

Smart Vision Sensors

ZFV Color Series




ZFV


Ordering Information

Models

Sensor Heads


Appearance	Type	Setting distance	Sensing area	Model
	Narrow View	34 to 49 mm (variable)	5 × 4.6 mm to 9 × 8.3 mm (variable)	ZFV-SC10
	Standard View	31 to 187 mm (variable)	10 × 9.2 mm to 50 × 46 mm (variable)	ZFV-SC50
	Wide View	66 to 141 mm (variable)	50 × 46 mm to 90 × 83 mm (variable)	ZFV-SC90
	Ultra-wide View	114 to 226 mm (variable)	90 × 83 mm to 150 × 138 mm (variable)	ZFV-SC150

Amplifier Units ZFV Color Series


Appearance	Power supply	Output type	Model
	24 VDC	NPN	ZFV-CA40
		PNP	ZFV-CA45

Accessories ZFV Color Series (order separately)

Data Storage Units

Appearance	Power supply	Output type	Model
	24 VDC	NPN	ZS-DSU11
		PNP	ZS-DSU41

Controller Link Unit

Appearance	Model
	ZS-XCN

External Lighting



Type	Model
Bar Lighting	ZFV-LTL01
Bar Double Lighting	ZFV-LTL02
Bar Low-angle Lighting	ZFV-LTL04
Light Source for Through-beam Lighting	ZFV-LTF01

Sensor Head Extension Cable

Cable length	Model
3 m	ZFV-XC3B *1
8 m	ZFV-XC8B

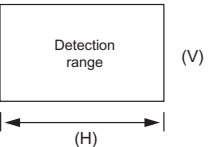
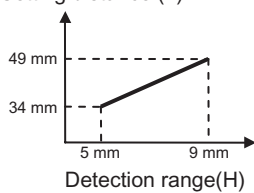
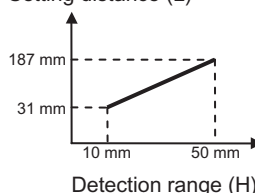
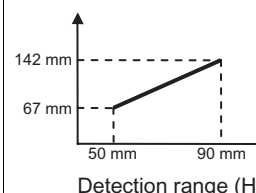
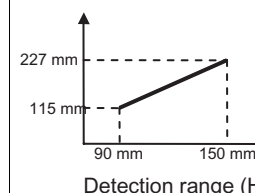
*1. ZFV-XC3BR Robot Cable is also available.

Panel-mounting Adapter

Appearance		
Model	ZS-XOM1	ZS-XPM2
	First Unit	Additional Units (for expansion)

Specifications

Sensor Heads

Item	ZFV-SC10 (Narrow View)	ZFV-SC50/SC50W (Standard View)	ZFV-SC90/SC90W (Wide View)	ZFV-SC150/SC150W (Ultra Wide View)
Setting distance (L)	34 to 49 mm (variable)	31 to 187 mm (variable)	67 to 142 mm (variable)	115 to 227 mm (variable)
Detection range (H × V) 	5 × 4.6 mm to 9 × 8.3 mm (variable)	10 × 9.2 mm to 50 × 46 mm (variable)	50 × 46 mm to 90 × 83 mm (variable)	90 × 83 mm to 150 × 138 mm (variable)
Relation between setting distance and detection range	Setting distance (L) 	Setting distance (L) 		
Built-in lens	Focus: f15.65	Focus: f13.47	Focus: f6.1	
Object lighting method	Pulse lighting			
Object light source	8 white LEDs	36 LEDs	20 white LEDs	72 white LEDs
Lightning I/F (Option)	None	Yes		None
Sensing element	1/3-inch CCD			
Shutter	Electronic shutter, shutter time: 1/500 to 1/8,000			
Power supply voltage	15 VDC (Supplied from Amplifier Unit.)	15 VDC, 48 VDC (Supplied from Amplifier Unit.)		
Current consumption	Approx. 200 mA	Approx. 350 mA [15 V: approx. 150 mA, 48 V: approx. 200 mA] (Including the current consumed when external light is connected)		
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min			
Vibration resistance (destructive)	10 to 150 Hz, 0.35 mm single amplitude, 10 times each in X, Y, and Z directions for 8 min			
Shock resistance (destructive)	150 m/s ² , three times each in six directions (up/down, left/right, forward/backward)			
Ambient temperature	Operating: 0 to +40 °C, Storage: -25 to +65 °C (with no icing or condensation)			
Ambient humidity	Operating and storage: 35% to 85% (with no condensation)			
Ambient atmosphere	Must be free of corrosive gas.			
Connection type	Prewired, Standard cable length: 2 m			
Degree of protection (IEC 60529)	IP65	ZFV-SC___: IP65 ZFV-SC___W: IP67		
Material	Case: ABS, Mounting bracket: PBT			
Weight	Approx. 200 g (including mounting bracket and cord; packaged condition: approx. 300 g)	Approx. 270 g (including mounting bracket and cord; packaged condition: approx. 350 g)	Approx. 300 g (including mounting bracket and cord; packaged condition: approx. 380 g)	Approx. 600 g (including mounting bracket and cord; packaged condition: approx. 780 g)
Accessories	Mounting bracket ZFV-XMF (1), Ferrite core (1), Instruction sheet	Mounting bracket ZFV-XMF2 (1), Ferrite core (2), Warning label (1) Instruction sheet	Mounting bracket ZFV-XMF2 (1), Ferrite core (2), Warning label (1) Instruction sheet	Ferrite core (2), Instruction sheet
LED class ^{*1}	Class 1	Class 2	Class 2	Class 1

