TEMPEST
Fighting for performance

OPERATOR'S MANUAL

for

TEMPEST TIC 4 Series

Professional Thermal Imaging Cameras for Fire Fighters and Search and Rescue

CE certified and RoHS compliant

CERTIFIED
ISO 9001
AB CERTIFICATION

CAUTION:

THIS OPERATOR'S MANUAL MUST BE READ THROUGH CAREFULLY AND COMPLETELY BY ALL USERS AND MANAGERS. THIS THERMAL IMAGING CAMERA MUST BE HANDLED AND USED ACCORDING TO THE MANUFACTURER'S INFORMATION. THIS IS ESPECIALLY IMPORTANT IN HAZARDOUS SITUATIONS AND ENVIRONMENTS.

Version: v1.1 10.09.2020

IMPORTANT POINTS TO NOTE

This thermal imaging camera is for the use of observing thermal sceneries like fire or other heat sources and is to use within the limits described by this manual.

This thermal imaging camera is subject to the Dual Use Regulation (EC) No.428/2009 in the currently valid version.
A violation of this provision may result in criminal prosecution.

This thermal imaging camera is to be returned to the manufacturer for disposal.

In keeping with our policy of continuously improving our products, we reserve the right to change the camera's technical data without prior information at any time.

1 TEMPEST TIC 4.1 and 4.3

2

LEADER TIC 4.1 with 1 button
(detachable optional pistol grip)

LEADER TIC 4.3 with 3 buttons
(detachable optional pistol grip)

TEMPEST TIC 4.1 and 4.3 Long Range 700 and Long Range 1000

TEMPEST TIC 4.1 LR700/LR1000 with 1 button
(detachable optional pistol grip)

TEMPEST TIC 4.3 LR700/LR1000 with 3 button
(detachable optional pistol grip)

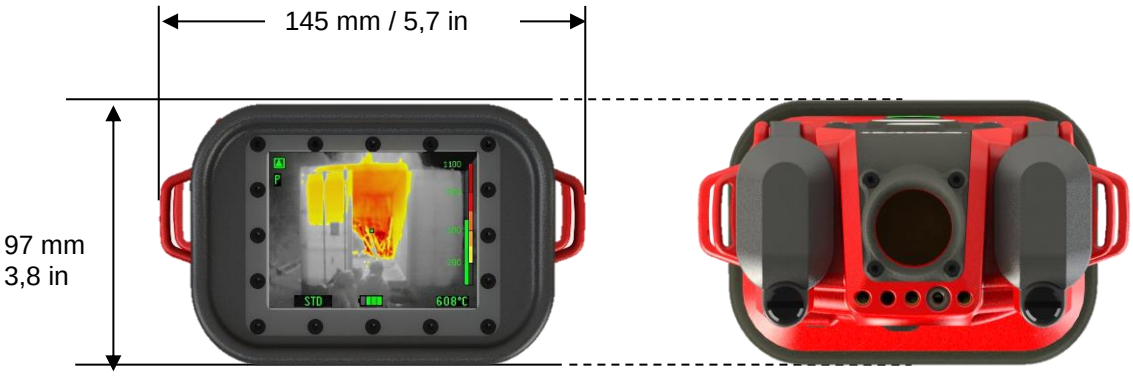
The TEMPEST Long Range series comes with a grey housing and with 2 different Infrared Optics. The LR700 with a theoretical detection range of 700m comes with a 24mm lens and the LR1000 with a theoretical detection range of 1000m comes with a 35mm lens. All other functions like usability, button allocation, video, photo, colorization and other options and accessories are completely the same compared to standard TEMPEST TIC 4.1 or 4.3 TEMPEST Thermal Imaging Cameras. Please see more information in chapter 2.6.

TEMPEST TIC 4.1 small and efficient + 4” display = **1 Button**

Particularly suitable for the first attack. TEMPEST TIC 4.1 offers unbeatable value and best quality, ideal for firefighting, first attack, search for missing persons and fire.

