



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	$9 \times 10^{-4}$	A

\*1: No dew condensation

When there is a temperature difference between a product and the surrounding area in high humidity environment, 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	-	$1 \times 10^5$	-	V/A
Feedback capacitance	Cf	-	100	-	pF
Input photocurrent*2	Ip	$1 \times 10^{-5}$	-	$9 \times 10^{-5}$	A
		$1 \times 10^{-5}$	-	$9 \times 10^{-5}$	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* <sup>4</sup> * <sup>5</sup> (μm)	Package (mm)	Installation on board	External attachment* <sup>6</sup>
S3931	6 × 1	1.5	Ceramic (9.2 × 4.8)	○	○
S3932	12 × 1	3	Ceramic (15.2 × 4.8)	○	○
S8543* <sup>7</sup>	24 × 0.7	5.9	Ceramic (36.7 × 4)	×	○
S4583-04* <sup>7</sup>	3 × 1	0.8	Plastic	×	○
S4584 series* <sup>7</sup>	3.5 × 1	0.9	Plastic	×	○
S3274-05* <sup>7</sup>	3.5 × 1	0.9	Plastic	×	○
S7105 series* <sup>7</sup>	4.2 × 1	1.1	Plastic	×	○
S15430-01CT/-02CT	1 × 6	1.5	Glass epoxy	×	○
S15430-03CT					

#### ■ C9069 (applicable PSD: two-dimensional PSD)

Type no.	Photosensitive area size (mm)	Position resolution* <sup>5</sup> * <sup>8</sup> (μm)	Package (mm)	Installation on board	External* <sup>6</sup> attachment
S1880	12 × 12	3.5	Ceramic (φ28)	○	○
S2044	4.7 × 4.7	1.4	Metal (TO-8 φ14)	○	○
S5990-01* <sup>9</sup>	4 × 4	1.1	Ceramic chip carrier (8.8 × 10.6)	×	○
S5991-01* <sup>9</sup>	9 × 9	2.5	Ceramic chip carrier (14.5 × 16.5)	×	○

\*4: Reference value. Digital output  $\Sigma=5$  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 be directly mounted on the circuit board. Connect to the through-hole terminals at the edge of the circuit board by external wiring.

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

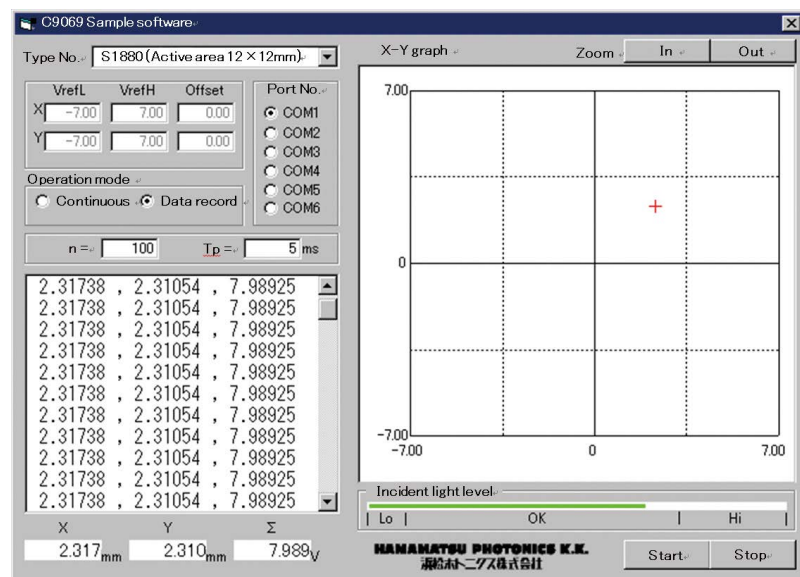
\*9: The S5990-01 or S5991-01 can be mounted on the C9069 using the supplied dedicated circuit board.

### Accessory sample software display example (C9069)

Position data is displayed in numerical values and graphs.