*1. Applicable standards: IEC60825-1: 1993 +A1:1997 +A2:2001, EN60825-1:1994 +A:2002 +A:2001

Amplifier Units

Item		ZFV-CA40	ZFV-CA45
Output specifications		NPN open collector, 30 VDC 50 mA max., residual voltage 1.2 V max.	PNP open collector, 50 mA max., residual voltage 1.2 V max.
Input specifications	ON	Short-circuited with 0 V terminal or 1.5 V or less	Supply voltage short-circuited or within supply voltage -1.5 V max.
	OFF		
Serial I/O	USB2.0	1 port, full-speed (12 Mbps) MINI-B	
	RS-232C	1 port, 115,200 bps max.	
Inspection items		PATTERN, AREA, HUE (Color), WIDTH, POSITION, COUNT, BRIGHT, CHARA	
Teaching area		Rectangular, one area	
Teaching area size		<ul style="list-style-type: none"> • PATTERN, BRIGHT: Any rectangular area (256 × 256 max.) • AREA, HUE (Color), WIDTH, POSITION, COUNT, CHARA: Any rectangular area (full screen max.) 	
Sensing area		Full screen	
Resolution		468 x 432 (H x V) max.	
Bank switching		Supported for 8 banks.	
Image input interval		13 ms (Standard), 8 ms (1/2 for partial scan), 5 ms (1/4 for partial scan)	
Other functions		Control output switching: ON for OK / ON for NG, ON delay / OFF delay, One-shot output, "ECO" mode	
Output signals		(1) Control output (OUTPUT) (2) Enable output (ENABLE) (3) Error output (ERROR)	
Input signals		(1) Sync measurement input (TRIG)/Continuous measurement input (TRIG); switched by menu (2) Bank selection inputs (BANK1-3) (3) Workpiece still teaching (TEACH)/ Workpiece moving teaching (TEACH); switched by menu	
Sensor head interface		Digital interface	
Image display		1.8 inch TFT ccolor LCD (Display dots: 557 x 234 pix)	
Indicators		<ul style="list-style-type: none"> • Judgment result indicator (OUTPUT, Color: orange) • Inspection mode indicator (RUN, Color: green) • Error indicator (ERR, Color: red) • Ready status indicator (READY, Color: blue) 	
Operation interface		<ul style="list-style-type: none"> • Cursor keys (up, down, left, right) • Setting key (SET) • Escape key (ESC) • Operating mode switching (slide switch) • Menu switching (slide switch) • Teaching/Display switching key (TEACH/VIEW) • Function keys (A to D 4 input) 	
Power supply voltage		20.4 to 26.4 VDC (including ripple)	
Current consumption		800 mA max. (with Sensor Head connected)	
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min between leads and Amplifier Unit case	
Noise resistance		1 kV, Pulse rise: 5 ns, Pulse width: 50 ns, Burst duration: 15 ms, Cycle: 300 ms	
Vibration resistance (destructive)		10 to 150 Hz, 0.1 mm single amplitude, 10 times each in X, Y, and Z directions for 8 min	
Shock resistance (destructive)		150 m/s ² , three times each in six directions (up/down, left/right, forward/backward)	
Ambient temperature range		Operating: 0 to 50 °C Storage: -25 to 65 °C (with no icing or condensation)	
Ambient humidity range		Operating and storage: 35% to 85% (with no condensation)	
Ambient atmosphere		Must be free of corrosive gas.	
Degree of protection		IEC 60529, IP20	
Material		Polycarbonate (PC)	
Weight		Approx. 300 g (including cord; packaged condition: 450 g)	
Accessories		Ferrite core (1), Instruction sheet, Label (1)	

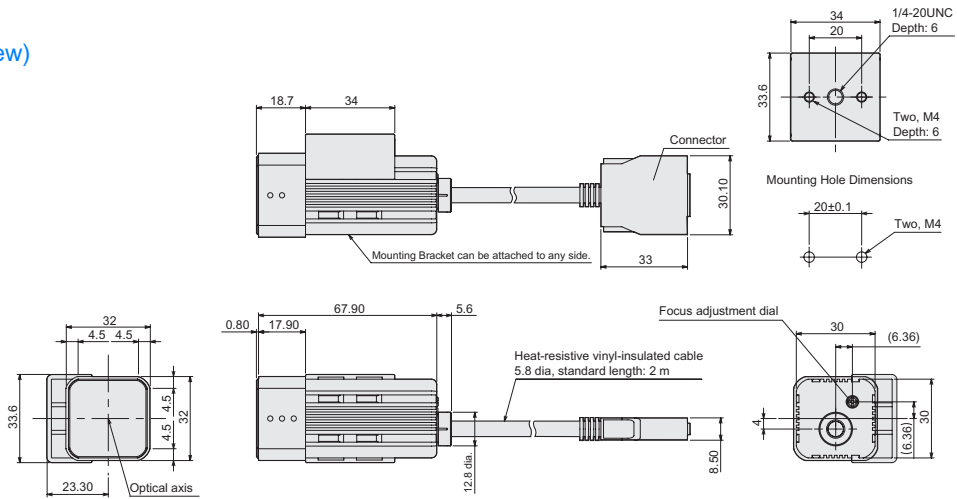
External light units (optional)

