FLUKE®

RSE30/RSE60/RSE30H/RSE60H

Thermal Camera

Users Manual

March 2022 (English)

LIMITED WARRANTY AND LIMITATION OF LIABILITY

Each Fluke product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is two years and begins on the date of shipment. Parts, product repairs, and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a Fluke authorized reseller, and does not apply to fuses, disposable batteries, or to any product which, in Fluke's opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation or handling. Fluke warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke does not warrant that software will be error free or operate without interruption.

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Fluke's warranty obligation is limited, at Fluke's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke authorized service center within the warranty period.

To obtain warranty service, contact your nearest Fluke authorized service center to obtain return authorization information, then send the product to that service center, with a description of the difficulty, postage and insurance prepaid (FOB Destination). Fluke assumes no risk for damage in transit. Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB Destination). If Fluke determines that failure was caused by neglect, misuse, contamination, alteration, accident, or abnormal condition of operation or handling, including overvoltage failures caused by use outside the product's specified rating, or normal wear and tear of mechanical components, Fluke will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer transportation prepaid and the Buyer will be billed for the repair and return transportation charges (FOB Shipping Point).

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Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this Warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

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Introduction

The RSE30、RSE60、RSE30H and RSE60H Thermal Camera (the Product or Cameral) are stationary, infrared imaging cameras for use in many applications, which include equipment troubleshooting, electricity, preventive and predictive maintenance, building diagnostics, and research and development.

The Cameras can stream live infrared video to a PC that has Fluke SmartView *IR* installed. The Fluke SmartView IR is the standard professional thermal image analysis software which can be used for professional analysis and reporting of thermal images and fully-radiometric thermal videos.

Contact Fluke

Fluke Corporation operates worldwide. For local contact information, go to our website: www.fluke.com (English) or cn.fluke.com (Chinese)

To register your product, view, print, or download the latest manual or manual supplement, go to our website.

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Safety Information

Warnings and Cautions

A **Warning** identifies hazardous conditions and procedures that are dangerous to the user. A **Caution** identifies conditions and procedures that can cause damage to the Product or the equipment under test.

General Safety Information is in the printed Safety Information document that ships with the Product and at www.fluke.com (English) or cn.fluke.com (Chinese). More specific safety information is listed where applicable.

⚠ Caution

Storage and/or continual operation of the Camera in extreme ambient temperature conditions can result in temporary interruption of operation. If this occurs, let the Camera stabilize (cool down or warm up) before you resume operation.

Conventions

For keys, buttons, menus, options, fields, and components mentioned in this Manual:

Bold fonts are generally used to indicate printed words or names of keys/buttons on the Product's panel or body.

"Bold fonts within quotation marks" are generally used to indicate the content or options displayed on the Product's screen.

Fonts in blue generally refer to hyperlinks, including links to the Internet and cross-references within this Manual. Click the link to go to the targeted content.

For readability purposes, list items are generally not enclosed in double quotes, because they are easy to be identified to be the content on screen and panel by context.

Product Familiarization

The manual explains features for multiple models. As different models have different features, some of the information in this manual may not be applicable to your product. Use *Table 2* to understand the features of your Camera.

Standard Packaging

To prevent damage during shipment, the Product is shipped in a specially designed package. Please check the Product carefully and inform the carrier of any damage.

When unpacking the Product, please check the standard equipment listed in *Table 1* and other ordered parts listed on the packing list. If there is any shortage of parts, please inform the nearest Fluke Technical Service Center or the Service Center in the place of purchase.

If you need to reship the Product, use the original package. If the original package is not available, order a new package from Fluke according to the Product's model.

Figure 1 and *Table 1* list the standard equipment that comes with the Product. For optional lenses, see *Optional lens*.