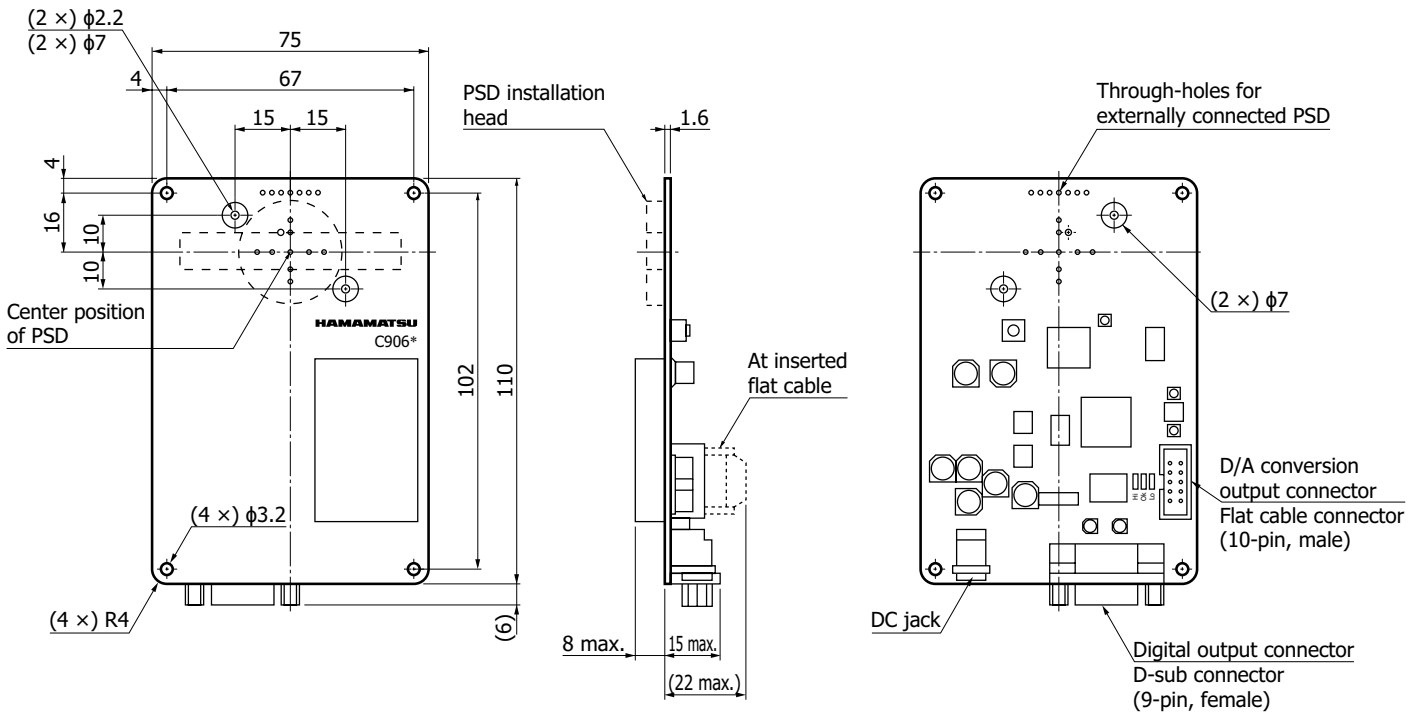
Compatible OS: Microsoft® Windows® 8.1 Pro (32-bit, 64-bit)

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.

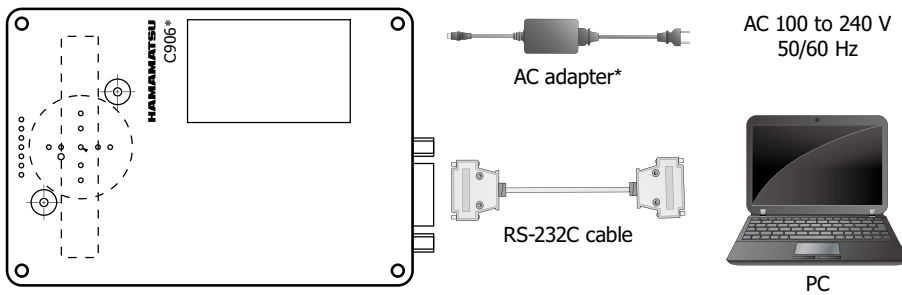
**Dimensional outline (unit: mm)**



Tolerance unless otherwise noted  
 $\leq 6$  :  $\pm 0.1$   
 $6 <$   $\leq 30$  :  $\pm 0.2$   
 $30 <$  :  $\pm 0.3$

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](http://www.hamamatsu.com/sp/ssd/doc_en.html)

- Precautions
- Disclaimer

- Technical information
- PSD

Information described in this material is current as of July 2021.

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