Item	ZFV-LTF01	ZFV-LT01	ZFV-LTL01	ZFV-LTL04
Applicable sensor head	ZFV-SC50/SC50W/SC90/SC90W			
Lighting method	Pulse lighting			
Lighting interval	Fixed (1.1 to 1.4 ms)			
Light source (Qty.)	White LEDs			
	60	20	40	80
Power supply voltage	48 VDC (Supplied from sensor head)			
Current consumption	Approx. 160 mA	Approx. 80 mA	Approx. 120 mA	Approx. 210 mA
Dielectric strength	300 VAC, 50/60 Hz for 1 min			
Vibration resistance (destructive)	10 to 150 Hz, 0.35 mm single amplitude, 10 times each in X, Y and Z directions for 8 min			
Shock resistance (destructive)	150 m/s ² , 3 times each in six directions (up/down, left/right, forward/backward)			
Ambient temperature	Operating: 0 to 40 °C Storage: -20 to 65 °C (with no icing or condensation)			
Ambient humidity	Operating and storage: 35% to 85% RH (with no condensation)			
Ambient atmosphere	Must be free of corrosive gas			
Connection type	Prewired, Standard cable length: 2 m			
Degree of protection	IEC6D529 IP20			
Material	SPCC	SPCC, aluminium		
Weight	Approx. 500 g (when packaged: Approx. 550 g)	Approx. 250 g (when packaged: Approx. 300 g)	Approx. 650 g (when packaged: Approx. 900 g)	Approx. 900 g (when packaged: Approx. 1,150 g)
LED class	Class 1 Applicable standards IEC6D825-1: 1993 +A1:1997 +A2:2001 EN60825-1: 1994 +A1:2002 +A2:2001			

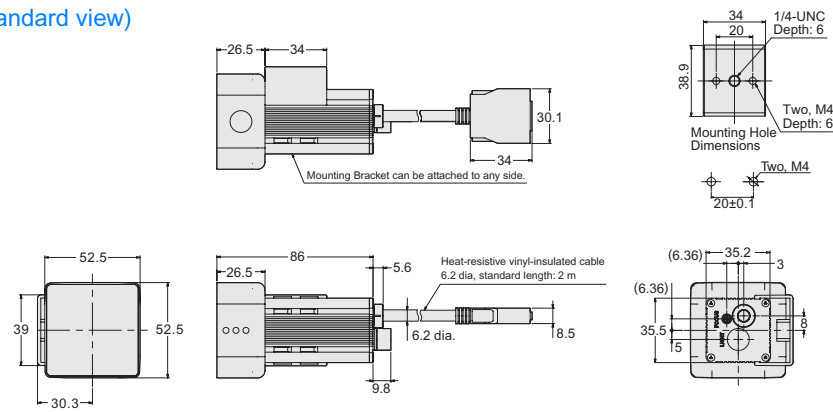
Dimensions (Units: mm)

Sensor Heads

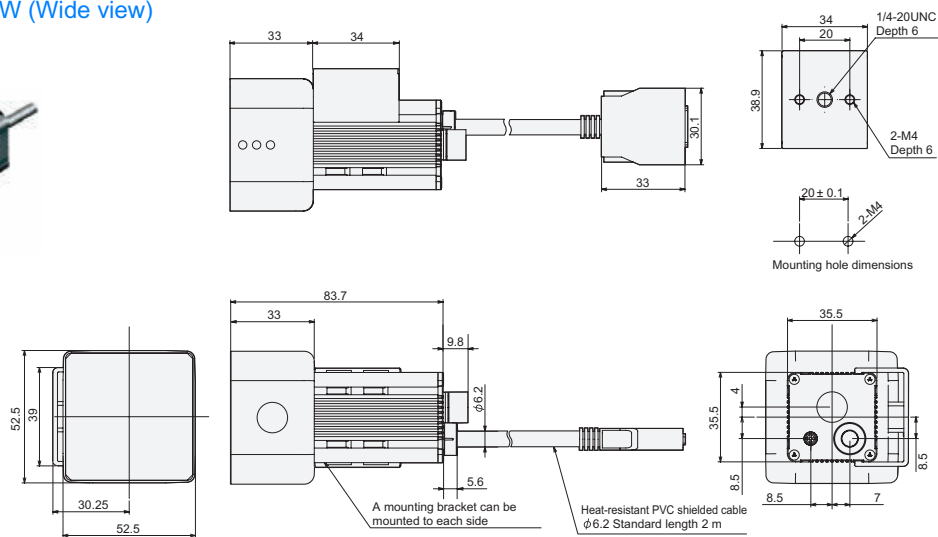
ZFV-SC10 (Narrow view)



ZFV-SC50/SC50W (Standard view)

