

HIOKI

9742-10

OPTICAL SENSOR

INSTRUCTION MANUAL

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Introduction

Thank you for purchasing the HIOKI "Model 9742-10 OPTICAL SENSOR." To obtain maximum performance from the device, please read this manual first, and keep it handy for future reference.

Overview

The 9742-10 is an optical sensor for the 3664 OPTICAL POWER METER capable of measuring up to 50 mW in the range of wavelengths from 320 to 1100 nm.

Inspection and Maintenance

Initial Inspection

When you receive the device, inspect it carefully to ensure that no damage occurred during shipping. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.

Preliminary Checks

- Before using the device the first time, verify that it operates normally to ensure that no damage occurred during storage or shipping. If you find any damage, contact your dealer or Hioki representative.
- Before using the device, make sure that the insulation on the cables is undamaged and that no bare conductors are improperly exposed. Using the device in such conditions could cause an electric shock, so contact your dealer or Hioki representative for repair.

Maintenance and Service

- To clean the device, wipe it gently with a soft cloth moistened with water or mild detergent. Never use solvents such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline, as they can deform and discolor the case.
- With the exception of ethyl alcohol, avoid using organic solvents to clean the detector window. These solvents can damage the detector window.
- If the device seems to be malfunctioning, contact your dealer or Hioki representative.
- Pack the device so that it will not sustain damage during shipping, and include a description of existing damage. We cannot accept responsibility for damage incurred during shipping.

Safety Information

This manual contains information and warnings essential for safe operation of the device and for maintaining it in safe operating condition. Before using it, be sure to carefully read the following safety precautions.

⚠ DANGER

This device is designed to comply with IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the device. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from device defects.

Safety Symbol



In the manual, the **⚠** symbol indicates particularly important information that the user should read before using the device. The **⚠** symbol printed on the device indicates that the user should refer to a corresponding topic in the manual (marked with the **⚠** symbol) before using the relevant function.

The following symbols in this manual indicate the relative importance of cautions and warnings.

⚠ DANGER

Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.

⚠ CAUTION

Indicates that incorrect operation presents a possibility of injury to the user or damage to the device.

NOTE

Indicates advisory items related to performance or correct operation of the device.

Operating Precautions



Follow these precautions to ensure safe operation and to obtain the full benefits of the various functions.

⚠ CAUTION

- To prevent malfunctions in the 3664 or the optical sensor, avoid connecting or disconnecting the optical sensor connector while power for the 3664 is ON.
- To avoid damaging the optical sensor and to ensure accurate measurements, avoid dropping or applying any physical shock to the optical sensor.
- Avoid touching the detector window with your bare hands. The detector window must be clean for the sensor to meet the specified performance parameters.
- Avoid scratching the detector window with sharp or pointed objects (e.g., the tips of tweezers) or against hard surfaces. Damage to the detector window may prevent the sensor from meeting specified performance parameters.
- To avoid breaking the cables, do not bend or pull them.
- To avoid broken wires, always grasp the plug to disconnect the optical sensor connector. Avoid pulling on the cable itself.
- Excessive power input may damage the sensor. Avoid exposing the sensor to light whose intensity exceeds specifications.
- Avoid exposing the sensor to intense beams that lie beyond the range in which it can render accurate results. In addition to inaccurate results, doing so may damage the sensor.
- Make sure no stress is applied to the repeater cable between the sensor main unit and its light-receiving element.
- This device is not designed to be entirely water- or dust-proof. Do not use it in an especially dusty environment, nor where it might be splashed with liquid. This may cause damage.

⚠ CAUTION

- This device is designed for use indoors. It can be operated at temperatures between 0 and 40°C (32 and 104°F) without degrading safety.

