



# MS-57SH Pyrheliometer

Thank you for purchasing EKO products.

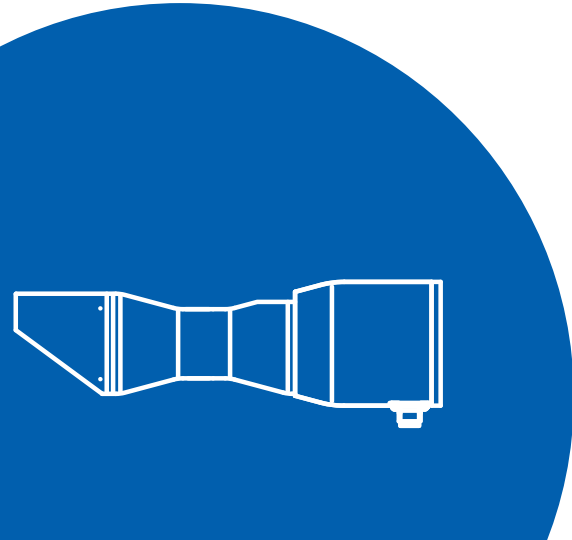
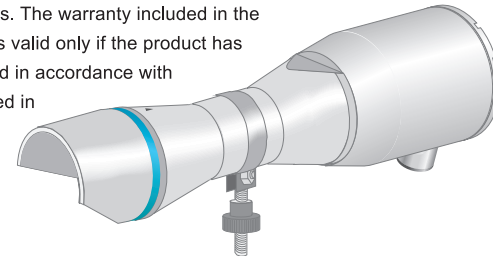
This Quick Start Guide provides basic instructions to help you set up and get started. Please see the **Instruction Manual** for more detailed information about this product.

## Product Warranty

Your MS-57SH Pyrheliometer comes with a 5-year warranty.

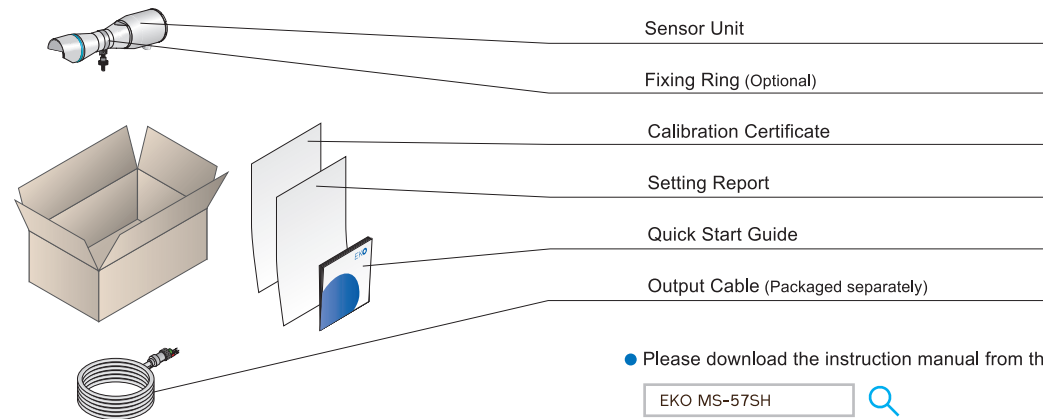
For warranty terms and conditions, please consult the **Instruction Manual**, EKO Instruments, or your distributor for further information.

Please Note: All of our products are tested to ensure that they meet their published specifications. The warranty included in the conditions of delivery is valid only if the product has been installed and used in accordance with the instructions provided in the **Instruction Manual**.



## 1 In the Box

First, please check the package contents. If any part is missing or damaged, please contact EKO or your local EKO distributor.



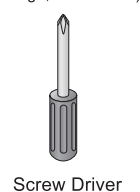
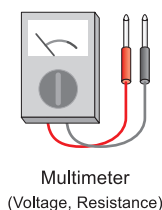
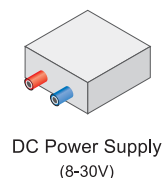
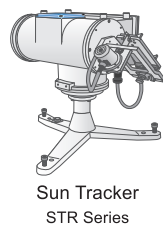
Please download the instruction manual from the EKO website.