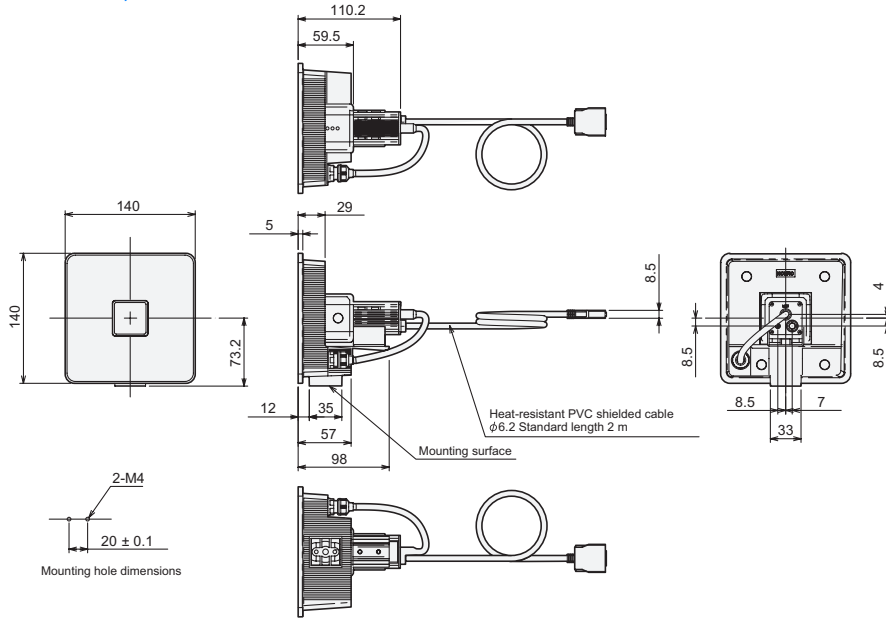


ZFV-SC90/SC90W (Wide view)



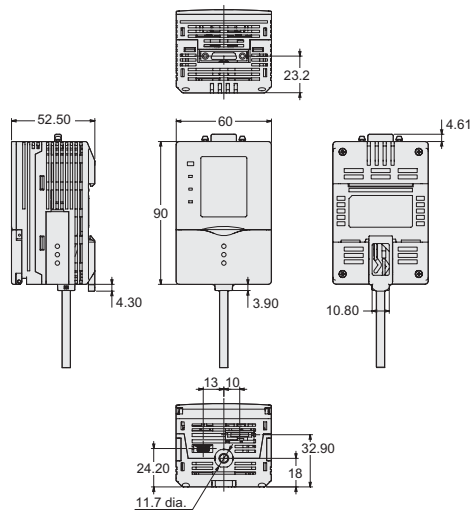
ZFV

ZFV-SC150/SC150W (Ultra wide view)