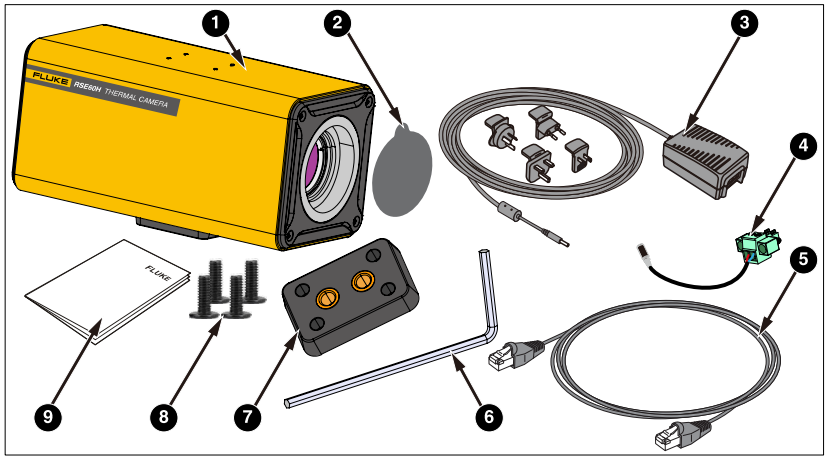


Figure 1. Standard equipment

Table 1. Standard equipment

Item	Description	Quantity		Item	Description	Quantity
1	Thermal Camera (standard lens)	1		6	Allen wrench	1
2	Lens cap (removable)	1		7	Tripod adapter block	1
3	Power adapter	1		8	Mounting screw, M2X5	4
4	Power connector	1		9	Documents including each of Safety Sheet, Quick Reference Guide, Quality Certificate and Warranty Card.	1
5	Ethernet cable, 3 m	1				

Product Features

A summary of product features is listed in *Figure 2* and *Table 2*.

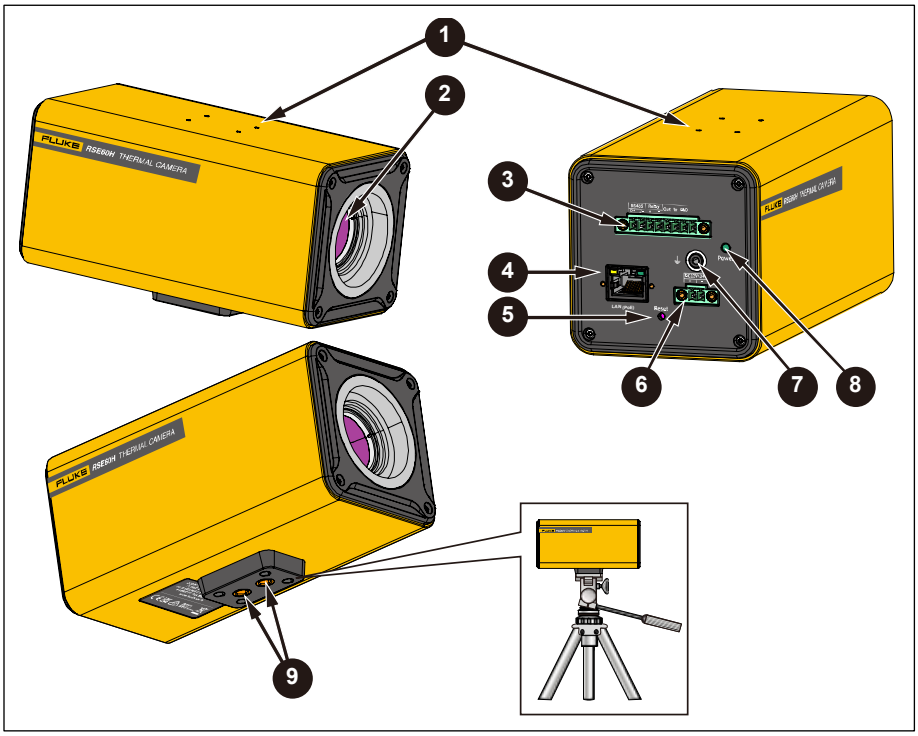


Figure 2. Product features

Table 2. Product features

Item	Description		Item	Description
1	Top mounting holes		6	Power input port
2	Infrared lens		7	Functional earth
3	Interface for RS-485 communication, relay and optocoupler		8	LED indicator
4	LAN communication interface		9	Tripod/accessory mounting holes
5	Reset button			

Operation

The Camera and the Fluke SmartView *IR* software need a network connection to work properly. Set up your network without interference from other systems. SmartView IR is a data-intensive application. Use of other data-intensive applications (audio or video stream) on the PC or in the same network system can cause loss of data.

Note

All thermal cameras need sufficient warm-up time for accurate temperature measurements and best image quality. Warm-up time can vary by model and environmental conditions. Wait a minimum of 30 minutes for the most accurate temperature measurement. When you move the camera between environments with large differences in ambient temperature, allow for additional adjustment time.