TEMPEST TIC 4.3 efficient and versatile + 4” display = **3 Buttons**

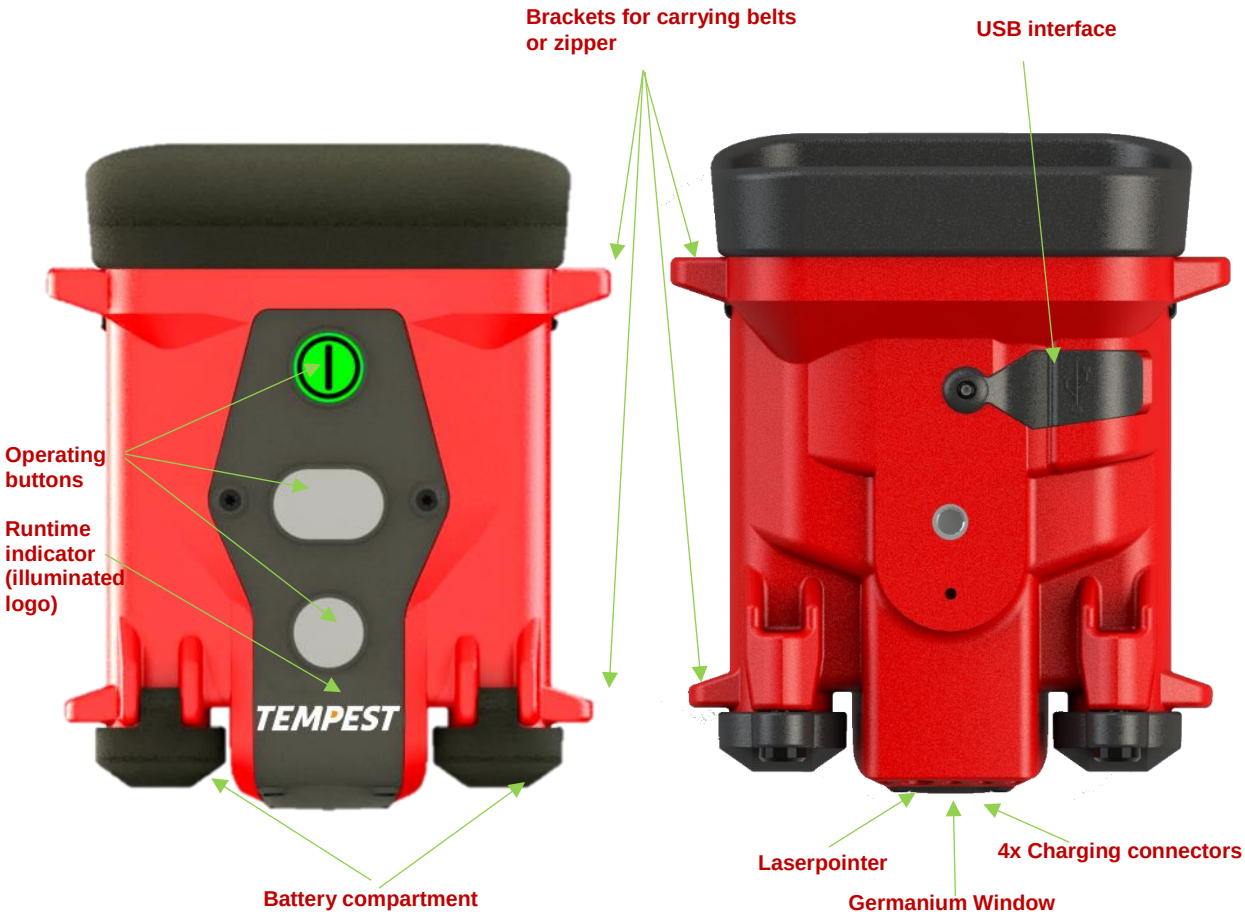
2.1 Dimensions



2.2 Benefits

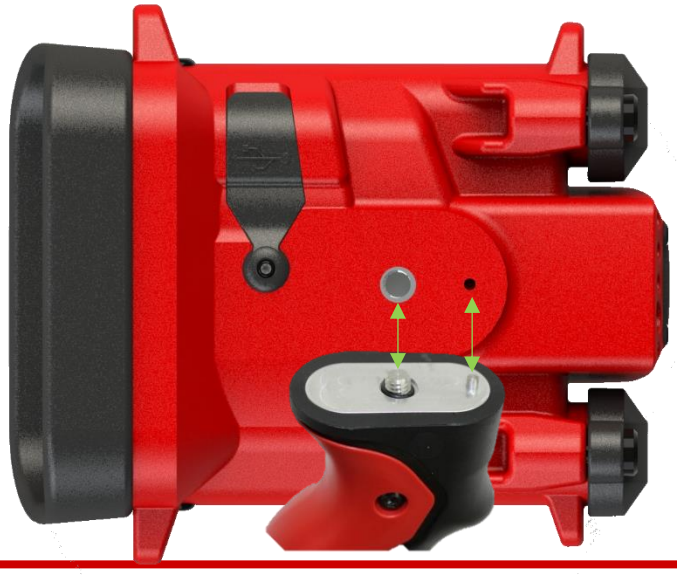
- Compact 175 x 145 x 97 mm, 6,9 x 5,7 x 3,8 inch (without pistol grip)
- Removable Pistol grip (+110 mm/ + 4,3" in height)
- Lightweight 950g (2,1 lb) with 2 batteries, with handstraps (+35g / +0,08 lb), with pistol grip (+165g / +0,36 lb)
- Extra large 4,0“display for detailed visibility
- Ultra wide temperature range: -40°C to +2100°F
- 1 to 5* colorization mode
- Image freeze, picture capture* and video recording*
- Numerical hot-spot temperature
- 6 years warranty on batteries (Best Energy Concept) 5000 battery charging cycles
- > 8 h running time with 2 batteries (5-6h with video recording)
- Germanium window to protect the optics
- Large buttons easy to operate even with gloves
- Digital zoom 2x and 4x *
- Laserpointer for marking areas of interest*
- Analogue output optionally available

3 Camera Setup TEMPEST TIC 4:



3.1 Mounting the Pistol Grip:

The pistol grip is premounted on the camera if ordered with this option. The grip can be easily demounted/mounted within seconds. The necessary tool (standard hex wrench) is part of scope of supply.



3.2 Change of Batteries

The camera's energy design is based on the latest **LiFePO4** (nanophosphate) batteries. These cells are far superior to the usual NiCd and NiMh batteries with respect to:

- up to > 5000 charging cycles and extreme performance even in frost
- No emission of inflammable POTASSIUM HYDRIDE GASES at high temperature

The batteries are kept ready to the left and right in the battery compartments.

The compartments can be easily opened with a coin within seconds.

Batteries and battery packs are processed to guarantee correct polarity. Please insert them into the shaft so that the "*blank*" side (*contact face*) points downwards. Protective class IP67 is only guaranteed if the compartment is tightly closed.

3.3 Aramid protective cover (option)

Use of the heat resistant aramid protective cover is recommended to lower the effort of cleaning and extend the lifetime and operating time of the camera. The camera is additionally protected against mechanical damage and chemicals.