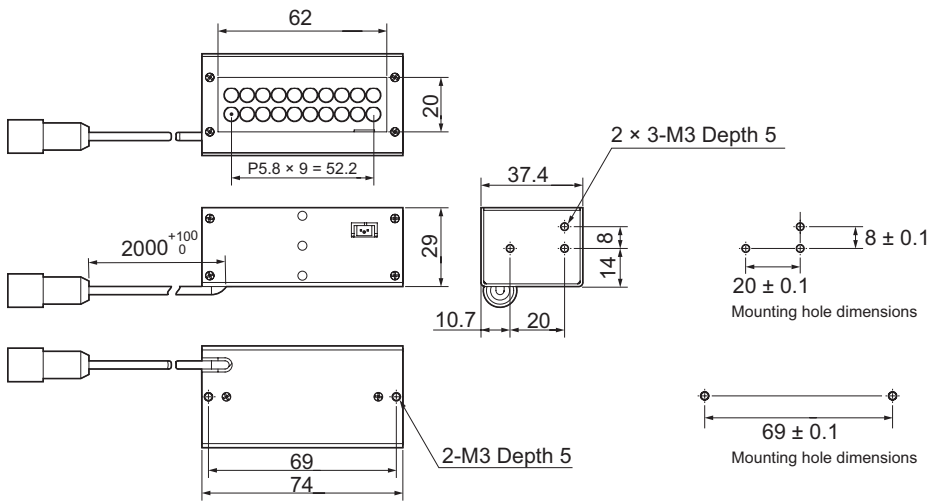
Amplifier Units

ZFV-CA4□

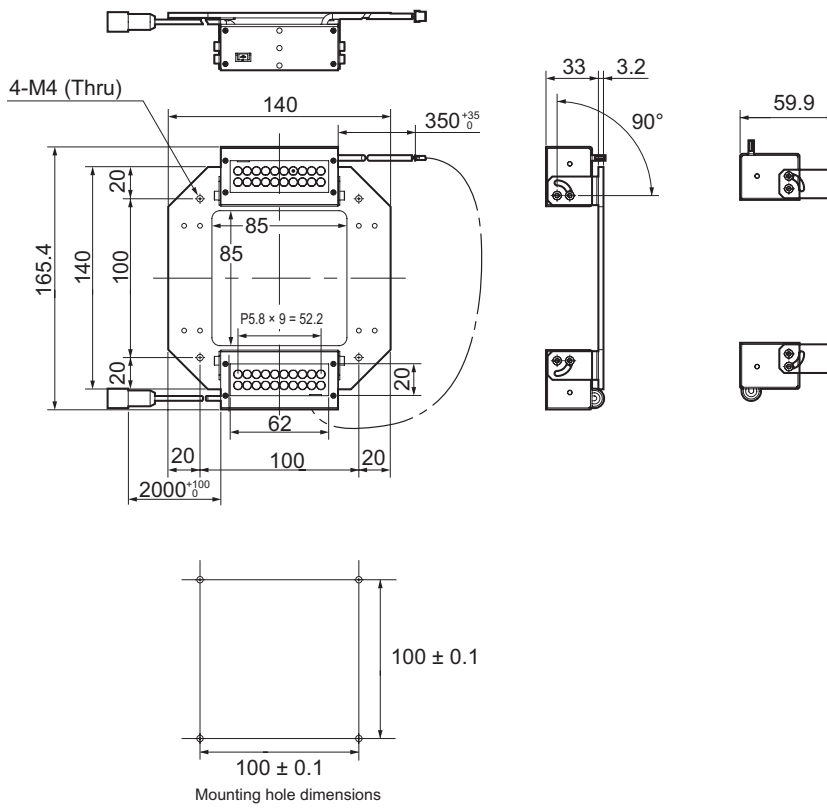


External light units (optional)

ZFV-LTL01 (bar lighting)

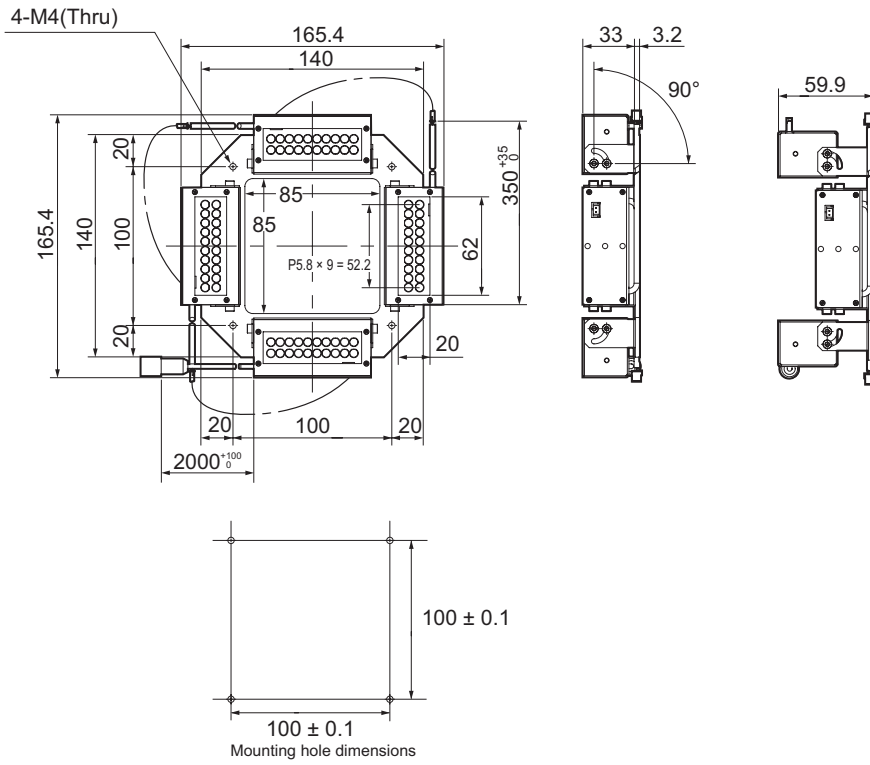


ZFV-LTL02 (bar double-lighting)

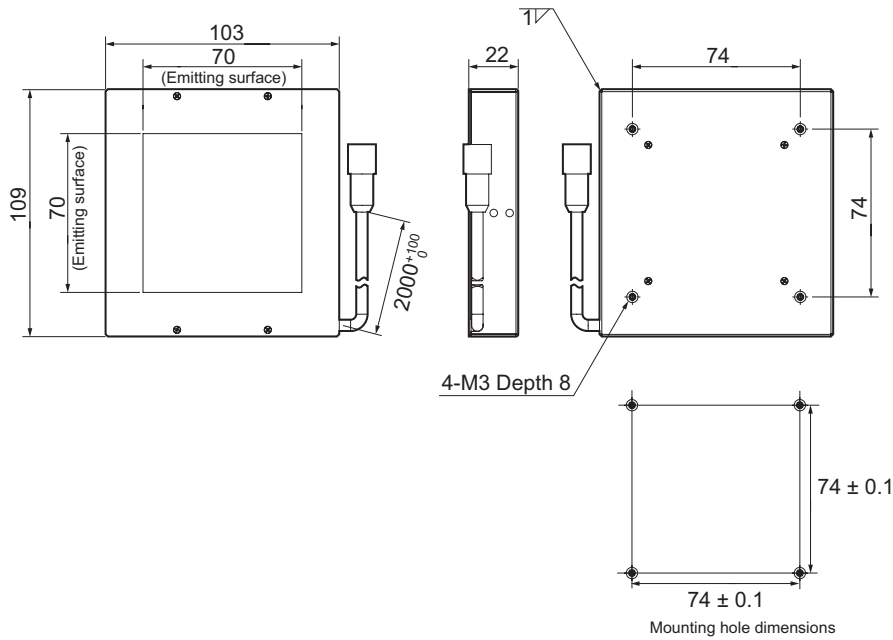


ZFV

ZFV-LTL04 (bar low-angle lighting)