Connect to a PC or the Ethernet

1. Stabilize the Product either on a flat surface or a tripod.
2. Connect one end of the Ethernet cable to the Ethernet jack on a PC or a switch, connect the other end of the Ethernet cable to the LAN interface on the end of the Camera (❹ in *Figure 2*).
3. Connect the AC plug of the power adapter to the power outlet and connect one end of the power adapter to the power input port on the end of the Product (❻ in *Figure 2*). The LED indicator lights green indicating the power on status.
4. Warm-Up the Product, then remove the lens cover. Follow the instructions in section *IP Address* and run the Fluke SmartView *IR* software.

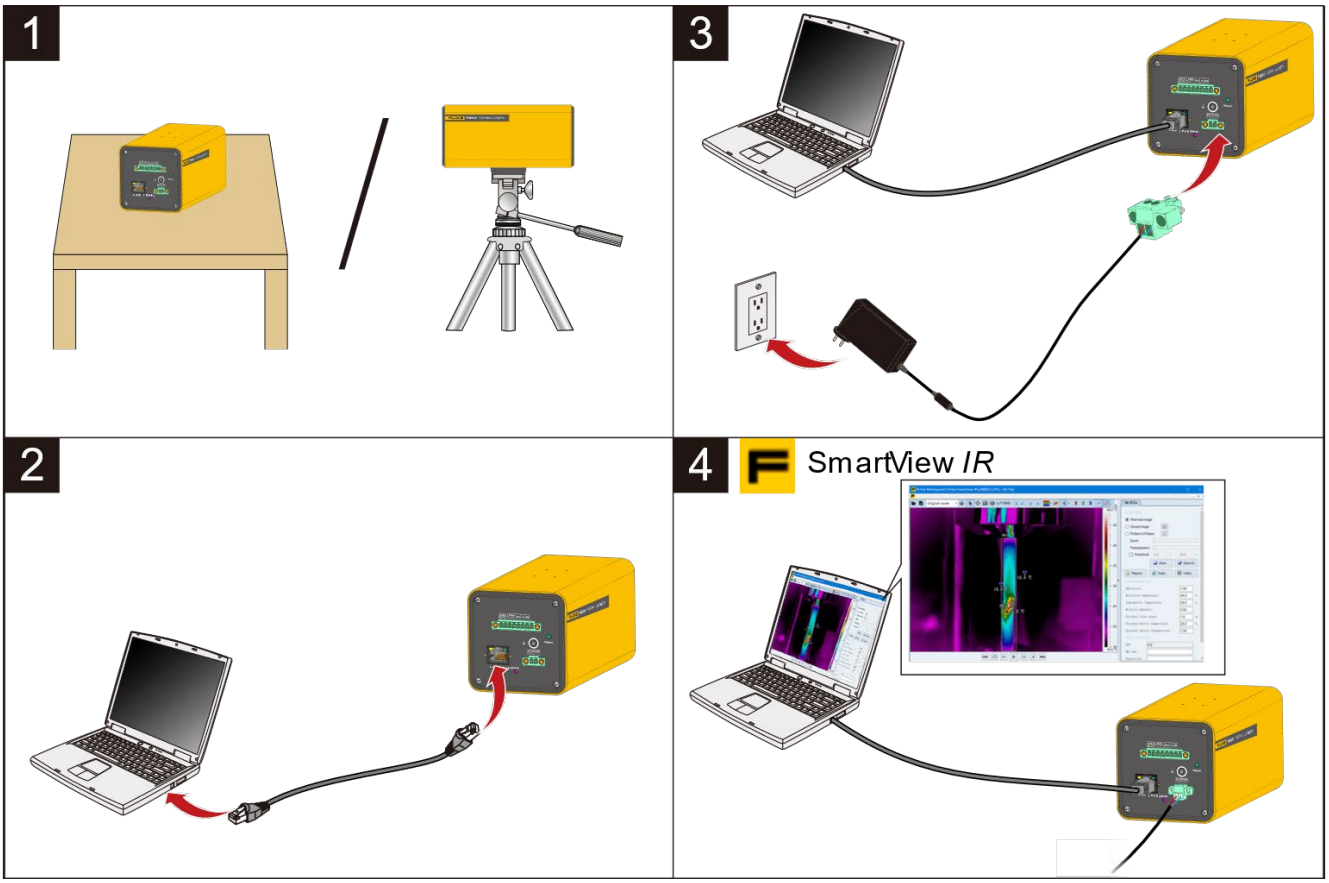


Figure 3.Connect to a PC or the Ethernet

IP Address

To connect the Camera to your PC:

1. Connect the Camera to your PC or the network as described in section *Connect to a PC or the Ethernet*.
2. Set the local IP address of the server to be in the same network segment as the Camera.