EKO MS-57SH

We recommend that you keep the original packaging for return shipping in case of recalibration or repair.

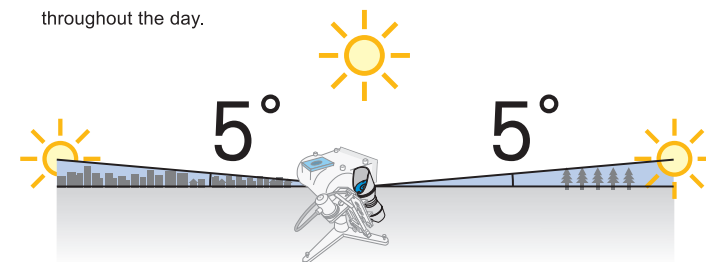
## 2 Preparing to Install

### 1 Required Tools



### 2 Location & Setup Conditions

Select a location with free horizon, without any obstructions and light reflections throughout the day.



Install MS-57SH on sunny day.

See STR-21G/22G/32G Instruction Manual for Sun Tracker installation.

## 3 Installation

### 1 Mount the MS-57SH on Sun Tracker

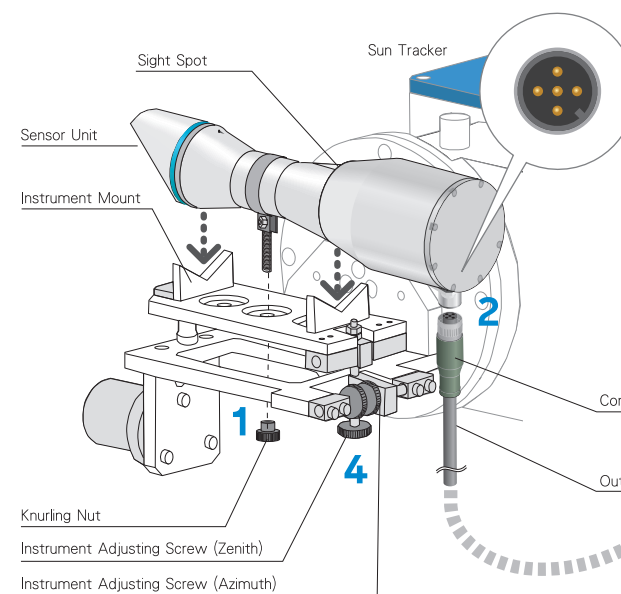
As the Sun Tracker is properly installed and its power turned off, mount the MS-57SH on the instrument mount and fasten the knurling nut.

### 2 Connect the Output Cable

Check the connector pin orientation before connecting the cable.

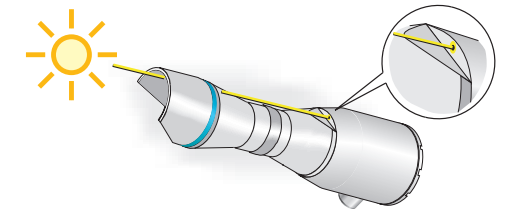
### 3 Switch on the Sun Tracker Power

When the Sun Tracker power is switched on, the Sun Sensor automatically starts to adjust its position to the sun direction.



### 4 Adjust the Sight Spot

Once the Sun Tracker has confirmed the sun position, adjust the sight spot on the MS-57SH by using the instrument adjusting screws (Azimuth/Zenith).

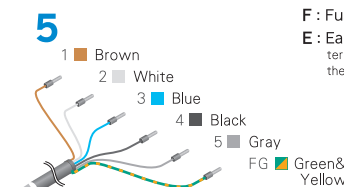


### 5 Wiring

Connect the output cable to each terminal

Connect to		Digital Output	
Cable		Modbus (5-30 VDC)	SDI-12 (12 VDC)
1 Brown	V +		
2 White	V -		
3 Blue	RS485 +		
4 Black	RS485 -		
5 Gray	SDI-12 Data		
FG Green & Yellow	Frame Ground Shielded Wire		

D : DAQ System - Data Acquisition System  
 F : Fuse (0.5A) - Connect in series between power supply lines.  
 E : Earth Connection - Be sure to connect it to the ground terminal of the power supply. Otherwise, noise will be generated in the output signal and correct measurement cannot be performed.