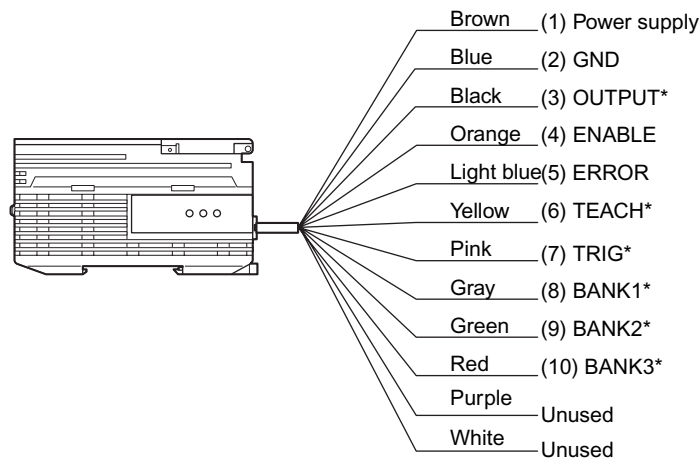


ZFV-LTF01 (light source for through-beam lighting)



About the I/O cable

The following shows the leads that comprise the I/O cable.



* : Enabled only in the RUN mode

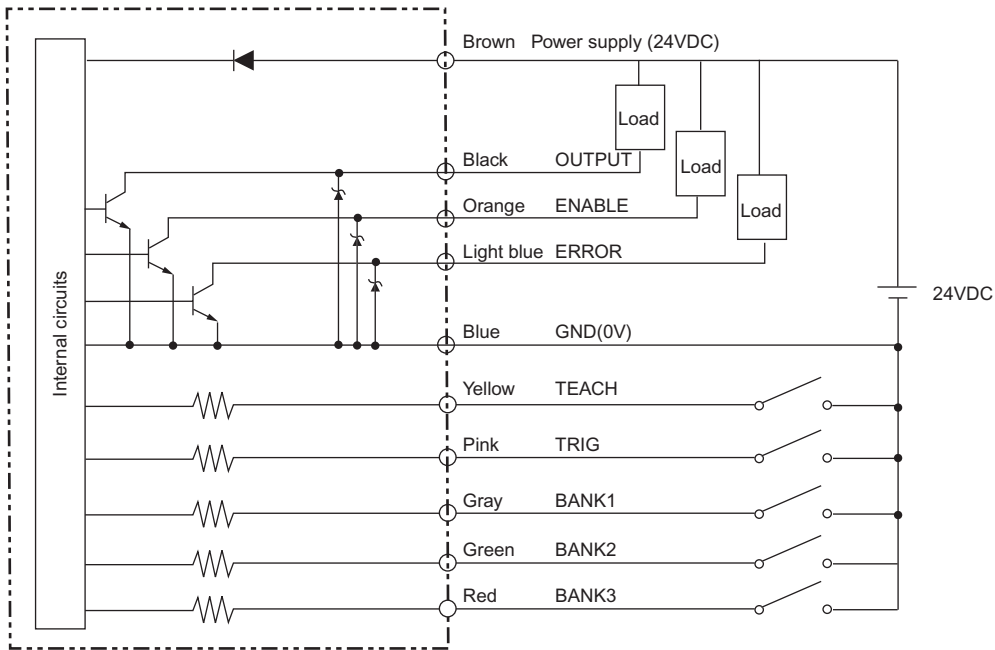
- (1) **Power Supply**
This connects the power supply.
Use a DC power supply with safe extra-low-voltage circuits to prevent high voltage.
Wire the power supply separately from other devices. Wiring them together or placing them in the same duct may cause induction, resulting in malfunction or damage.
- (2) **GND**
The GND terminal is the 0 V power supply terminal.
- (3) **OUTPUT (control output)**
This outputs judgment results. This lead is interlocked with OUTPUT LED.
- (4) **ENABLE (enable output)**
This turns ON when error is generated. This leads is interlocked with ERR LED.
- (5) **ERROR (error output)**
This turns ON when an error is generated. This lead is interlocked with ERR LED.
- (6) **TEACH (teching output)**
There are two teaching modes, workpiece stop teaching and workpiece move teaching. These teaching modes can be selected in the menu.
- (7) **TRIG (measurement trigger input)**
There are two measurement modes, synchronus measurement and continuous measurement. Which mode of measurement is to be performed in is selected in the menu.
- (8) **BANK1 (bank swichting input 1)**
- (9) **BANK2 (bank swichting input 2)**
- (10) **BANK3 (bank swichting input 3)**