3. Open the IPConfig software and search for the Camera's IP address. The Camera's IP address is 192.168.1.100.
4. Start the Fluke SmartView IR software and connect to the Camera using the IP address 192.168.1.100.
5. For the next steps, please see the Fluke SmartView IR software's Users Manual.

Note

The default IP address of the Product is 192.168.1.100, and when you use the Reset button to reset the Product, the default IP address is restored. Do not set servers or other PCs and network devices to this IP address. To change the IP address of the Product, see the instruction manual for the IPConfig software.

Fluke SmartView IR Software

The Fluke SmartView IR software can be used with the Camera and contains functions for analyzing images, organizing data and information and generating professional reports.

Use the SmartView IR software to:

- stream radiometric videos
- capture fully-radiometric videos or imagers
- analyze images
- plot data trends
- export data
- customize reports

To download and install the SmartView IR Software.

1. On the PC, go to: www.fluke.com/smartviewIR.
2. Download the SmartView IR software to the PC according to the instructions on the Product page.
3. On the PC, follow the instructions to install SmartView IR software. (Administrator privileges are required for the installation.)

For details on remote viewing and control of the Product connected to the SmartView IR software, see the instructions for the software.

Optional lens

	Lens Name / Lens Parameters	Standard Lens	Wide-Angle Lens	Telephoto Lens
RSE30	Field of View (FOV)	25° x 18.7°	50° x 37.5°	12° x 8.9°
	Spatial Resolution (IFOV)	1.13 mrad	2.07 mrad	0.57 mrad
	Minimum Focus Distance	0.3 m	0.3 m	1 m
	Focal Length	15 mm	8.2 mm	30 mm
RSE60	Field of View (FOV)	25° x 18.7°	50° x 37.5°	12° x 8.9°
	Spatial Resolution (IFOV)	0.68 mrad	1.31 mrad	0.34 mrad
	Minimum Focus Distance	0.3 m	0.3 m	1 m
	Focal Length	25 mm	13 mm	50 mm
RSE30H	Field of View (FOV)	25° x 18.7°	50° x 37.5°	12° x 8.9°
	Spatial Resolution (IFOV)	1.13 mrad	2.32 mrad	0.53 mrad
	Minimum Focus Distance	0.5 m	0.5 m	1.5 m
	Focal Length	15 mm	7.34 mm	32.2 mm
RSE60H	Field of View (FOV)	25° x 18.7°	50° x 37.5°	12° x 8.9°
	Spatial Resolution (IFOV)	0.67 mrad	1.39 mrad	0.32 mrad
	Minimum Focus Distance	0.5 m	0.7 m	5 m
	Focal Length	25.3 mm	12.2 mm	53.9 mm

Note: The product is shipped with standard lens, optional lens is add-on installation method, and the temperature measurement will only be guaranteed for the optional lens.

Maintenance

There are no parts requiring for users to repair and maintain inside the Product, and no special maintenance is needed. It is only necessary to clean and maintain the lens regularly.

To Clean the Case

Clean the case with a damp cloth and a weak soap solution. Do not use abrasives, isopropyl alcohol, or solvents to clean the case or lens.

⚠ Caution

To prevent damage to the case, do not get the alcohol on the case.

Lens Care

⚠ Caution

To prevent damage to the infrared lens:

- **Carefully clean the infrared lens. The lens has a delicate anti-reflective coating.**
- **Do not clean the lens too vigorously because this can damage the anti-reflective coating.**

To clean the lens:

1. Use a pressurized can of air or a dry nitrogen-ion gun, if available, to blow off the particulates from the lens surface.
2. Soak a lint-free cloth in a commercial lens cleaning liquid that contains alcohol, ethyl alcohol, or isopropyl alcohol.
3. Squeeze the cloth to remove excess liquid.
4. Wipe the lens surface in one circular motion and discard the cloth.
5. If needed, repeat with a new lint-free cloth.

