rated voltage	5 to 24 V ± 10% AC/DC	
Rated current	0.01 to 0.3 A ± 10% (Resistive load)	
Insulating resistance between electrodes	100MΩ or more (250V DC) (At shipping from a factory)	
Withstand voltage between electrodes	250V DC, 1 minute	
Operating temperature range	0 to 50°C (Do not freeze.)	
Storage temperature	0 to 60°C (With no dew condensation)	
Humidity range	90%RH or less	
Protection class	IP67 (IEC60529) *1	
Actuating force	150N or less (Measured by Ø80 test piece) *2	
Pretravel	4mm or less (Measured by Ø80 test piece) *2	
Overtravel	B1: 0.5mm min. @250 N B2: 1.0mm min. @400N Refer to Reference Data.	
Withstand load	600N by Ø80 test piece	
Mechanical endurance	10,000 or more times by Ø80/Ø20 test piece	
Operating angle	±20° (by Fig.5)	
Dead surface	30mm	
Maximum operating speed	10mm/sec	0 to 50°C
Mounting orientations	A B C D (by Fig.6)	

Table. 2

\*1 The built-in tape switch is IP67-rated, but the housing is IP46 equivalent (high profile cap type) and IP66 equivalent (low profile cap type) .

Take the operating environment into consideration, as prolonged exposure to water or foreign objects penetrating the housing may result in malfunctions.

\*2 Before using this product, the system risk assessment understanding is required, then make system design appropriately on the condition of operating speed and weight of the sensing object.

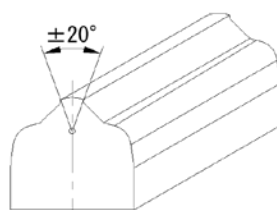


Fig.5

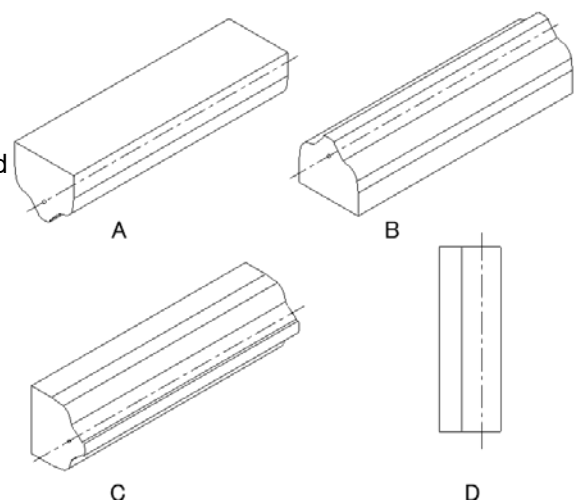


Fig. 6

## 5.6 Force-travel relationship

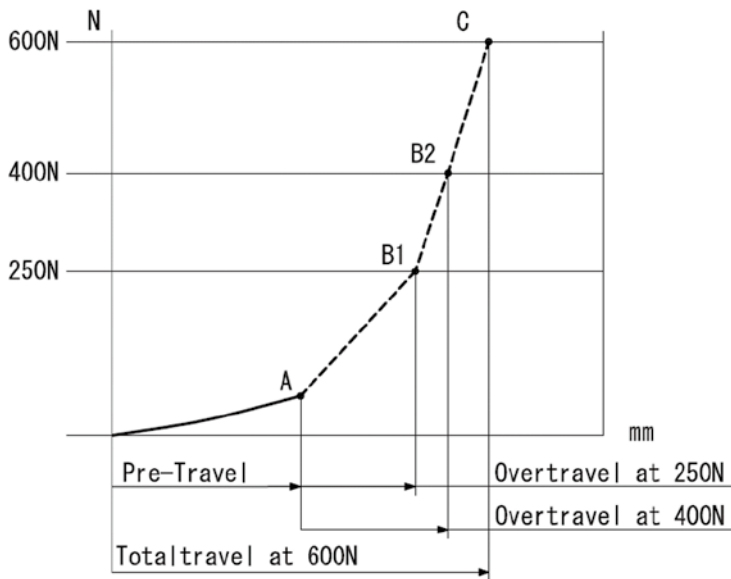


Fig. 7

A	Actuating Force	60N
	Pre - Travel	2.3mm
B1	Overtravel at 250N	1.4mm
B2	Overtravel at 400N	1.8mm
C	Total travel at 600N	4.6mm

Table. 3

- The value of characteristics are real measured data. Please recognize it as representative value.
- The measurement regulation is based on ISO13856-2. The measurement conditions are as below.  
Test peace: Ø80, Test location: c3, Operating speed: 10mm/sec., Environment temperature: 20°C