The bank No. can be switched when the BANK1 to BANK3 are connected as follows

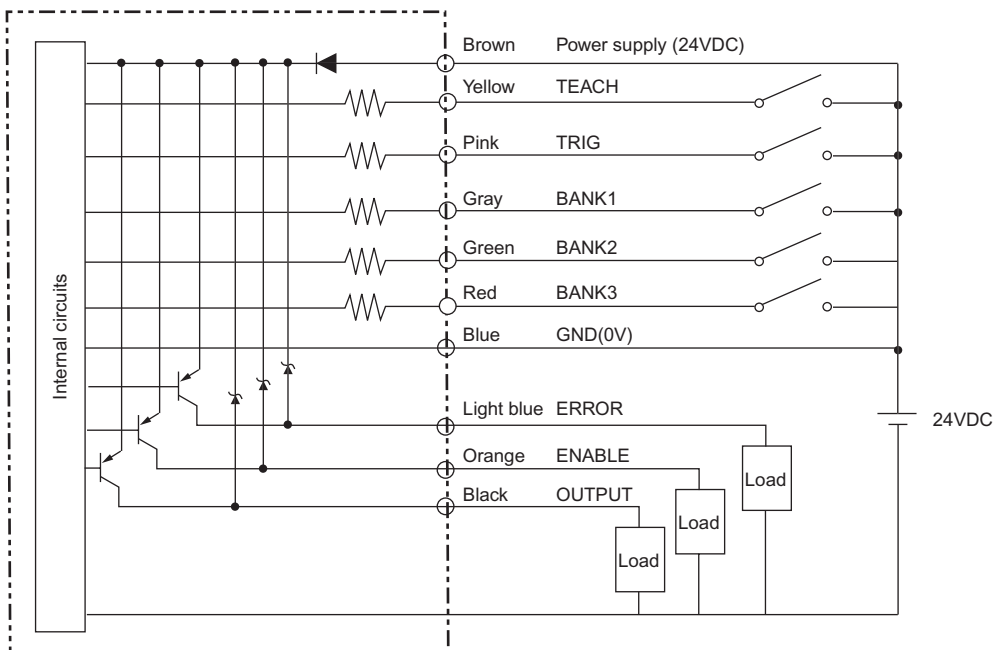
Bank No.	BANK1	BANK2	BANK3
BANK1	OFF	OFF	OFF
BANK2	ON	OFF	OFF
BANK3	OFF	ON	OFF
BANK4	ON	ON	OFF
BANK5	OFF	OFF	ON
BANK6	ON	OFF	ON
BANK7	OFF	ON	ON
BANK8	ON	ON	ON

I/O Circuit diagrams

NPN output type (ZFV-CA40)



PNP output type (ZFV-CA45)



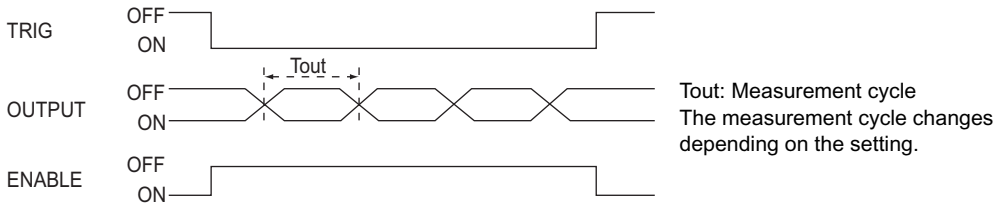
Timing Charts

The following shows the timing charts when communication is performed with external devices.

Measurement

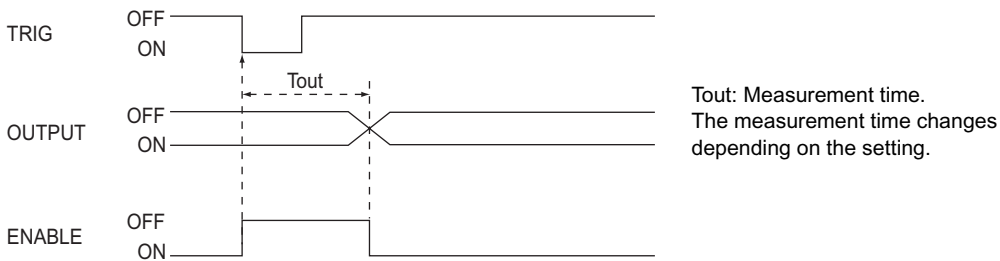
Continuous measurement

Measurement is performed continuously for the duration that the TRIG signal is ON. The measurement result is updated and output to external devices at each measurement cycle.



Synchronous measurement

Measurement is performed only once in synchrony with the change in TRIG signal state from OFF to ON and the result is output.



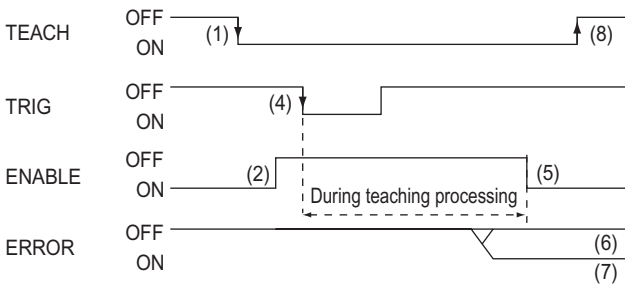
- The minimum ON time width of the TRIG signal is 1 ms.
 - The OUTPUT signal is held until the measurement result is updated.
- Note:** However, when one-shot is set, the OUTPUT signal is held for the preset time.

Teaching

Workpiece stop teaching

Teaching processing is performed according to TRIG signal input after the TEACH signal input.

Measurement is not performed while teaching is being performed. Do not move the workpiece until teaching is completed.