Specifications

General Specifications

	RSE30	RSE60	RSE30H	RSE60H
Temperature				
Operating	-10 °C - 50 °C			
Storage	-40 °C - 70 °C			
Altitude				
Operating	2 000 m			
Storage	12 000 m			
Relative Humidity	<90 % RH			
Power				
Power supply	12 V/24 V, PoE			
Power consumption (Typical)	3 W	4 W	3 W	4 W
Safety	IEC 61010-1: Pollution degree II			
Electromagnetic Compatibility (EMC)				
International	IEC 61326-1: Industry Electromagnetic Environment, CISPR 11: Group 1, Class A			
Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself. Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances. Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments. Emissions that exceed the levels required by CISPR 11 can occur when the equipment is connected to a test object.				
Korea (KCC)	Class A Equipment (Industrial Broadcasting & Communication Equipment)			
Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and not to be used in homes.				
Size (H x W x L)	142.25 mm x 71 mm x 70 mm (Standard lens, without base)		157.25 mm x 80 mm x 79 mm (Standard lens, without base)	164.6mm x 80 mm x 79 mm (Standard lens, without base)
Weight	706g (Standard Lens)	718g (Standard Lens)	713g (Standard Lens)	993g (Standard Lens)
Mounting	Bottom and top mounting supported Tripod mounting through adapter: 2 x 1/4-UNC-20 standard tripod mounting holes			
IP Rating	IEC 60529: IP40			

Detailed Specifications

	RSE30	RSE60	RSE30H	RSE60H
Temperature Measurements				
Temperature Range	-20 °C - 650 °C	-20 °C - 650 °C	-20 °C - 2000 °C	-20 °C - 2000 °C
Temperature Measurement Range				
Subrange 1	-20°C to 150 °C	-20 °C to 150 °C	-20 °C to 150 °C	-20 °C to 150 °C
Subrange 2	0 °C to 650 °C	0 °C to 650 °C	0 °C to 650 °C	0 °C to 650 °C
Subrange 3			300 °C to 2000 °C	300 °C to 2000 °C
Temperature Accuracy*	Operating temperature:15℃~35℃, ±2 °C or ±2 % of rdg, whichever is greater			
	-10 °C ~15 °C or 35 °C ~50 °C, ±4 °C or ±4 % of rdg, whichever is greater			
Infrared Resolution	384 × 288	640 × 480	384 × 288	640 × 480
Detector Type	Focal Plane Array FPA, Uncooled Microthermal			
Detector Frame Rate	60 Hz			
Thermal Sensitivity (NETD)**	＜50 mk	＜30 mk	＜50 mk	＜30 mk
Pixel Spacing	17 μm			
Infrared Spectral Band	7.5 μm to 14 μm			
Field of View (FOV)	See *Optional lens*			
Spatial Resolution (IFOV)	See *Optional lens*			
Minimum Focus Distance	See *Optional lens*			
Lens Focal Length	See *Optional lens*			
Focus System	Auto (in SmartView IR)			
Global Temperature Measurement Correction	Emissivity (0.01 to 1.00), Reflected Temperature (Background Temperature), Transmittance, Atmospheric Temperature, Relative Humidity, Target Distance			
Analysis Software	SmartView IR			
Color Palettes	10 color palettes, for example Ironbow, black-white, rainbow, and more the palettes can be inverted			
Video Stream Compression Standard	H.264			

