OMRON

Model FLV-TCC□

Camera-mount Lighting Controller

INSTRUCTION SHEET

Thank you for selecting OMRON product. This sheet primarily describes precautions required in installing and operating the product.
Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience, keep the sheet at your disposal.

TRACEABILITY INFORMATION:
Importer in EU:
Omron Europe B.V.
Wegalaan 67-69
2132 JD Hoofddorp,
The Netherlands

Manufacturer:
Omron Corporation,
Shiokoji Horikawa, Shimogyo-ku,
Kyoto 600-8530 JAPAN

The following notice applies only to products that carry the CE mark:
Notice:
This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.

CE

2279800-0C

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PRECAUTIONS ON SAFETY

● Meanings of Signal Words

⚠WARNING	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally, there may be significant property damage.
⚠CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.

● Alert Statements in This Sheet

⚠ WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly. Do not use it for such purposes.

Do not disassemble the product. Doing so may cause electric shock due to the high voltage portion. Burn also may result due to high temperature. Do not attempt to disassemble, deform by pressure, incinerate, repair, or modify this product.

Looking into the LED light continuously may occasionally cause visual impairment. Do not look directly into the LED light.

⚠ CAUTION

Do not use it exceeding the rated voltage.
There is a possibility of failure and fire.

Do not connect amplifier units to AC power supply.
Risk of explosion.

Minor burns may occasionally occur.
Do not touch the case as it is very hot while the unit is operating or immediately after turning OFF the power supply.

PRECAUTIONS FOR SAFE USE

Please observe the following precautions for safe use of the products.
1.Installation Environment
- Do not use the product in environments where it can be exposed to inflammable/explosive gas.
- To secure the safety of operation and maintenance, do not install the product close to high-voltage devices and power devices.
- When mounting this product in the camera and using, do not touch the main unit with the conductive parts (metal parts) of peripheral devices. When touching conductive parts of peripheral devices, it's connected with 0V of this product and a circuit inside the camera, and a breakdown and a malfunction are caused. To use the main unit, keep it well away from those devices.

2.Power Supply and Wiring
- Be careful when using a power supply with the overcurrent detection function. This sensor uses a DC-DC converter for the power supply circuit. The protection circuit may be activated due to surge current when using a power supply with the overcurrent detection function.
  Recommended power supply: S8VS-06024 (OMRON: 24 VDC 2.5 A 60 W)
- Do not apply voltages or AC power supplies that exceed the rated voltage (24 VDC±10%).
- Do not reverse the polarity of the power connection.
- Use a load that is equal to or less than the rating.
- Do not share the power supply line with other devices but Image Sensor Controller (FH or FZ5).
- High-Voltage lines and power lines must be wired separately from this product. Wiring them together or placing them in the same duct may cause induction, resulting in malfunction or damage.
- Take sufficient safety measures such as fail-safe circuit to use the product.
- To wire the terminal block, connect a applicable cord (AWG12-26 with a 10 mm margin for work). Do not connect an inapplicable cable with the terminal block for 24V external power input.
- Supply power from a DC power supply for which measures have been applied to prevent high voltages (e.g., a safety extra low voltage circuit).
- The length of the power supply cable should be as short as possible.
- Tighten the mounting screw to the torque specified in this instruction sheet.
- Always turn off the power of the main unit before taking the following actions. Not doing so may result in malfunction.
  - Connecting/disconnecting the lighting connecting connector
  - Connecting/disconnecting the 24 V external power supply input terminal block
  - Connecting/disconnecting the camera connecting cable
- Be sure to remove the terminal block from of the main unit when wiring the product to the 24 V external input terminal block.

3.Others
- Do not use in safety circuits for atomic energy or that are critical for human life.
- Do not attempt to disassemble, deform by pressure, incinerate, repair, or modify this product.
- When disposing of the product, treat as industrial waste.
- Connect only to the applicable lighting (FLV series), camera (FH-S series, FZ-S series) and image sensor controller (FH series, FZ5 series).Use of other devices may result in fire, explosion, malfunction or failure.
- If you notice an abnormal condition such as a strange odor, extreme heating of the unit, or smoke, immediately stop using the product, turn off the power, and consult your dealer.
- Do not drop or impose excessive shock to the product. Doing so may result in damage to the product.
- This product might be heated to around 70°C in the room temperature environment. So, do not touch it directly before putting heatproof gloves.
- Ensure that all components which have locking mechanisms are locked before using the product.
- Be careful not to drop the product when opening the crate and carrying it.

