

Moisture & water damage

General information on moisture & water damage

It is often possible to detect moisture and water damage in a house by using an infrared camera. This is partly because the damaged area has a different heat conduction property and partly because it has a different thermal capacity to store heat than the surrounding material.

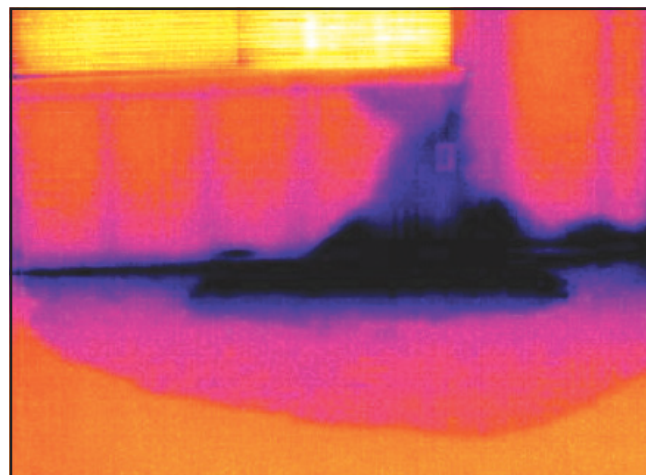
To keep in mind

Many factors can come into play as to how moisture or water damage will appear in an infrared image.

For example, heating and cooling of these parts takes place at different rates depending on the material and the time of day. For this reason, it is important that other methods are used as well to check for moisture or water damage.

Example image

The image below shows extensive water damage on an external wall where the water has penetrated the outer facing because of an incorrectly installed window ledge.



Faulty contact in socket

General information on faulty contact in sockets

Depending on the type of connection a socket has, an improperly connected wire can result in local temperature increase. This temperature increase is caused by the reduced contact area between the connection point of the incoming wire and the socket, and can result in an electrical fire.

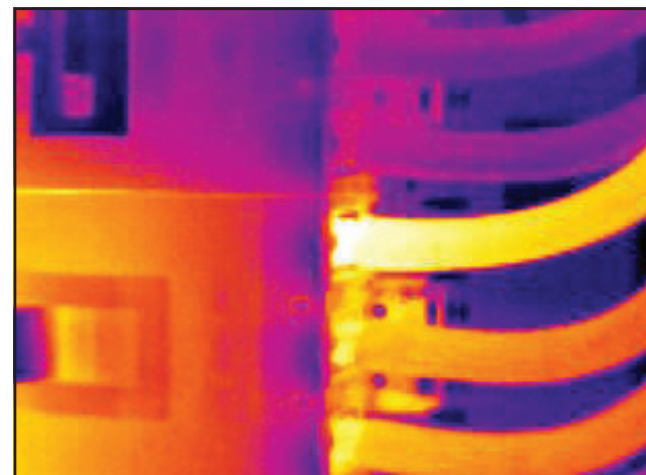
To keep in mind

A socket's construction may differ dramatically from one manufacturer to another. For this reason, different faults in a socket can lead to the same typical appearance in an infrared image.

Local temperature increase can also result from improper contact between wire and socket, or from difference in load.

Example image

The image below shows a connection of a cable to a socket where improper contact in the connection has resulted in local temperature increase.



Oxidized socket

General information on oxidized sockets

Depending on the type of socket and the environment in which the socket is installed, oxides may occur on the socket's contact surfaces. These oxides can lead to locally increased resistance when the socket is loaded, which can be seen in an infrared image as local temperature increase.

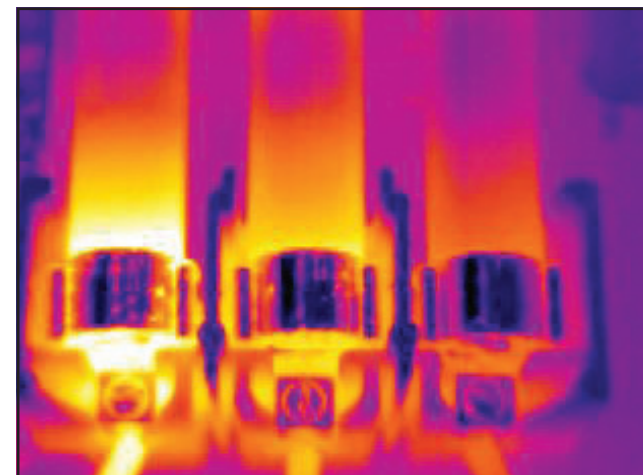
To keep in mind

A socket's construction may differ dramatically from one manufacturer to another. For this reason, different faults in a socket can lead to the same typical appearance in an infrared image.

