



C9068

C9069

Digital output for connection with PC

The C9068 (for one-dimensional PSD) and C9069 (for pin-cushion type two-dimensional PSD) are DC signal processing circuits specifically designed for position measurement using PSD. Digital output allows direct connection with a personal computer through a serial (RS-232C) interface. The C9068 and C9069 are capable of detecting accurate positions of a spot light regardless of light intensity.

A D/A conversion signal is also output for monitoring, and when a voltmeter is connected to this D/A conversion output, the output voltage value directly represents position data. (Output voltage represents the distance from the center of PSD. 1 V=1 mm)

Features

- Digital output
- Serial (RS-232C) connection with PC
- D/A conversion signal output for monitoring
- Easy handling due to single +12 V supply operation
- No complicated adjustment required

Applications

- Displacement measurement
- Testing using PSD
- PSD performance evaluation

Absolute maximum ratings (Ta=25 °C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Supply voltage	Vs max	+18	V
Operating temperature*1	Topr	0 to +40	°C
Storage temperature*1	Tstg	-10 to +60	°C
Input current	Iin max	9×10^{-4}	A

*1: No dew condensation

When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C, Vs=+12 V)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Conversion impedance	Zt	-	1×10^5	-	V/A
Feedback capacitance	Cf	-	100	-	pF
Input photocurrent*2	Ip	1×10^{-5}	-	9×10^{-5}	A
		1×10^{-5}	-	9×10^{-5}	A
Signal conversion time*3	-	5	-	-	ms
Digital output format	-	Conforms to RS-232C (position signal, light level monitor output) 12-bit			-
D/A conversion maximum output amplitude voltage	Vfs	-	-	±10	V
Operating supply voltage	Vs	+9	+12	+18	V
Current consumption	Is	-	200	-	mA

*2: Photocurrent Ip (total input signals) from PSD mounted on the C9068 or C9069 circuit board

*3: Output response time versus spot light position change

Combination with a PSD

A PSD is installed (soldered) on the signal processing circuit.

Note: PSDs are sold separately.

■ C9068 (applicable PSD: one-dimensional PSD)

Type no.	Photosensitive area size (mm)	Position resolution* ⁴ * ⁵ (μm)	Package (mm)	Installation on board	External attachment* ⁶
S3931	6 × 1	1.5	Ceramic (9.2 × 4.8)	○	○
S3932	12 × 1	3	Ceramic (15.2 × 4.8)	○	○
S8543	24 × 0.7	5.9	Ceramic (36.7 × 4)	×	○* ⁷
S4583-04	3 × 1	0.8	Plastic	×	○* ⁷
S4584 series	3.5 × 1	0.9	Plastic	×	○* ⁷
S3274-05	3.5 × 1	0.9	Plastic	×	○* ⁷
S7105 series	4.2 × 1	1.1	Plastic	×	○* ⁷
S15430-01CT/-02CT	1 × 6	1.5	Glass epoxy	×	○* ⁷
S15430-03CT					

■ C9069 (applicable PSD: two-dimensional PSD)

Type no.	Photosensitive area size (mm)	Position resolution* ⁵ * ⁸ (μm)	Package (mm)	Installation on board	External* ⁶ attachment
S2044	4.7 × 4.7	1.4	Metal (TO-8 φ14)	○	○
S5990-01	4 × 4	1.1	Ceramic chip carrier (8.8 × 10.6)	×	○* ⁹
S5991-01	9 × 9	2.5	Ceramic chip carrier (14.5 × 16.5)	×	○* ⁹

*4: Reference value. Digital output Σ=5 to 9 V. 40% range from the center to the end with respect to the PSD photosensitive length L.

*5: When PSD is mounted. The position resolution may vary depending on the connection method, operating environment, and so on.

*6: Wiring using shielded wires or AWG#26 or equivalent twisted pair wires (no longer than 30 cm) is recommended.

*7: These PSDs cannot directly be mounted on the product. Mount the PSD on the printed circuit board prepared separately, and connect the printed circuit via the wiring to the through-holes for externally connected PSD.

*8: Reference value. Digital output Σ=5 to 9 V. Within a circle with a diameter equal to 40% of PSD photosensitive area length L.

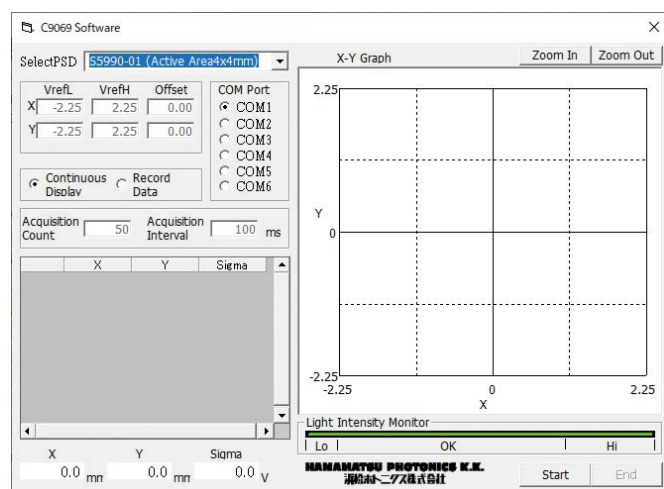
*9: The S5990-01 or S5991-01 can be mounted on the C9069 using the supplied dedicated circuit board.