4. Regulations and standards
This lighting complied with the EN standard (EN61326-1)
(Electromagnetic environment : Industrial electromagnetic environment (EN/IEC 61326-1 Table 2))
- Also, the following condition is applied to the immunity test of this product.
  There may be cases that Lighting brightness fluctuate Max 10%.

PRECAUTIONS FOR CORRECT USE

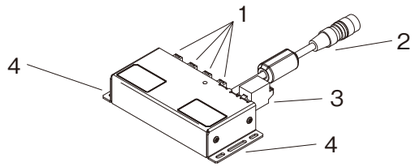
Observe the following to prevent failure, malfunctioning, and adverse effects on performance and the device.
1.Installation site
Do not install in the following locations:
- Locations where the ambient temperature exceeds the rated temperature range.
- Locations subject to sudden temperature changes (where condensation will form).
- Locations where the relative humidity is below or above 35 to 85% RH.
- Locations where there are corrosive or flammable gases.
- Locations where there is dust, salt, or iron powder.
- Locations where the device will be subject to direct vibration or shock.
- Locations where there is strong scattered light (laser light, arc welding light, ultraviolet light, etc.)
- Locations exposed to direct sunlight or next to a heater.
- Locations where there is splashing or spraying of water, oil, or chemicals.
- Locations where there is a strong electrical or magnetic field.

2.Maintenance
- Do not install the product close to high-voltage devices and/or power devices in order to secure the safety of operations and maintenance.
- When this product and a cable are attached or removed, be sure to turn OFF the power of the Controller first before operation.
- Never use paint thinner, benzen, acetone, or kerosene to clean the product.Wipe the contamination with a soft cloth included a small amount of alcohol.

3.Power and cable connections
- Be sure to connect the dedicated lighting (FLV series). We can offer no warranty in the event you connect the lighting other than the dedicated one.
- When using a commercially available switching regulator, make sure that the Frame ground terminal is grounded.
- If there are surges on your power line, connect a surge absorber as appropriate for your conditions of use.
- Before turning on the power after the wiring is completed, verify that the power is correct, that there are no incorrect connections such as a shorted load circuit, and that the load current is suitable. Incorrect wiring may cause damage and failures.
- Use the product with the specified voltage. Applying a voltage or AC voltage that exceed the rating may result in burning or explosion of circuit components.
- Use the dedicated camera and cable.
- For cable extension between the lighting and lighting controller, use an optional extension cable or branching cable. An extension cable, for standard lighting (FLV-XC□/-XC□R) and for spot lighting (FLV-XC□EP/-XC□EPR) and a branch cable, for standard lighting (FLV-XC□S2) is prepared. Only one extension cable and branch cable can be used.
- When using the 24V external power supply, turn ON the power of this product and Image Sensor Controller at the same time or this product first.
- The bending radius for the wiring of the camera or lighting cable must be at least 20 mm.
- Do not look directly into the lighting as it momentarily emits light with the maximum brightness.
- When noise gets on the power supply supplied to this product from outside (DC24V), when changing the lighting condition by this product, there is a possibility that the set value isn't renewed, so do the following action.
  - It's connected by the most short distance as much as possible by a code thicker than AWG22 between the 0V of power supply to this product and a image sensor controller (FH or FZ5).
  - The power supply to this product and a image sensor controller (FH or FZ5) is made something identical.

4.Warming Up
After turning on the power supply, allow the Controller to stand for at least 30 minutes before use. As the circuit is unstable immediately after the power ON, brightness may gradually change.
5.Light Intensity Adjustment
- This product provides two light control methods: duty light control and voltage light control/current light control. Duty light control is recommended by usual use, but as duty light control operates with the frequency of 100 kHz, use of voltage light control/current light control is recommended when the shutter speed is set as high speed.
- Some lightings may not emit light with the gradation of 100 or less when using voltage light control.