## 5.7 Chemical and oil resistant

Alcohol	1	Vegetable Oils	1
Strong alkaline	1	Organic Solvents	3
Ammonium hydroxide	1	Ester Solvents	3
Gasoline	1	Ketone Solvents (Containing Oxygen)	3
ASTM oil #1	1	Organic acid	3
ASTM oil #3	2	Ozone	3

Table. 4

- 1: No Effects  
 2: Noticeable Effects, Reduced Contact  
 3: Extreme Effects, Avoid Contact

- \* The above influence level is not adapted to lead wire.
- \* The influence level must be confirmed by customer's environments before real usage.

## 5.8 The noise emission declaration

This product has no noise emission source.

## 6 Connection Wiring Diagram

- Before beginning to connect the product to the safety relay module, read and fully understand the instruction manual of the safety relay module.
- Before hooking up some edge switches, make sure total resistance does not exceed the controller maximum input resistance.

Total resistance = Edge switch resistance + Lead wire resistance + Connector resistance.

Edge switch resistance (20 degree Celsius): 0.6Ω/m

Lead wire resistance (20 degree Celsius): VFF: 0.05Ω/m, VVC: 0.15Ω/m

### 6.1 In combination with HR6S-AK safety relay module

#### Simple diagram

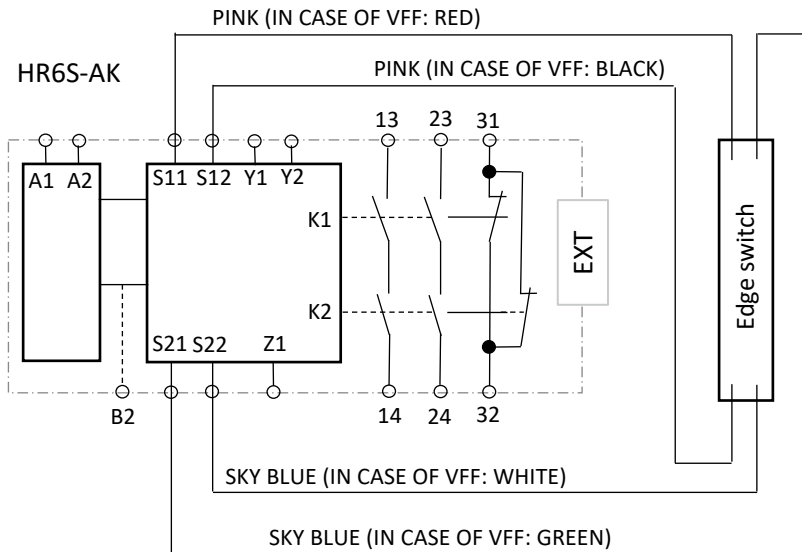


Fig. 8

#### Serial Connection max. 24 edges

#### Connection diagram

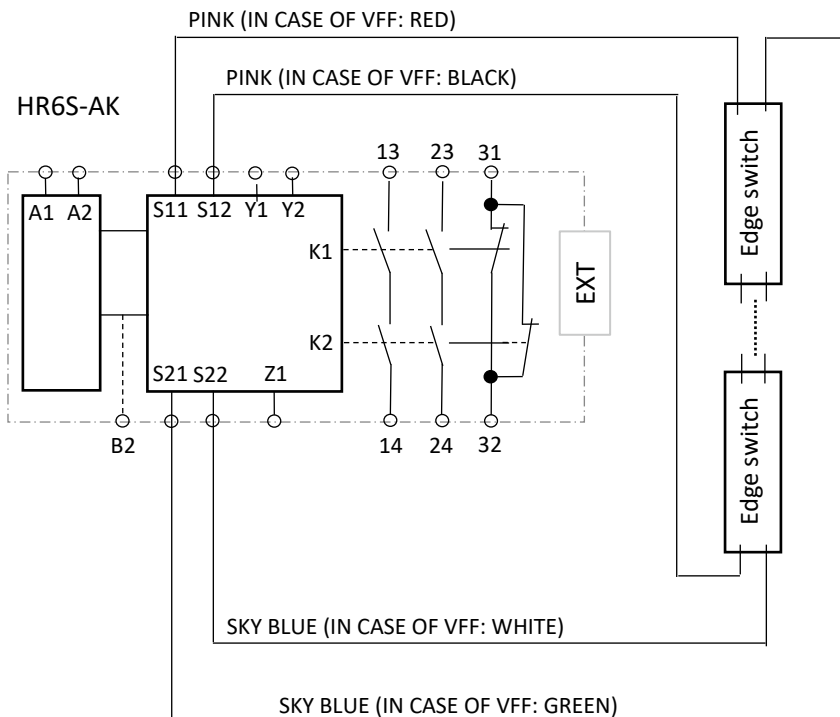


Fig. 9

## 6.2 In combination with HR6S-AK safety relay module + HR6S-EP extension module

### Simple diagram

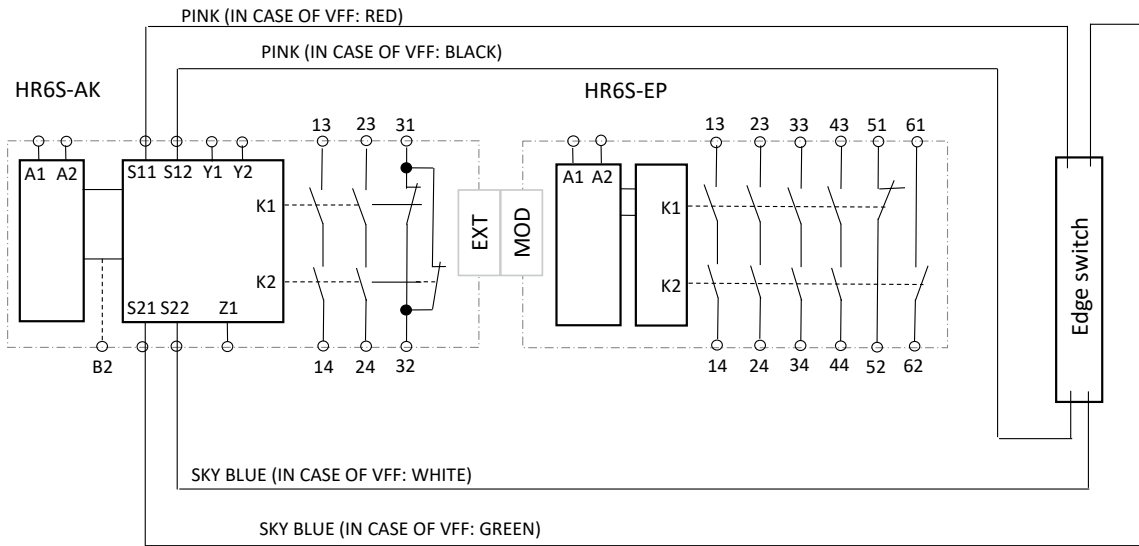


Fig. 10

### Serial Connection max. 24 edges Connection diagram

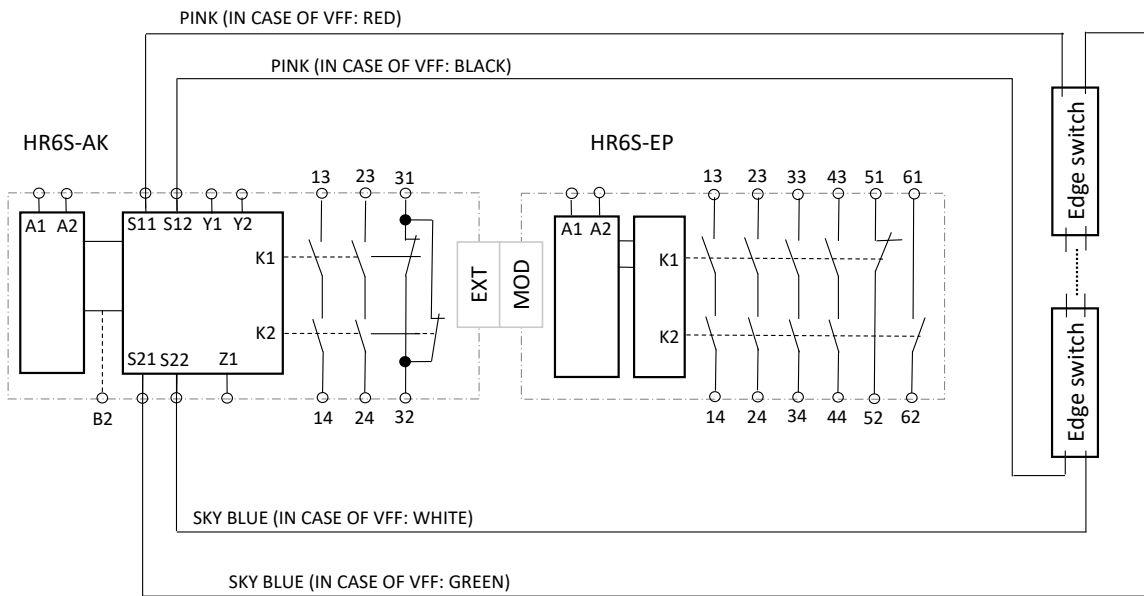


Fig. 11



The persons who execute installation and wiring to the safety relay module must have expert knowledge. And carefully read and fully understand the manuals of the safety relay module. The installation and wiring must be implemented with deep consideration on safety.