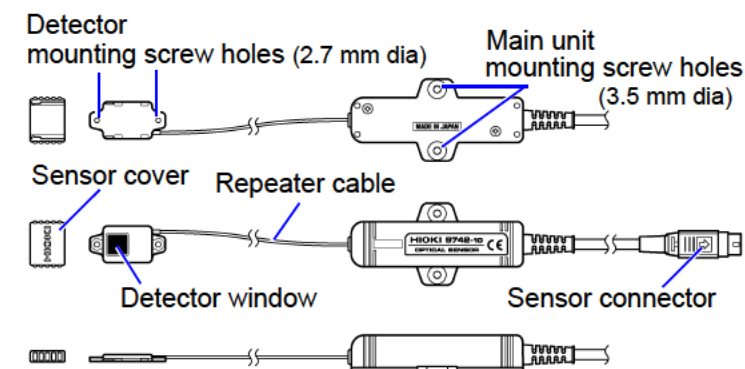
NOTE

To ensure accurate measurements, make sure the detector window is free of dust, stains, and any damage.

Specifications

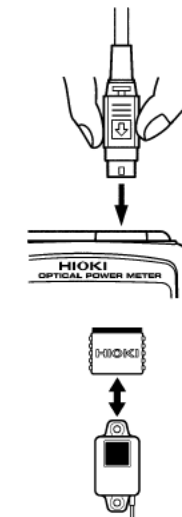
Measurement wavelength	320 to 1100 nm
Acceptable power range	-59 dBm to +17 dBm at the calibration wavelength
Maximum rating	50 mW (+17 dBm) with total irradiation
Detector type	Si photodiode
Dimensions of light-receiving area	Approx. 9.6 mm x 9.6 mm
Measurement accuracy	±4.3% Calibration conditions: Direct a 100 μW collimated He-Ne laser beam (approx. 2 mm dia) with a wavelength of 633 nm perpendicularly into the center of the sensor. Accuracy is ±5% when the sensor is used with the 3664.
Default wavelength settings	633 nm, 635 nm, 650 nm, 780 nm These are the default wavelengths stored in memory by the 3664. They cannot be edited.
Operating temperature and humidity ranges	0 to 40°C (32 to 104°F), 80% RH or less (no condensation)
Storage temperature and humidity ranges	-10 to 50°C (14 to 122°F), 80% RH or less (no condensation)
Accuracy guarantee for temperature and humidity	23 ± 5°C (73 ± 9°F), 80% RH or less
Guaranteed accuracy period	1 year
Location for use	Indoors, altitude up to 2000 m (6562-ft.)
Dimensions	Light-receiving element : Approx. 18W x 37H x 3.5D mm (0.71"W x 1.46"H x 0.14"D) (excluding Sensor cover) Main unit : Approx. 40W x 84H x 18D mm (1.57"W x 3.31"H x 0.71"D) (excluding projections) Repeater cable lengths : Approx. 160 mm (6.30") Cable lengths : Approx. 2000 mm (78.74")
Mass	Approx. 100 g (3.5 oz.)
Applicable Standards	Safety: EN 61010-1:2001 Pollution degree 2

Names of Parts



The 9742-10 sensor main unit and its detector may be attached with screws. (Note the mounting screw holes.)

Measurement Procedure



- Make sure power for the 3664 is OFF.
- Place the 9742-10 optical sensor with the arrow side facing up and insert into the optical sensor connector of the 3664.
- Turn on power for the 3664.
- Remove the cover of the optical sensor.
- Irradiate with light.

NOTE

- Always grasp the connector with the arrow to connect or disconnect the optical sensor. You must grasp the connector to disconnect the sensor.
- To prevent dust accumulation, stains, and damage, cover the detector window with the sensor cover when the sensor is not in use.
- Take care to avoid misplacing the sensor cover.
- Note the correct orientation of the sensor cover. The HIOKI logo should face in the direction indicated in the diagram above.

Cleaning the detector window

⚠ CAUTION

With the exception of ethyl alcohol, avoid using organic solvents to clean the detector window. These solvents can damage the detector window.

- Open the sensor cover.
- Wipe the detector window of the sensor using lens cleaning paper or other lint-free material. If lint remains on the detector window, blow off with an optical lens airbrush. If the detector window is soiled, fluff the tip of a cotton swab. Moisten the cotton tip in ethyl alcohol and wipe the surface.

Dimensional Diagram