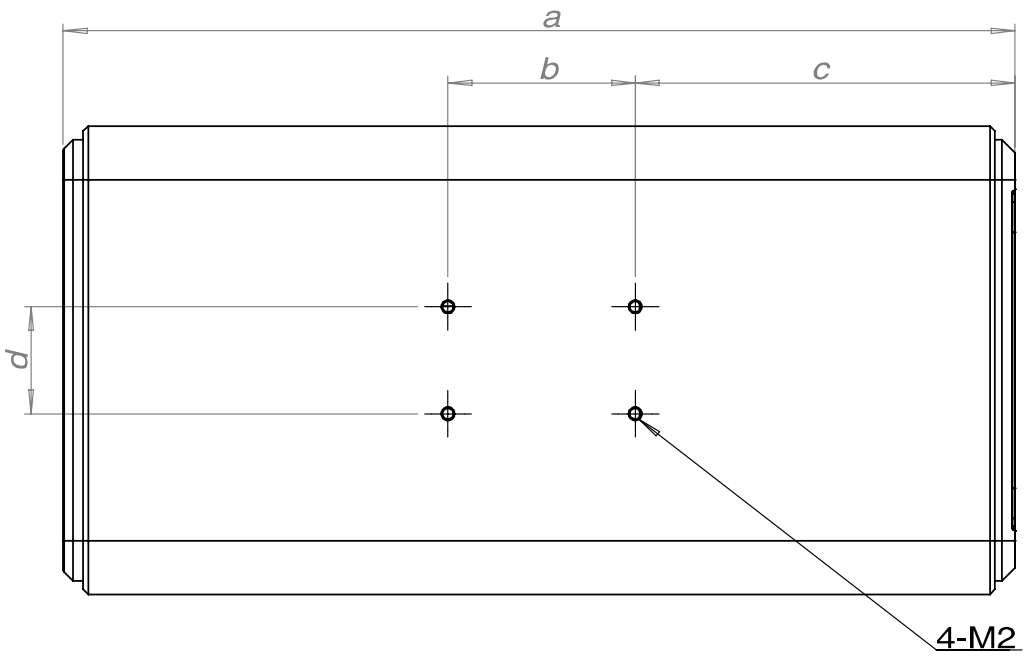
	RSE30	RSE60	RSE30H	RSE60H
Video	Main stream Pixel: 384 x 288 Frequency: 30 Hz Bandwidth: 1.8 Mb Sub stream Pixel: 384 x 288 Frequency: 30 Hz Bandwidth: 100 kb	Main stream Pixel: 640 x 480 Frequency: 30 Hz Bandwidth: 2.5 Mb Sub stream Pixel: 320 x 240 Frequency: 30 Hz Bandwidth: 100 kb	Main stream Pixel: 384 x 288 Frequency: 30 Hz Bandwidth: 1.8 Mb Sub stream Pixel: 384 x 288 Frequency: 30 Hz Bandwidth: 100 kb	Main stream Pixel: 640 x 480 Frequency: 30 Hz Bandwidth: 2.5 Mb Sub stream Pixel: 320 x 240 Frequency: 30 Hz Bandwidth: 100 kb
Fully-Radiometric Streaming	30 Hz	25 Hz	30 Hz	25 Hz
Pan-Tilt Control	Support Pelco-D protocol			
Temperature Measurement Area	Support 5 temperature measurement points, 10 temperature measurement lines, 10 temperature measurement areas, support Modbus output (the Modbus output is mutually exclusive with the Pan-Tilt control)			
Ethernet Type	10M/100M/1000M, adaptive			
Network Protocols	IPv4, UDP, TCP, RTSP, RTCP, RTP			
Concurrent Access	10 channels for main stream and sub stream, 1 channel for fully-radiometric			
Access standard	ONVIF			
Network Interface	RJ45, with status indicator			
Alarm Input/Output	1 relay output: load capacity: 24 V, 1.5 A 1 optocoupled output: output capacity: 3.3 to 24 V, 35mA maximum output current 1 channel optocoupled input: input capability: 3.3 to 24 V, 5mA-to-15mA input current			
Serial Port	1 RS-485			