**Communication Settings**  
 Modbus RTU : 19200bps / 8bit / Even / 1 stop bit / xx \*  
 \* Last two digits of the product serial number.  
 SDI-12 : 1200bps / 7bit / Even / 1 stop bit / Address 0

### 6 Window Heating Function Control

The heating system of the MS-57SH can be controlled via an on/off switch using our free Hibi software or Modbus RTU/SDI-12 commands.

Please note: The default setting of the heating system is 'ON'. For detailed operating instructions, see the Hibi section of this manual or the Modbus RTU/SDI-12 commands section of the full instruction manual, available online.

## 4 Measurement & Maintenance

### Window Heating Function

- A power supply of at least 8 VDC is required to use the window heating function.
- The window heating function is set to ON when the product is shipped.
- The window heating function can be switched on and off with a simple toggle button in Hibi or by rewriting the respective registers of the Modbus RTU and SDI-12.
- On switching the window heating function on or off it can take up to 3 hours for the window temperature to stabilise.

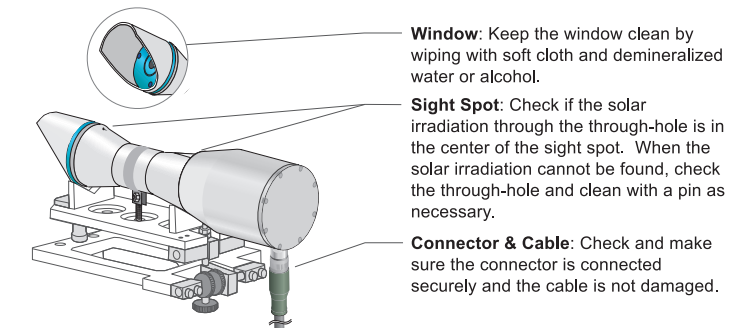
### Intensity of Solar Radiation

The digital output enables direct solar radiation intensity (W/m<sup>2</sup>) to be obtained without conversion.

#### Approximate Output Values

Conditions	☁ Cloudy	☁ Partly Cloudy	☀ Clear
Solar Irradiance [W/m <sup>2</sup> ]	< 300	> 300	> 700

### Periodic Maintenance



**Window:** Keep the window clean by wiping with soft cloth and demineralized water or alcohol.

**Sight Spot:** Check if the solar irradiation through the through-hole is in the center of the sight spot. When the solar irradiation cannot be found, check the through-hole and clean with a pin as necessary.

**Connector & Cable:** Check and make sure the connector is connected securely and the cable is not damaged.

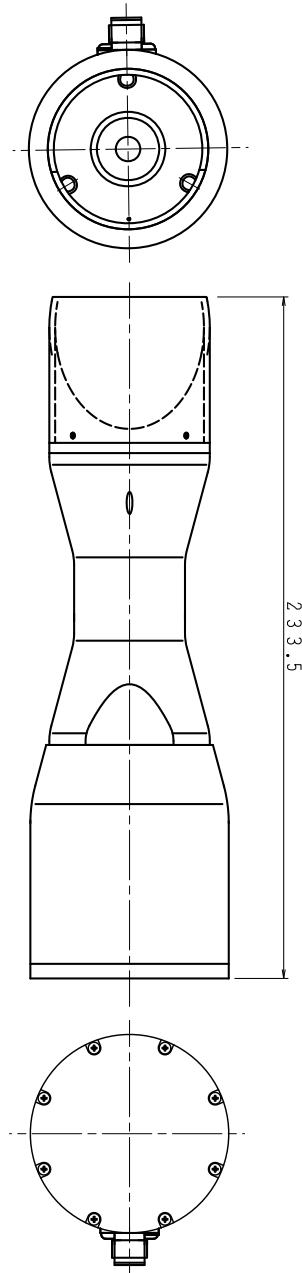
### Recalibration & Desiccant Replacement

To maintain the highest levels of measurement accuracy we recommend periodic recalibration of your product (every 5-years for the MS-57SH). Please contact EKO Instruments for more information about our 'Recalibration Services'.