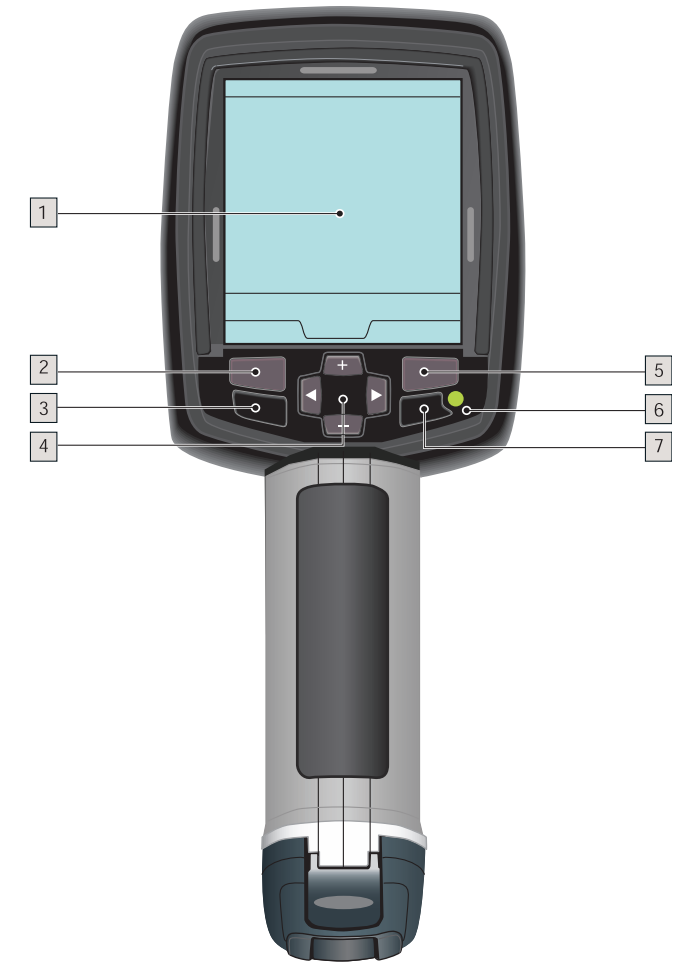
Local temperature increase can also result from improper contact between a wire and socket, or from difference in load.

Example image

The image below shows a series of fuses where one fuse has a raised temperature on the contact surfaces against the fuse holder. Because of the fuse holder's blank metal, the temperature increase is not visible there, while it is visible on the fuse's ceramic material.



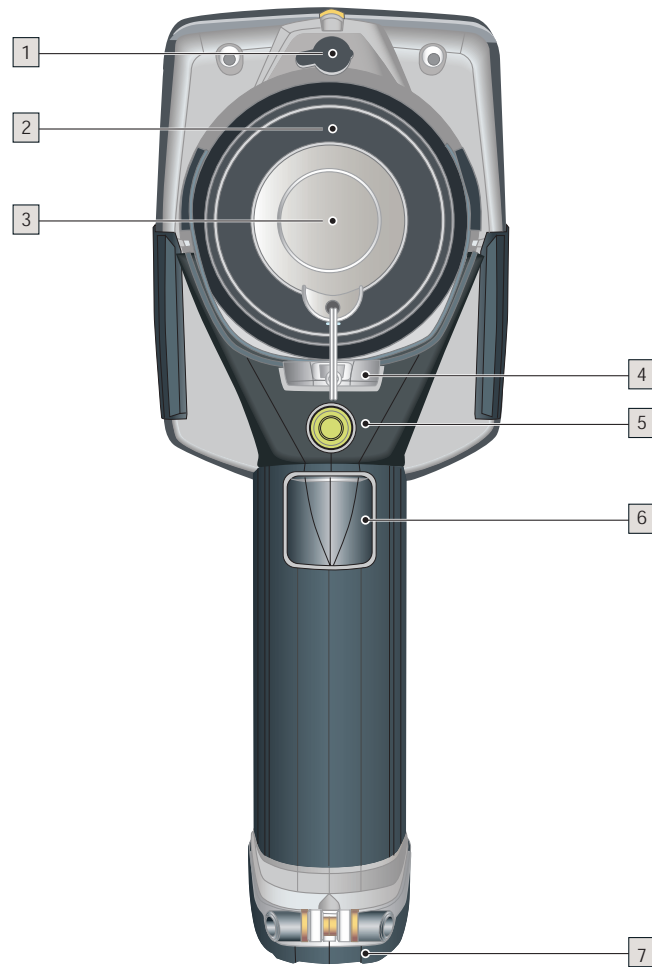
Parts of the camera



- 1 Screen
- 2 Left selection button (Menu)
- 3 Camera-/Image archive-button
- 4 Navigation pad
- 5 Right selection button (Man/Auto)
- 6 Power indicator
- 7 ON/OFF button

See manual for a complete description of these functions.