** Nominal measurement distance. RSE30/RSE60 is at 1 meter, RSE30H/RSE60H is at 2 meters.*
*** Best possible*

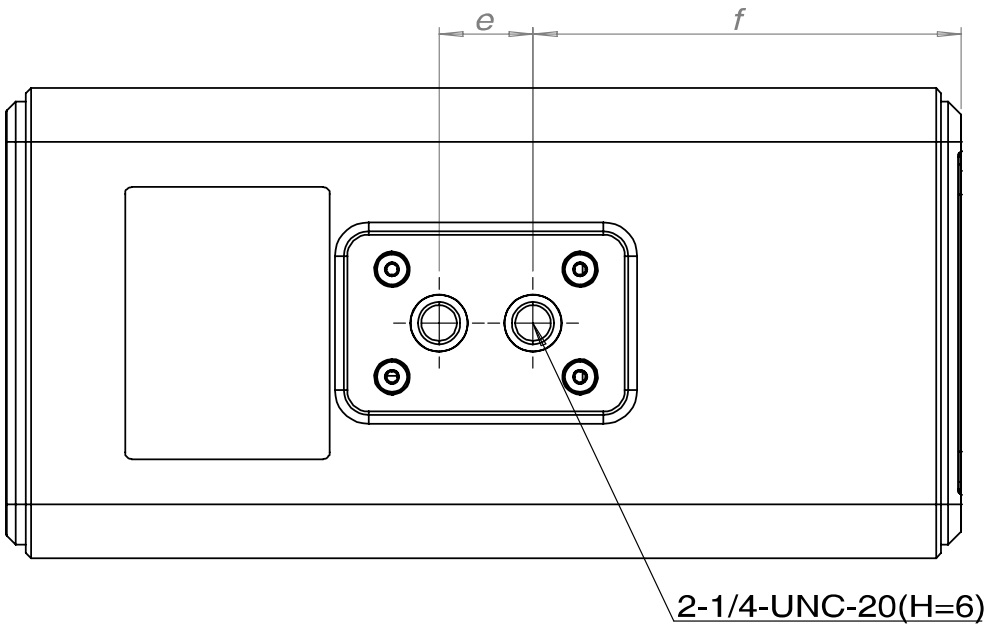
Dimensions

The dimensions of the Product are shown in *Figure 4* and *Table 3*.

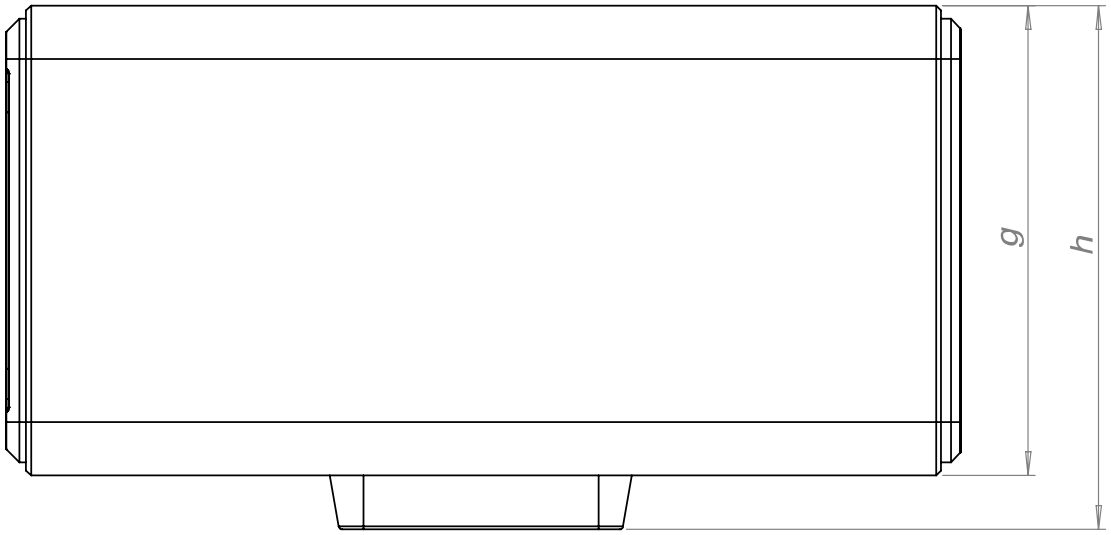
Size



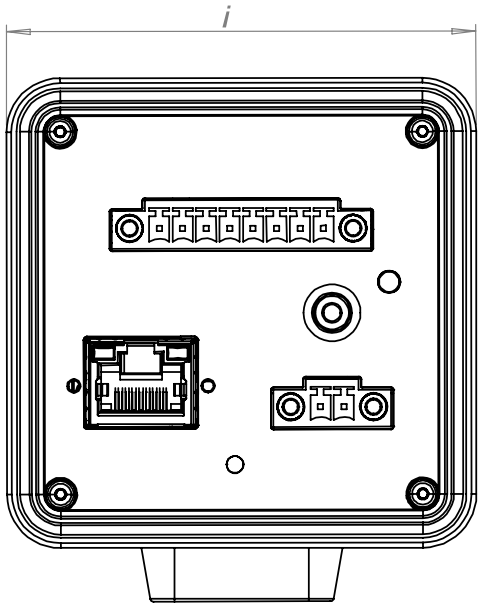
Top view



Bottom view



Side view



Rear view

Figure 4. Product dimensions

Table 3. Product dimensions

	a	*b*	*c*	*d*	*e*	*f*	*g*	*h*	*i*
RSE30/60	142.25	28.00	56.75	16.00	14.00	63.75	70.00	78.00	71.00
RSE30H	157.25	28.00	61.25	16.00	14.00	68.25	79.00	87	80.00
RSE60H	164.00	28.00	68.60	16.00	14.00	75.60	79.00	87.00	80.00
Note: *The unit is mm.*									