Thanks to the advanced design of your sensor, there is no need to change the desiccant, and attempting to change the desiccant may void your warranty.

# Specifications

	MS-57SH
Length	233 mm
Width	Φ68 mm
Overall Height	80,5 mm
Mass	0,6 kg
Operating Temperature	-40 to 80 °C
Input Power	Modbus : 5V or 8 to 30 V DC
	SDI-12 : 12 V DC
Power Consumption	Without Heating : < 0.2 W
	With Heating : < 1.4 W

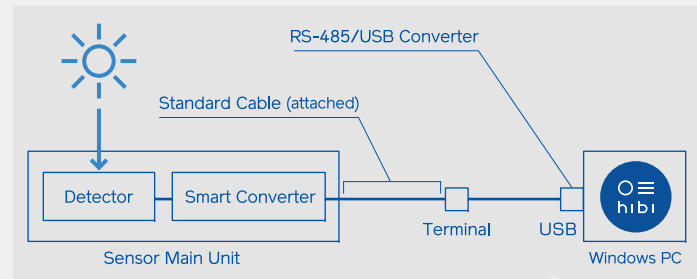


## Quick Start Guide Hibi Software



## Meet Hibi

Hibi, available for Windows from the EKO website, is a free software programme designed to help you get the most from your sensor. Use Hibi to visualise detection signals, change settings, set communication parameters, check the status of your pyranometer, and rapidly troubleshoot any issues.



### What can Hibi do?

- Change your sensor's signal converter settings**  
 Manage the communication protocol and output signal settings.
- Realtime display of measurement values and sensor conditions**  
 Get instant, easy to read measurement values and live information on the condition of your sensor (temperature, humidity, tilt).
- Record measurement data**  
 Measurement data can be recorded and output to CSV (comma delimited).
- Toggle window heating function**  
 The heating function can be switched on or off. The default setting is on.

# 1 Preparation

## 1 Download

EKO MS-57SH

Download Hibi from any s-series pyranometer product page on the EKO website.

## 2 Install

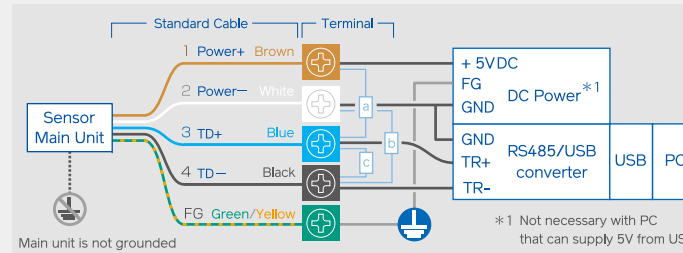
Execute the installer file (.exe) and install Hibi on your PC. If a dialogue window appears during the installation process, click 'Run Anyway'.

## 3 Connect sensor and PC using cable

Connect 5 cable terminals as shown in the Communication Cable Wiring Diagram.

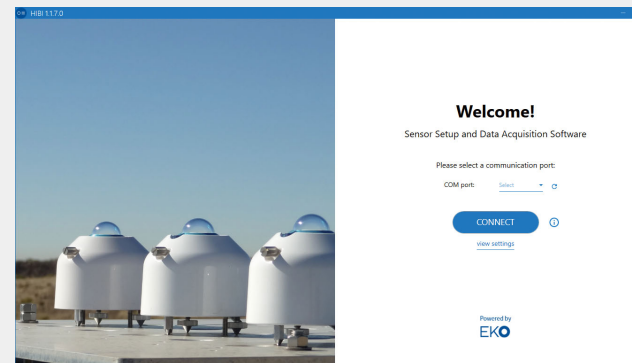
### Communication Cable Wiring Diagram

How to connect to PC when using general purpose RS-485/USB cable.