■Parts Names and Functions



No.	Name	Description
1	Lighting connecting connector	Connects the LED lighting.
2	Camera connecting cable	Connects to the extension connector of the camera.
3	24 V external power supply input terminal block	Connects the 24 VDC power supply. (FLV-TCC1EP is excluded.)
4	Mounting hole for fixing screw	Holes to mount screws to secure the Lighting Controller to a mounting plate or device.

■Specifications

item / Model				FLV-TCC4	FLV-TCC1	FLV-TCC3HB	FLV-TCC1EP
Number of connectable lightings				4 of standard lighting	1 of standard lighting	1 of spot lighting, 2 of standard lighting	1 of spot lighting
Applicable Lighting *1				FLV series (However, FLV-EP series and FLV-LN series are excluded.)		FLV series (However, FLV-LN series are excluded.)	FLV-EP series
Applicable Cameras *2				FH-S series, FZ-S series			
Applicable Image Sensor Controller				FH series, FZ5 series			
Input Voltage				Supplied from applicable camera (12 V) or external power supply (24 V) *3			Supplied from applicable camera (12 V)
External power supply voltage				24 VDC±10% (including ripple)			
Current consumption				1.5A max.			1.0A max.
	Recommended power supply			Model S8VS-06024 (manufactured by OMRON, 24 VDC, 2.5 A, 60 W)			
Connectable lighting	12 VDC for camera supply	Continuous lighting		4ch total 7.5 W max.	7.5 W max.	0ch connection : 1,2ch total 5.5 W max. 0ch non-connection : 1,2ch total 7.5 W max.	All FLV-EP series can be connected.
		Trigger lighting	Simultaneous lighting	4ch total 7.5 W max.	7.5 W max.	0ch connection : 1,2ch total 5.5 W max. 0ch non-connection : 1,2ch total 7.5 W max.	
			Individual lighting	7.5 W max. for 1ch		7.5 W max. for 1ch	
	24 VDC for external supply	Continuous lighting		4ch total 7.5 W max.	7.5 W max.	0ch connection : 1,2ch total 5.5 W max. 0ch non-connection : 1,2ch total 7.5 W max.	
		Trigger lighting	Simultaneous lighting	4ch total 15 W max.	15 W max.	0ch connection : 1,2ch total 14 W max. 0ch non-connection : 1,2ch total 15 W max.	
			Individual lighting	15 W max. for 1ch		15 W max. for 1ch	
Drive method				Constant voltage method		0ch:Constant current method 1ch/2ch:Constant voltage method	Constant current method
Lighting method				Trigger lighting, Continuous lighting			
Luminance Control Method				Duty light adjustment or voltage light adjustment Duty light adjustment: PWM frequency of 100 kHz, light adjustment of 255 levels Voltage light adjustment: Light adjustment of 255 levels (all are set with image sensor controller)		・0ch Duty light adjustment or current light adjustment ・1ch/2ch Duty light adjustment or voltage light adjustment Duty light adjustment: PWM frequency of 100 kHz, light adjustment of 255 levels current light adjustment/Voltage light adjustment : Light adjustment of 255 levels (all are set with image sensor controller)	Duty light adjustment or current light adjustment Duty light adjustment: PWM frequency of 100 kHz, light adjustment of 255 levels current light adjustment : Light adjustment of 255 levels (all are set with image sensor controller)
Trigger lighting				Lighting in synchronization with trigger input timing from the controller.			
Trigger lighting delay time				Ton: 30 μs max.			
Lighting duration setting				Auto setting in accordance with shutter speed.			
External Interface				Camera connection cable (directly connected with the main unit)			
Insulation Resistance				0.5 MΩ (100VDC)			
Ambient Temperature				Operating: 0 to +50℃, Storage: −15 to +60℃ (with no icing or condensation)			
Ambient Humidity				Operating and storage: 35% to 85% (with no condensation)			
Degree of Protection				IP20 (IEC60529)			
Vibration Resistance(destructive)				10 to 150 Hz, (0.7mm double amplitude) 80 min each in X, Y, and Z directions			
Shock Resistance (destructive)				150 m/s² 3 times each in 6 directions(up/down, left/right, forward/backward)			
Materials				Case,Camera mount plate : Aluminum, Cable : PVC			
Weight				Approx. 130g(including the camera mount plate)	Approx. 120g(including the camera mount plate)	Approx. 130g(including the camera mount plate)	Approx. 120g(including the camera mount plate)
Accessories				Instruction manual(this manual), Lighting connection table, Camera Mount plate, Mounting screws (M2 set screw x 4, M2 flat head screw x 4, M4 flat head screw x 4)			