Parts of the camera



- 1 Laser pointer (with lens cap)
- 2 Infrared lens
- 3 Lens cap
- 4 Tripod mount
- 5 Top trigger to operate laser pointer
- 6 Bottom trigger to save image
- 7 Battery compartment lid

See manual for a complete description of these functions.

Read this first

Focusing

To focus, turn the focusing ring of the infrared lens either clockwise or counter-clockwise.

Auto-adjusting the camera

Before you begin your inspection, it is important to auto-adjust the image. An auto-adjusted image generally makes a good image. Manual mode will allow you to narrow in on a particular detail, but this is a more advanced mode.

- If **M** appears at the bottom right of the screen, press the **Man/Auto**-button once to auto-adjust the image and once to adjust the image manually.
- If **A** appears at the bottom right of the screen, the image is already auto-adjusted and will automatically adjust itself according to the object in the image.

Using the laser pointer

To use the laser pointer, remove its lens cap and press the top trigger on the camera. The laser pointer turns off when you release the trigger.

Saving an image

To save an image, press and release the bottom trigger on the camera.

To keep in mind

- Blank objects may appear as warm or cold in the camera depending on the other objects they are reflecting. Panes of glass, for example, act as "mirrors" and always reflect other objects.
- Avoid direct sunlight on the details that you are thermographing.
- Various types of faults, such as those in a building's construction, may result in the same type of infrared images.

Insulation deficiencies

General information on insulation deficiencies

Insulation deficiencies may result from insulation losing volume over the course of time and thereby not entirely filling the cavity in a frame wall.

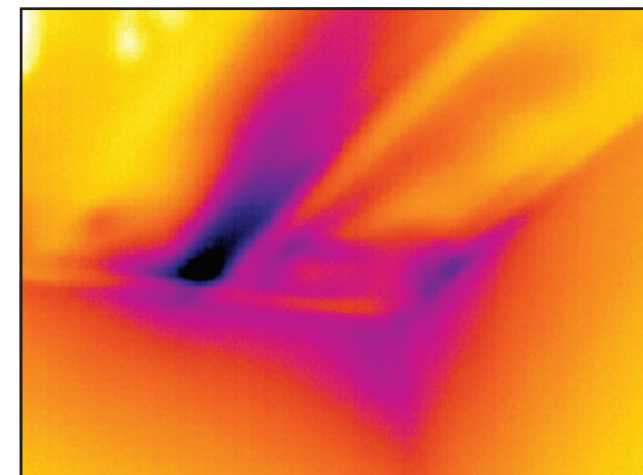
An infrared camera allows you to see these insulation deficiencies because they either have a different heat conduction property than sections with correctly installed insulation, and/or show the area where air is penetrating the frame of the building.

To keep in mind

When you are inspecting a building, the temperature difference between the inside and outside should be at least 10°C (18°F). Studs, water pipes, concrete columns, and similar components may resemble an insulation deficiency in an infrared image. Minor differences may also occur naturally.

Example image

In the image below, insulation in the roof framing is lacking. Due to the absence of insulation, air has forced its way into the roof structure, which thus takes on a different characteristic appearance in the infrared image.



Draft

General information on draft

Draft can be found under baseboards, around door and window casings, and above ceiling trim. This type of draft is often possible to see with an infrared camera, as a cooler airstream cools down the surrounding surface.

To keep in mind

When you are investigating draft in a house, there should be sub-atmospheric pressure in the house. Close all doors, windows, and ventilation ducts, and allow the kitchen fan to run for a while before you take the infrared images.

An infrared image of draft often shows a typical stream pattern. You can see this stream pattern clearly in the picture below.

Also keep in mind that drafts can be concealed by heat from floor heating circuits.

Example image

The image below shows a ceiling hatch where faulty installation has resulted in a strong draft.