# 7 Installation

Installation procedure is different depending on the configuration. There are nut fix configuration and screw fix configuration. Please confirm your product configuration and read corresponding instructions. After the installation is completed, please implement Stand-alone operation test described in Section 8.

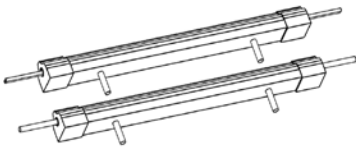
**!** Installation work should be carried out by suitably trained and qualified personnel.

## 7.1 Nut fix configuration

### 7.1.1 Confirming bundled items

Nut fix configuration is assembled when shipped from factory. The recommended number of bolts is different by the length of product as shown by the following table. The effective length of bolts is selectable from the size of 13, 18, 23 or 28mm at the ordering.

HK2H Series  
(E30BK1 High profile caps type)



HK2L Series  
(E30BK1 Low profile caps type)



Fig. 12

The recommended number of bolts per the product length

Length (mm)	Number of bolts
300 < 400	2
401 < 800	3
801 < 1200	4
1201 < 1600	5
1601 < 2000	6
2001 < 2400	7

Table. 5

M5 bolts, Effective length = 13, 18, 23 or 28mm  
Recommended tightening torque: 3.0N·m

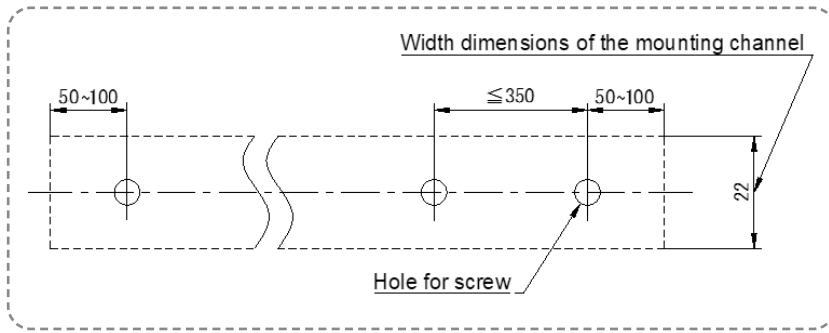
### 7.1.2 Setup and installation

#### 7.1.2.1 Making holes

Before fixing the product, drill holes for mounting product as shown by Fig.13.

Making holes for mounting:

- \* Fixing bolts are M5. When making holes for bolts, choose applicable drill size.
- \* Recommended distance between holes is less than 350mm.
- \* Recommended distance of each hole from the end is less than 100mm, must be more than 50mm.



**Fig. 13**



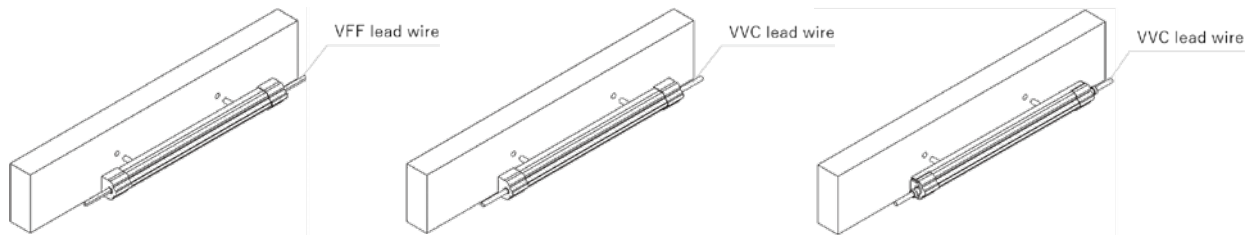
Please install this product on flat surface. The installation on uneven surface may spoil stated performance.



Remove burr and sharp corner around the hole, otherwise they also cause an injury.

### 7.1.2.2 Putting in product to mounting surface

Put lead wires and bolts through the respective holes on the mounting surface.



**Fig. 14**

### 7.1.2.3 Fixing product

Fix the product on mounting surface by using appurtenant plain washers, spring washers and nuts (not included). Recommended tightening torque is 3.0N·m.