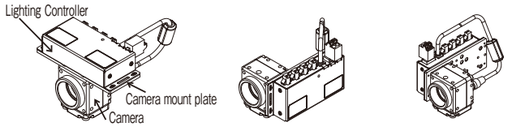
*1 : Check the lighting connection table of accessory.
*2 : When mounting on model FH-S□12, use model FH-SM12-XLC (separate sale).
*3 : When supplying the power to this product from an external input power supply (24V), make sure to turn ON the power to this product first or at the same time with the image sensor controller. If you reverse this order, this product will not recognize the 24V external input, so lighting greater than 7.5W will not be possible.

■Mounting the Controller to the Camera

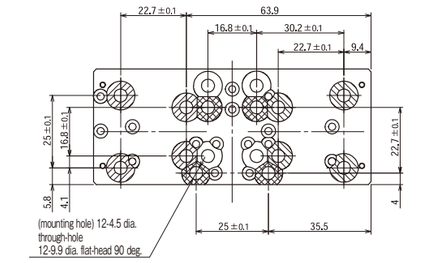
<Step 1: Mount the camera and camera mount plate.>

The Lighting Controller can be mounted to the Camera using the provided Camera Mount plate. Mounting directions are: (1) Top/Bottom mount, (2) Right side mount, (3) Left side mount. As locations for screw holes of the mounting plate differ depending on the camera on which it is mounted, see the figures below.
Recommended torque is 1.2N･m for M4 screws and 0.15N･m for M2 screws.

(1) Top/Bottom mount (2) Right side mount (3)Left side mount

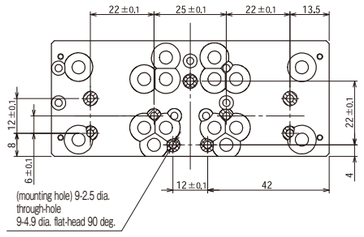


• Mounting to FH-SM/SC/SM02/SC02/SM04/SC04, or FZ-S5M2/SC5M2



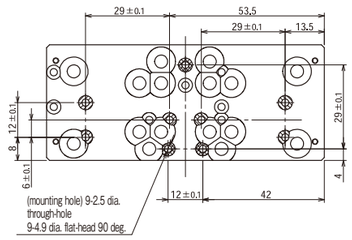
Use four M4 flat-head screws.
▨: Use for top/bottom mount. ▨: Use for right side mount. ▨: Use for left side mount.

• Mounting to FZ-S／SC



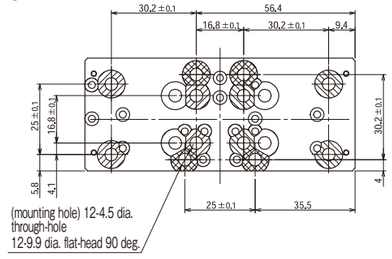
Use three M2 flat-head screws.
▨: Use for top/bottom mount. ▨: Use for right side mount. ▨: Use for left side mount.

• Mounting to FZ-S2M／SC2M



Use three M2 flat-head screws.
▨: Use for top/bottom mount. ▨: Use for right side mount. ▨: Use for left side mount.

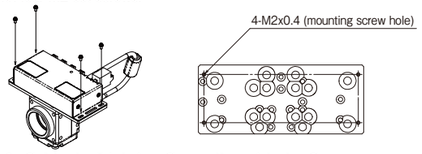
• Mounting to FZ-SH／SHC



Use M4 flat-head screw x 4.
▨ Use for top/bottom mounting. ▨ Use for right side mounting. ▨ Use for left side mounting.

<Step 2: Mount the Lighting Controller and Camera mount plate.>

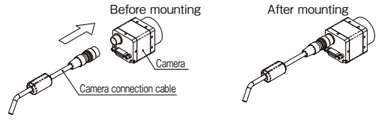
Fix with four M2 set screws.