Interface Definition

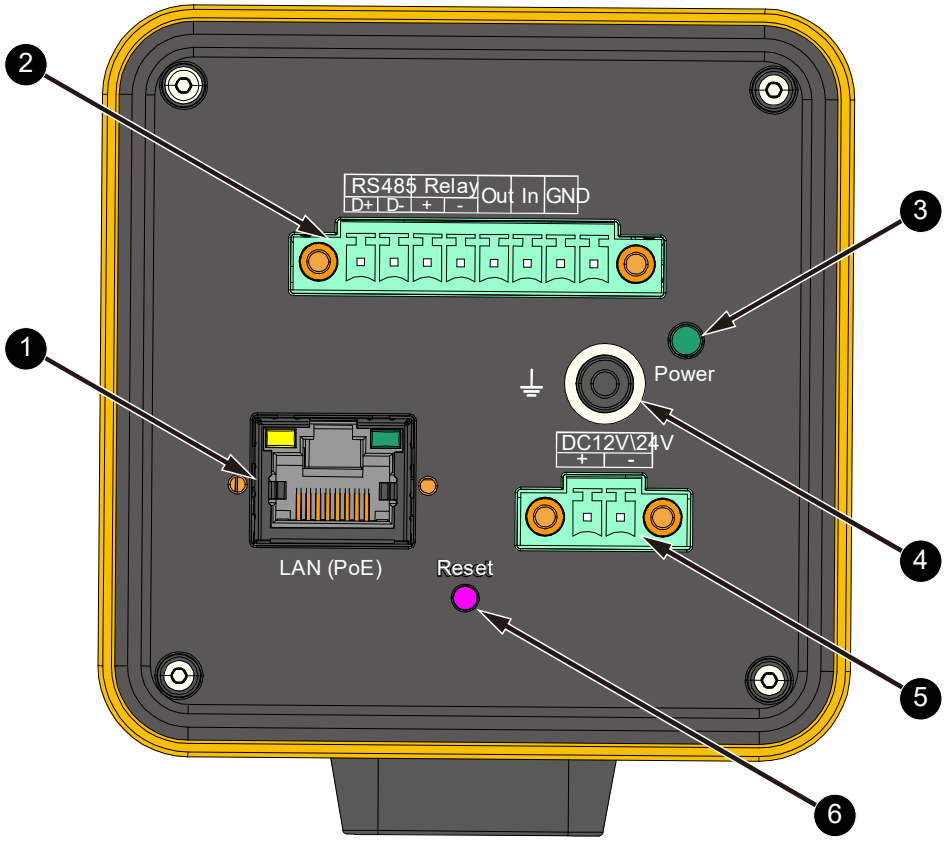


Figure 5. Product interfaces

Table 4. Product interface definition

<table>
<tr><th>Item</th><th>Name</th><th>Description</th></tr>
<tr><td>❶</td><td>LAN interface</td><td>RJ45 socket. Gigabit Ethernet port. Power over Ethernet (PoE) supported.</td></tr>
<tr><td>❷</td><td>Communication interface connector</td><td>Communication socket.
RS485 communication interface, relay input, optocoupler input/output and signal ground included. See table below.
<table>
<tr><th>Interface</th><th>Pin</th><th>Description</th></tr>
<tr><td rowspan="2">RS485</td><td>D+</td><td>Data terminal</td></tr>
<tr><td>D-</td><td>Data terminal</td></tr>
<tr><td rowspan="2">Relay</td><td>+</td><td>Positive relay pole 3.3 V to 24 V, 1.5 A</td></tr>
<tr><td>-</td><td>Negative relay pole</td></tr>
<tr><td rowspan="2">Optocoupler</td><td>Out</td><td>Optocoupler output. 3.3 V to 24 V, 35 mA</td></tr>
<tr><td>In</td><td>Optocoupler input, 3.3 V to 24 V, 5 mA to 15 mA</td></tr>
<tr><td>Signal ground</td><td>GND</td><td>Signal grounding</td></tr>
</table></td></tr>
<tr><td>❸</td><td>Power indicator</td><td></td></tr>
<tr><td>❹</td><td>Functional earth</td><td></td></tr>
<tr><td>❺</td><td>Power interface</td><td>DC12/24 V.
+: Connect to the positive pole of the power supply
-: Connect to the negative pole of the power supply</td></tr>
<tr><td>❻</td><td>Reset button</td><td>Restore factory settings. IP address is reset to 192.168.1.100</td></tr>
</table>

Note：Please refer to the SDK documents for detailed operations.