Accessory sample software display example (C9069)

Position data is displayed in numerical values and graphs.

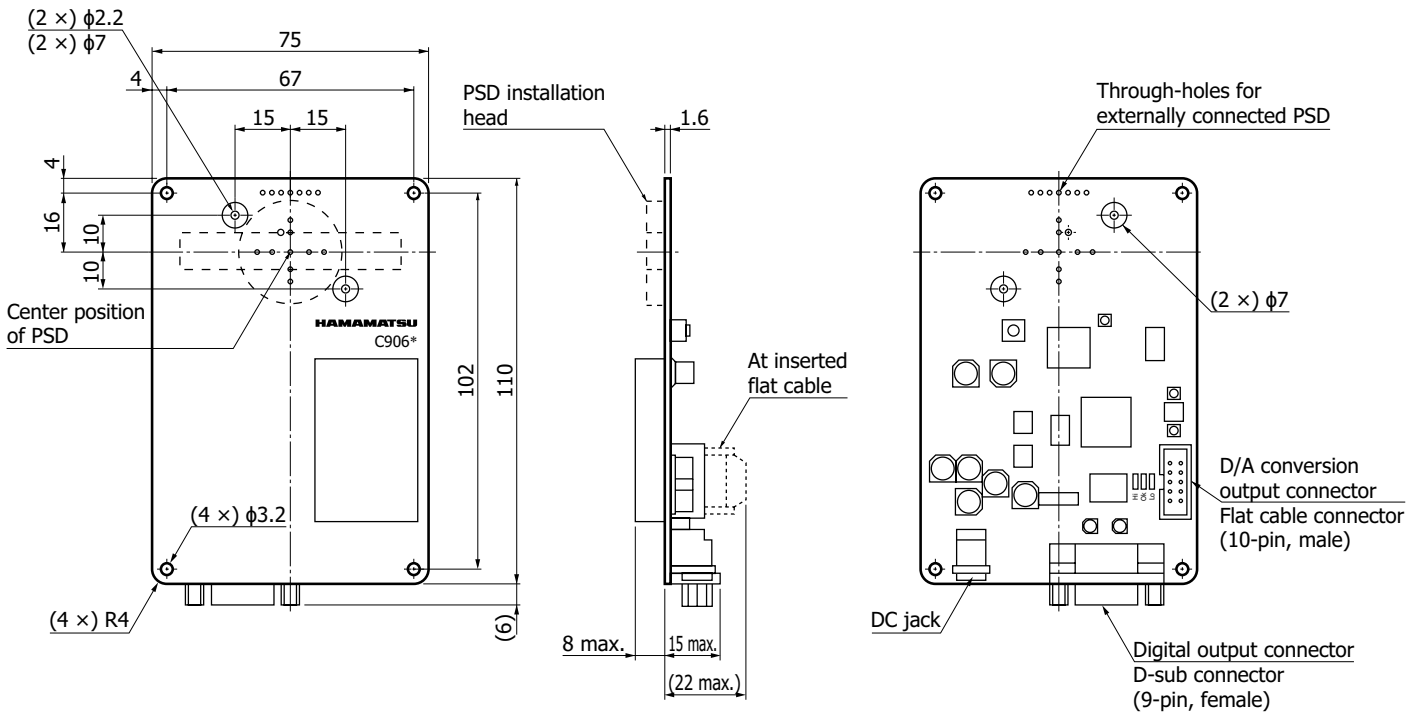
Compatible OS: Microsoft® Windows® 8.1 Pro (32-bit, 64-bit)

Microsoft® Windows® 10 Pro (32-bit, 64-bit)



Note: Microsoft, Windows, and Excel are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

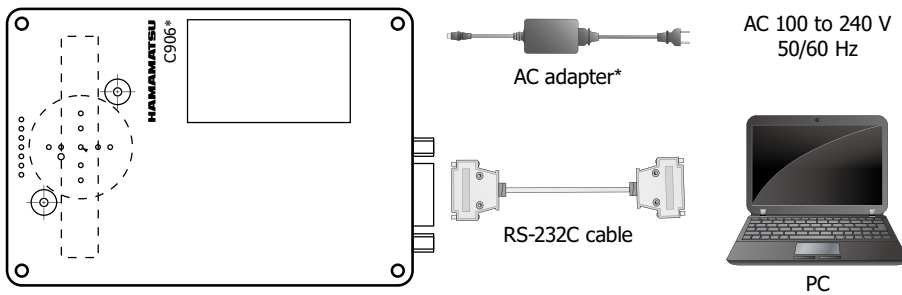
Dimensional outline (unit: mm)



Tolerance unless otherwise noted
 ≤ 6 : ± 0.1
 $6 <$ ≤ 30 : ± 0.2
 $30 <$: ± 0.3

KACCA0118EC

Connection example



* Accessory

KACCC0811EA

Accessories

- Instruction manual
- Sample software (CD-ROM)
- AC adapter
- Flat cable (48 cm) with connector for D/A conversion signal output
- Attachment board for S5990-01/S5991-01 (C9069 only)

Note: RS-232C cable is not supplied. Prepare an off-the-shelf cable (straight) with 9-pin D-sub connectors (male to female).

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions

- Disclaimer

■ Technical notes

- PSD
- PSD signal processing circuits, PSD modules

Information described in this material is current as of September 2022.

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