<Step 3: Cable the Lighting Controller with the Camera.>

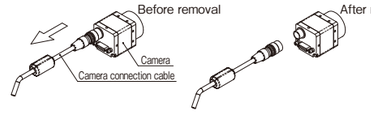
■Mounting

Align the inner grooves of the connectors on the camera connection cable side and camera side with each other, and insert the cable until it clicks to lock it.



■Removal

Hold the connector on the camera connection cable side in the arrowed direction, and pull it out straight.

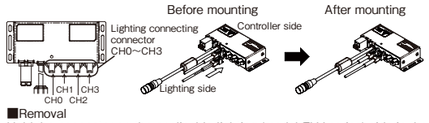


【Note】
Do not grab the cable and pull it out with a unreasonable force to remove it. Doing so might cause breakage.
【Important】
･Do not touch the internal terminals of the connector. Doing so might cause a failure.
･Avoid the cable and connector from being vibrated or shocked.
･Do not install the devices loading the connector constantly, for example, the cable is being tensed.

<Step 4: Connect the lighting controller with the lighting.>

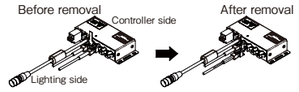
■Mounting

Insert the connector on the applicable lighting (model FLV series) side into the lighting connector until they click.



■Removal

Hold the connector on the applicable lighting (model FLV series) side in the arrowed direction, and pull it out straight.

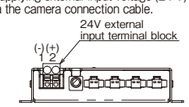


■Cable extension

To extend the distance of the Lighting and the Lighting Controller, be sure to use the separately sold extension cable (FLV-XC□/-XC□R/-XC□EP/-XC□EPR) or branch cable (FLV-XC□S2).
【Important】･Avoid the cable and connector from being vibrated or shocked.
･Do not install the devices loading the connector constantly,for example, the cable is being tensed.

■Connection with the 24V external input terminal block (FLV-TCC1EP is excluded.)

･When supplying input voltage (12 V) from the applicable camera, connecting this terminal block is not necessary.
･When not supplying external input voltage (24 V) from this terminal block, a voltage of 12 V is automatically supplied via the camera connection cable.



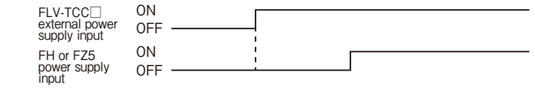
Terminal No.	Signal name	Description
1	DC24V(-)	0V input for external power supplies
2	DC24V(+)	24V input for external power supplies

【Important】Keep the power supply wire as short as possible.(Max.30m)
Wire the external power supply independently on other devices. If wiring it equally with other devices or with the same duct, this power supply is influenced by electromagnetic induction, so that the sensor might malfunction or be damaged.Avoid the cable and terminal block from being vibrated or shocked.
Do not install the devices loading the terminal block constantly, for example, the cable being tensed.

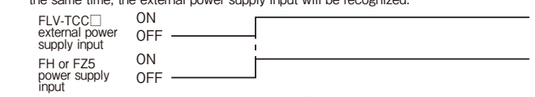
■Sequence to turn ON power when using a 24V external power supply (FLV-TCC1EP is excluded.)

When supplying the power to the lighting controller (FLV-TCC□) from an external input power supply (24V), make sure to turn ON the power supply to the product first or at the same time with the image sensor controller (FH or FZ5). If you reverse this order, the image sensor controller will supply voltage (12V) to the product via the camera to startup the product. Therefore, the product recognizes the power supply from the camera, so lighting greater than 7.5W will not be possible.

･If the external power input is provided first to the FLV-TCC□, the external power input will be recognized.

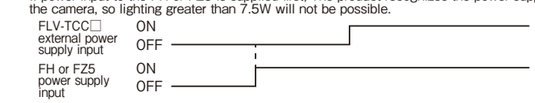


･If external power input to the FLV-TCC□ and the power input to the FH or FZ5 is provided at the same time, the external power supply input will be recognized.