## 7.2 Screw fix configuration

### 7.2.1 HK2H Series (E30BK1 High profile caps type)

#### 7.2.1.1 Confirming bundled items

Confirm the following items are included in the package of this product.

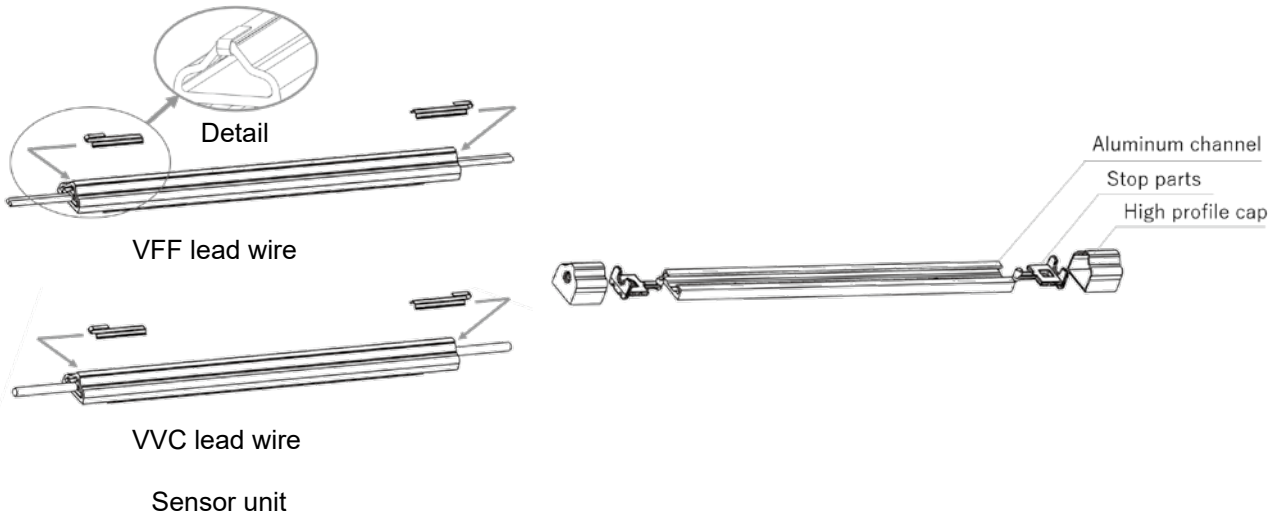


Fig. 15

#### 7.2.1.2 Setup and installation

##### 7.2.1.2.1 Making holes and fixing aluminum channel

Making holes as shown by Fig. 16.

- \* Recommended fixing screw: Low-head M5 screw, Recommended tightening torque: 3.0N·m
- \* Recommended distance between holes is less than 350mm
- \* Recommended distance of each hole from the end is less than 100mm, must be more than 50mm.

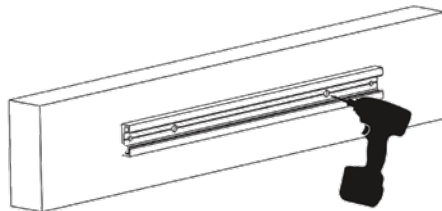


Fig. 16

Putting the stopper to the aluminum channel both ends as shown by Fig.17.

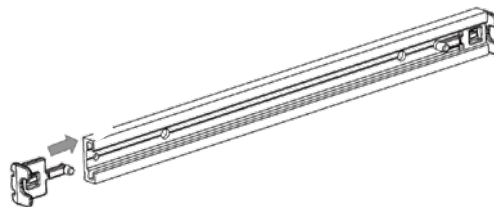


Fig. 17

Putting the high profile cap both ends of the aluminum channel as shown by Fig.18.

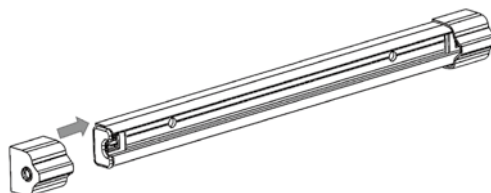
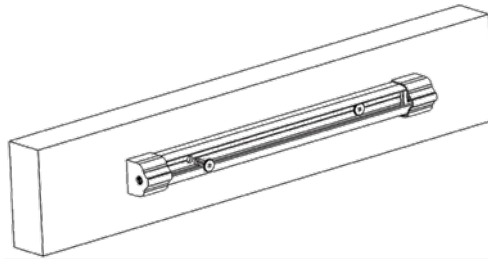


Fig. 18

Fixing the aluminum channel by fixing screws as shown by Fig.19.