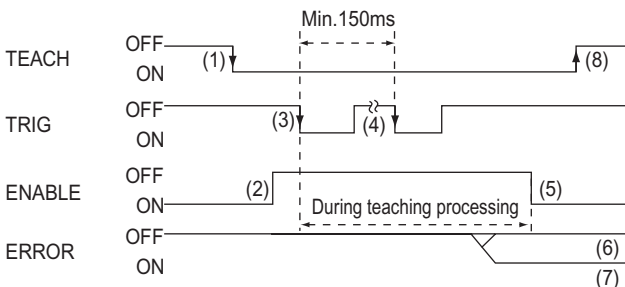


- (1) Turn the TEACH signal ON.
- (2) Confirm that the ENABLE signal has turned OFF.
- (3) Make sure that the workpiece to be taught is in the teaching area.
- (4) Input the TRIG signal.
- (5) The ENABLE signal turns ON after teaching is completed. At this timing, check the state of the ERROR signal.
- (6) When teaching has been completed successfully, the ERROR signal stays OFF.
- (7) When teaching fails, the ERROR signal turns ON.
- (8) Turn the TEACH signal OFF and end teaching processing.
When teaching fails, the state before teaching was initiated is returned to. Performe teaching again.
If the TEACH signal is turned OFF midway, teaching is disabled.

Workpiece move teaching

Use this teaching mode when the object cannot be stopped. Teaching processing is divided up and performed in synchronous with the TRIG signal input after the TEACH signal is input.

Teaching must be processewd eight times. Measurement is not performed while teaching is being performed.



- (1) Turn the TEACH signal ON from the outside.
- (2) Confirm that the ENABLE signal has turned OFF.
- (3) Input the TRIG signal at the timing for measuring the workpiece to be taught.
- (4) Repeat the input in step (3) eight times. (Trigger inputs from the ninth time onwards are ignored.)
- (5) The ENABLE signal turns ON after teaching is completed. Check the state of the ERROR signal at this timing.
- (6) When teaching has been completed successfully, the ERROR signal stays OFF.
- (7) When teaching fails, the ERROR signal turns ON.
- (8) Turn the TEACH signal OFF and end teaching processing.
When teaching fails, the state before teaching was initiated is return to. Perform teaching again.
If the TEACH signal is turned OFF midway, teaching is disabled.

Terms and Conditions of Sale

1. **Offer; Acceptance.** These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
2. **Prices; Payment Terms.** All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice.
3. **Discounts.** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
4. **Interest.** Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
5. **Orders.** Omron will accept no order less than \$200 net billing.
6. **Governmental Approvals.** Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the importation or sale of the Products.
7. **Taxes.** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Omron or required to be collected directly or indirectly by Omron for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Omron.
8. **Financial.** If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Omron may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
9. **Cancellation; Etc.** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses.
10. **Force Majeure.** Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
11. **Shipping; Delivery.** Unless otherwise expressly agreed in writing by Omron:
 - a. Shipments shall be by a carrier selected by Omron; Omron will not drop ship except in "break down" situations.
 - b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
 - c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
 - d. Delivery and shipping dates are estimates only; and
 - e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
12. **Claims.** Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
13. **Warranties.** (a) **Exclusive Warranty.** Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied. (b) **Limitations.** OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) **Buyer Remedy.** Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See <http://oeweb.omron.com> or contact your Omron representative for published information.
14. **Limitation on Liability; Etc.** OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY. Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.
15. **Indemnities.** Buyer shall indemnify and hold harmless Omron Companies and their employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not Omron is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless Omron and defend or settle any action brought against such Companies to the extent based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
16. **Property; Confidentiality.** Any intellectual property in the Products is the exclusive property of Omron Companies and Buyer shall not attempt to duplicate it in any way without the written permission of Omron. Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Omron. All information and materials supplied by Omron to Buyer relating to the Products are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
17. **Export Controls.** Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (ii) sale of products to "forbidden" or other proscribed persons; and (iii) disclosure to non-citizens of regulated technology or information.
18. **Miscellaneous.** (a) **Waiver.** No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) **Assignment.** Buyer may not assign its rights hereunder without Omron's written consent. (c) **Law.** These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law principles). (d) **Amendment.** These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) **Severability.** If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) **Setoff.** Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) **Definitions.** As used herein, "including" means "including without limitation"; and "Omron Companies" (or similar words) mean Omron Corporation and any direct or indirect subsidiary or affiliate thereof.

Certain Precautions on Specifications and Use

1. **Suitability of 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 but the following is a non-exhaustive list of applications for which particular attention must be given:
 - (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
 - (ii) Use in consumer products or any use in significant quantities.
 - (iii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
 - (iv) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this Product.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
2. **Programmable Products.** Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.
3. **Performance Data.** Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.
4. **Change in Specifications.** Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.
5. **Errors and Omissions.** Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

Complete "Terms and Conditions of Sale" for product purchase and use are on Omron's website at www.omron.com/oei – under the "About Us" tab, in the Legal Matters section.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

OMRON[®]**OMRON ELECTRONICS LLC**

One Commerce Drive
Schaumburg, IL 60173

847-843-7900

For US technical support or other inquiries:

800-556-6766**OMRON CANADA, INC.**

885 Milner Avenue
Toronto, Ontario M1B 5V8

416-286-6465**OMRON ON-LINE**

Global - <http://www.omron.com>
USA - <http://www.omron.com/oei>
Canada - <http://www.omron.ca>