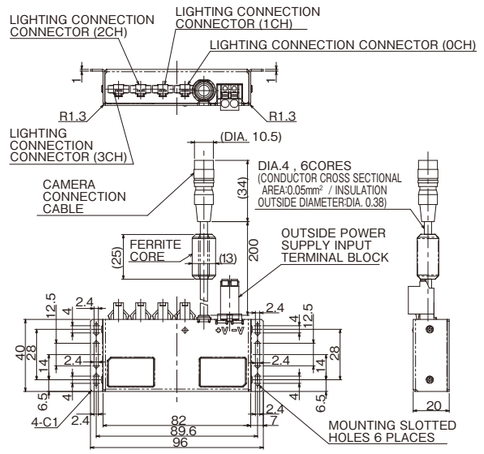
Note: The external power supply of the FLV-TCC□ is recognized when the external power supply input reaches approximately 20V. If the external power supply input starts extremely slowly and the external supply power recognition does not reach approximately 20V before switching on, it will not be possible to recognize the external power supply.

･If power input to the FH or FZ5 is supplied first, The product recognizes the power supply from the camera, so lighting greater than 7.5W will not be possible.



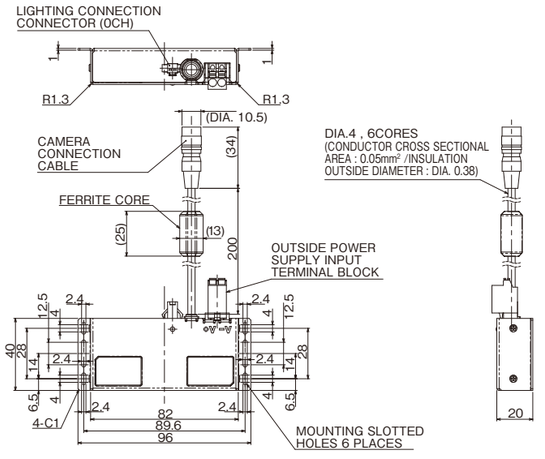
■Dimensions (Unit:mm)

●FLV-TCC4



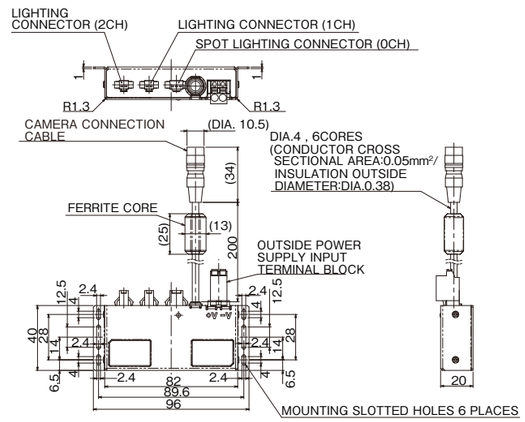
Tightening torque : M2 : 0.15N・m

●FLV-TCC1



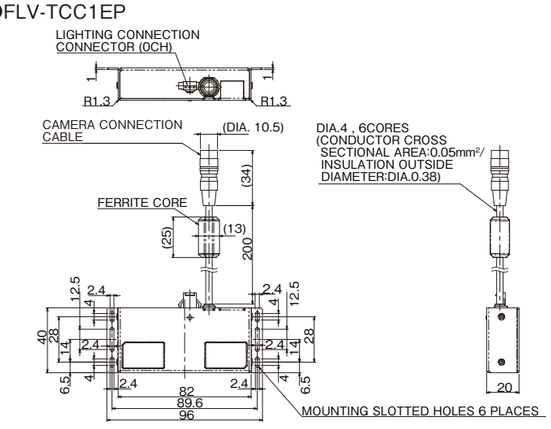
Tightening torque : M2 : 0.15N・m

●FLV-TCC3HB



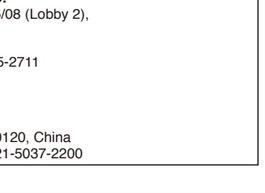
Tightening torque : M2 : 0.15N・m

●FLV-TCC1EP



Tightening torque : M2 : 0.15N・m

･Camera mount plate (provided)



Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
See also Product catalog for Warranty and Limitation of Liability.

OMRON Corporation Industrial Automation Company
Tokyo, JAPAN
Contact: www.ia.omron.com

Regional Headquarters

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