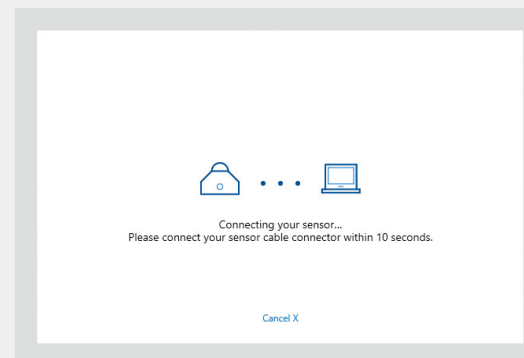
a : Pull-up resistor 680Ω b : Pull-down resistor 680Ω c : Terminating resistor 120Ω  
 Depending on the converter cable type and specifications, pull-up/pull-down resistors and a termination resistor are required. However, with the optional EKO Converter cable, additional resistors are not necessary.

## 4 Start up Hibi



## 5 Reconnect Cable

To automatically connect, remove the cable from the sensor, click CONNECT, then reconnect the cable within 10 seconds.



Hibi cannot operate without an established connection to the sensor.

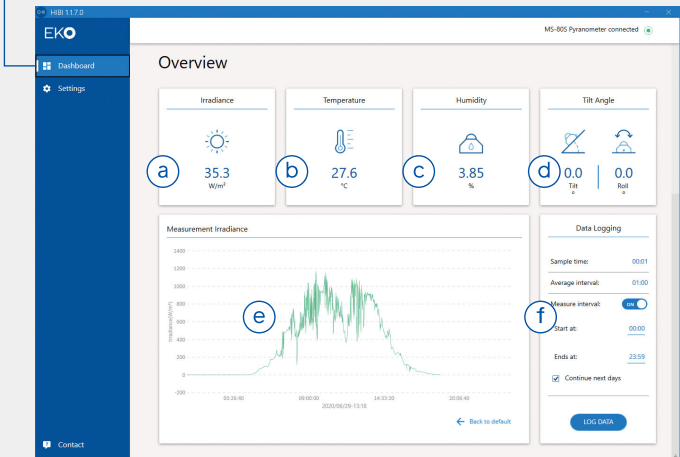
# 2 Operation

Once the connection between Hibi and the sensor is established, the Hibi dashboard will automatically load. See manual for more detailed information.

## 1 Dashboard

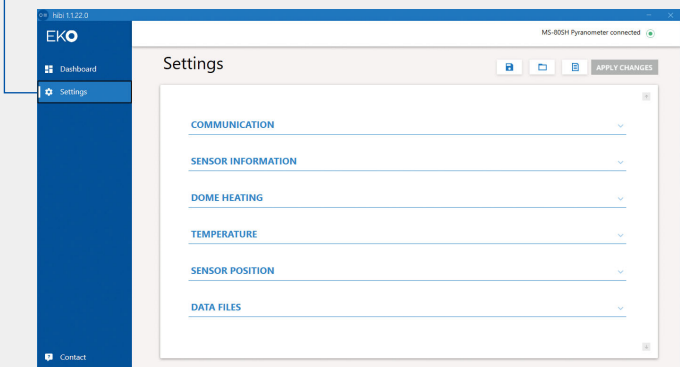
Current sensor output value is displayed in realtime.

- a Irradiance (Instantaneous Value)
- b Internal Temperature
- c Internal Humidity
- d Tilt Angle
- e Irradiance Graph
- f Data Logging Setting



## 2 Settings

- COMMUNICATION**  
 Communication settings can be changed
- SENSOR INFORMATION**  
 Sensor information, such as serial number and calibration value can be viewed.
- WINDOW HEATING** : Can be switched on or off (Default: ON).
- TEMPERATURE** : Temperature Unit [°C/°F/K] (Default: °C)
- SENSOR POSITION** : Tilt sensor zero-point adjustment
- DATA FILES** : Save location of measurement data and setting data



Please refer to the APPENDIX (Communication Specifications) of the instruction manual for Modbus and SDI-12 communication settings.



**EKO Japan, Asia**  
 P.+81 (3) 3469 6711  
**EKO Europe, Middle East, Africa, South America**  
 P.+31 (0) 70 305 0117  
**EKO North America**  
 P.+1 408 977 7751  
 eko-instruments.com