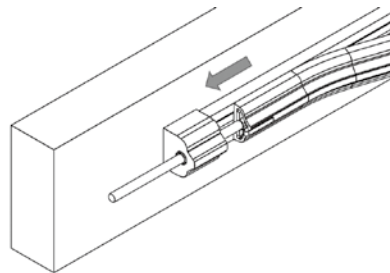


**Fig. 19**

#### 7.2.1.2.2 Fitting the sensor unit in the aluminum channel

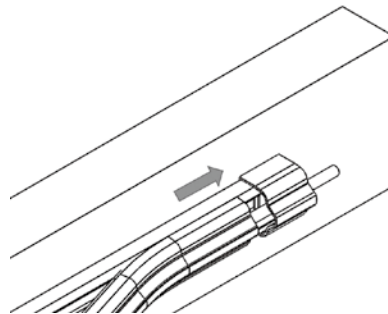
Put the one end of the lead wire through the hole of the cap.

Put the sensor unit in the aluminum channel close to the cap then slide laterally toward to the end of stopper.



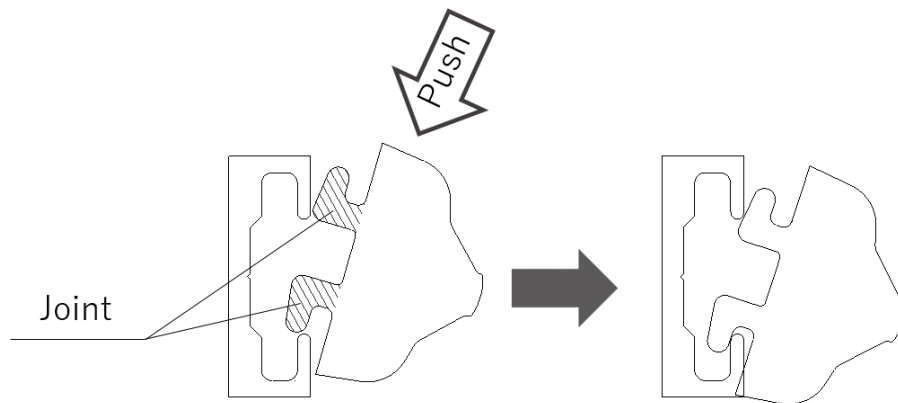
**Fig. 20**

Put the other end of the sensor unit in the aluminum channel then slide laterally toward to the end of stopper.



**Fig. 21**

Put the joint of the sensor unit to the aluminum channel groove, then push the top side surface of sensor unit. The entire bottom part of joint must be inserted into the channel groove.



**Fig. 22**

Push the part pointed by arrow and top side of joint is slide down into the channel.

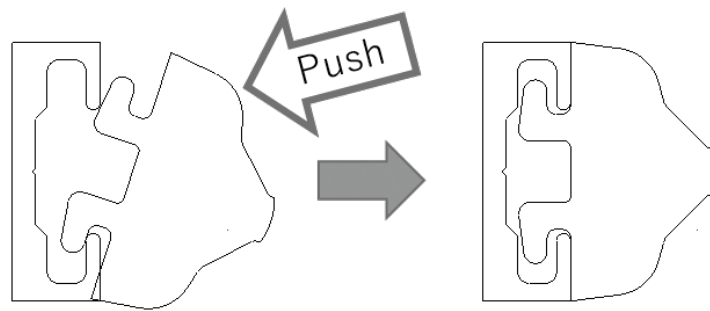


Fig. 23



If the screw head interferes with back side of sensor unit, it complicates assembly of this product, and may spoil stated performance.

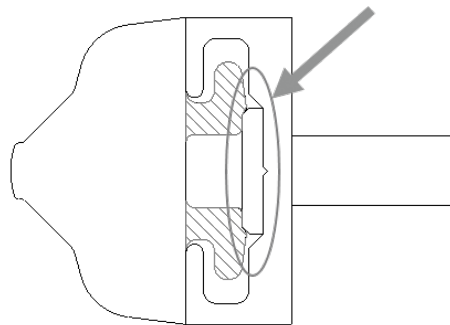


Fig. 24

## 7.2.2 HK2L Series (E30BK1 Low profile caps type)

### 7.2.2.1 Confirming bundled items

Confirm the following items are included in the package of this product.

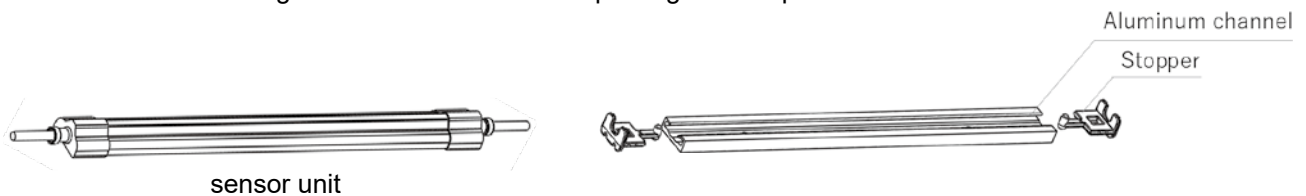


Fig. 25

### 7.2.2.2 Setup and installation

#### 7.2.2.2.1 Making holes and fixing aluminum channel

Making holes as shown by Fig.26.

Fixing the aluminum channel by fixing screws as shown by Fig.27.

- \* Recommended fixing screw: Low-head M5 screw, Recommended tightening torque: 3.0N·m.
- \* Recommended distance between holes is less than 350mm.
- \* Recommended distance of each hole from the end is less than 150mm, must be more than 50mm.

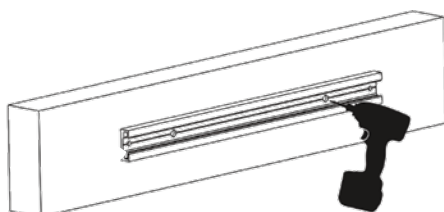


Fig. 26

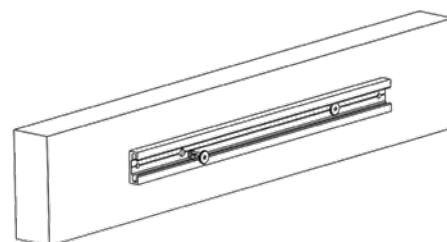
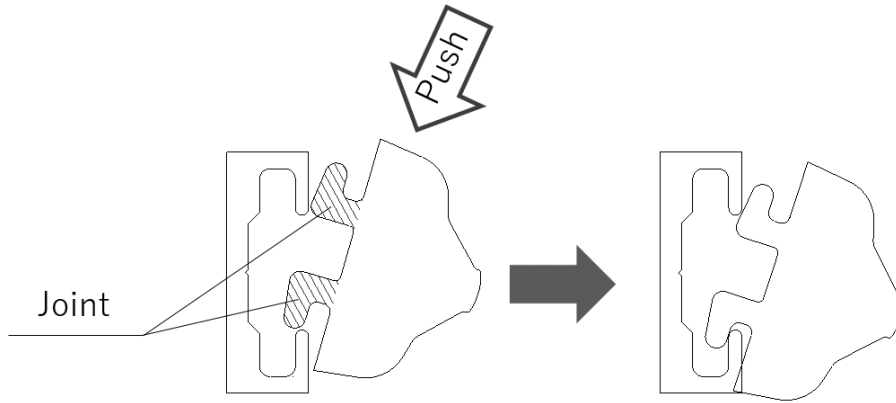


Fig. 27

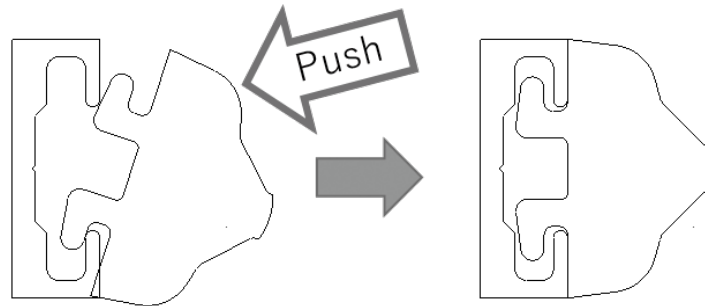
Put the joint of the sensor unit to the aluminum channel groove, then push the top side surface of the sensor unit.

The entire bottom part of joint must be inserted into the channel groove.



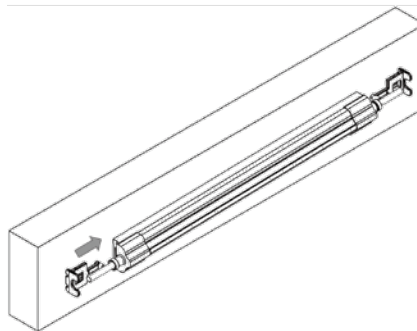
**Fig. 28**

Push the part pointed by arrow and top side of joint is slide down into the channel.



**Fig. 29**

#### 7.2.2.2.2 Putting the stopper into the channel



**Fig. 30**

## 8 Inspection

Test this product regularly according to usage conditions.

If you feel there are any abnormalities in use, stop using it immediately and disconnect the edge switch.



Test work should be carried out by suitably trained and qualified personnel.

- \* Check whether there is bolt looseness, loss of end cap or deep blemish or deformation on the product and lead wire.
- \* As a basic function test, practice operation check by pushing sensing part of the product. If the switch does not operate correctly, practice the following stand-alone operation test.

### How to practice Stand-alone operation test

Necessary tool: Continuity tester (If it cannot be prepared, circuit tester or multi-meter can be substituting tool.)

If lead wires of the product are connected with a machine, detach all lead wires from the machine. Then execute the following three tests.

Step 1: Confirming whether all lead wires keep electric conduction normally.

- \* Connect a tester between the pink lead wires (in case of VFF: red and black lead wires), and confirm that there is no wire breaking.
- \* Same as described the above, confirm that there is no wire breaking between sky blue lead wires (in case of VFF: green and white lead wires).

*If there was no problem in execution of Step 1, proceed to Step 2.*

Step 2: Confirming that there is no short circuit.

- \* Connect a tester between pink and sky blue lead wires (in case of VFF: red and green lead wires or black and white lead wires), and confirm that there is no short circuit.

*If there was no problem in execution of Step 2, proceed to Step 3.*

Step 3: Confirming whether switch function performs correctly.

- \* Stay connection lead wires from Step 2, confirm switch function by pushing sensing part of the product.
- \* The correct status before pushing is open. Becoming conduction by pushing is correct behavior.

*If any problem was found in Step 1 to Step 3, stop usage of the product immediately.*

## 9 Information about residual risks

### 9.1 Installation

If it's difficult to put the sensor unit in the aluminum channel, apply liquid soap.

### 9.2 Operation

Operating temperature range is 0 to 50°C.

Do not use this product out of range.

### 9.3 Dismantling

Adequate ventilation of combustion gas is required.

## 10 Disposal

When discarding the product, handle it as industrial waste by obeying the law and the regulation of local government.

And, when entrusting disposal to an industrial waste disposal contractor, offer the following product information to the contractor.

The products included in the scope of supply contain the following materials:

* Plastics	(Internal switch, lead wires, packing materials, stopper)
* Rubber	(Outer jacket)
* Copper, Phosphor bronze	(Internal switch, lead wires)
* Aluminum	(Aluminum channel)
* Stainless steel	(Sensing support bracket)
* Cardboard	(Packing materials)

\* Sensing support bracket

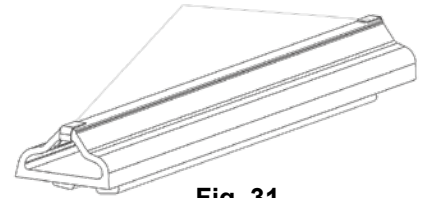


Fig. 31

## 11 EU Declaration of conformity

Identification of the Product: Safety Edge Switch

Name and address of Manufacturer: IDEC CORPORATION

2-6-64 Nishimiyahara, Yodogawa-Ku, Osaka 532-0004 Japan

Name and address of the authorized representative: APEM SAS

55, Avenue Edouard Herriot BP1, 82303 Caussade Cedex, France

This declaration of conformity is issued under the sole responsibility of the manufacturer

Object of the declaration: Series Name - HK2H Series/HK2L Series (previous model E30BK1 Series)

The object of the declaration described above is in conformity with the relevant EU

harmonization legislation: 2006/42/EC Machinery Directive

2011/65/EU and (EU)2015/863 RoHS Directive

Applied Union harmonized legislation and references to the relevant harmonization standards used or references the other technical specifications in relation to which conformity is declared.

ISO 13856-2: 2013 ISO 13849-1: 2015

EN IEC 63000: 2018

Where applicable, the notified body: TÜV NORD CERT GmbH (NB No.0044)

Am TÜV1 45307 Essen Germany

Additional Information: TÜV NORD Certificate No.44 205 21 0073 04 (HK2H Series / HK2L Series)

No.44 205 21 0073 01 (E30BK1 Series)

This product complies with ISO 13856-2 listed with "HR6A-AK safety relay module" or "HR6S-AK safety relay module + HR6S-EP extension module".

Note

Aluminum channel radii area is not covered by EC-certification of design.

# IDEC CORPORATION

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**USA** IDEC Corporation  
**EMEA** APEM SAS

**Singapore** IDEC Izumi Asia Pte. Ltd.  
**Thailand** IDEC Asia (Thailand) Co., Ltd.  
**India** IDEC Controls India Private Ltd.

**China** IDEC (Shanghai) Corporation  
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