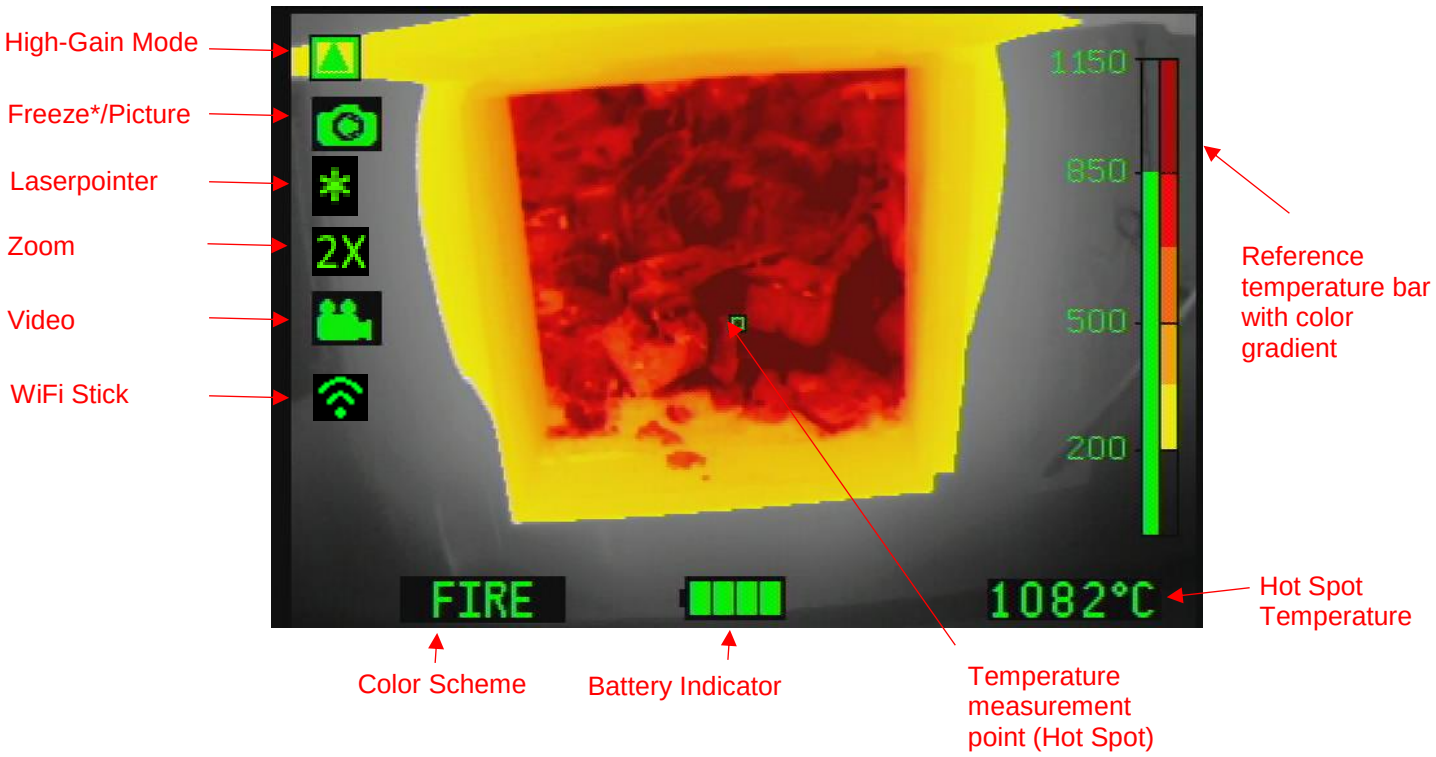
Pull the protective cover over the camera and close the Velcro fasteners. Protective covers wear out with frequent use and can be ordered as spare parts.

The camera can be charged in the charging bay with or without the protective cover.

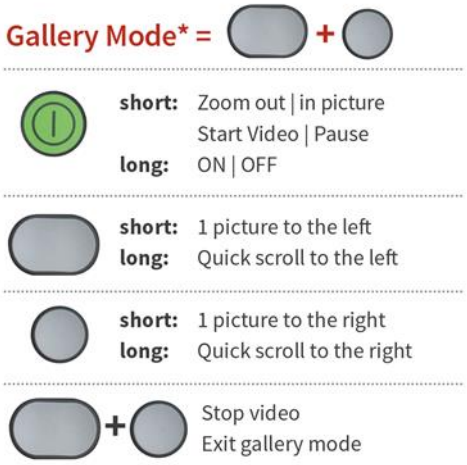
Positions of keys are additionally marked in color.

The protective cover doubles the heat resistant time.

3.4 Screen Elements:



* If only image freeze function is available (TIC 4.1) the symbol turns into F



The SD card symbol on the top indicates the currently used capacity of the internal 8GB storage. The symbol changes in the following linear manner from 0 to 8 GB. The camera can store up to 1000 pictures + 8h video.

If the red symbol appears the next recorded video will overwrite the oldest video on the card.

3.5 Characteristics of TEMPEST TIC 4:

TEMPEST TIC 4	
Dimensions	L.175 x W.145 x H.97 mm (H = +110mm with optional pistol grip)
Weight	950g with 2 batt / 865g with 1 batt (+170g with optional pistol grip)
Display	4“ LCD / 320 x 240 (76.800) px / Backlighted / Brightness: 800 cd/m²
Frequency	60Hz Fps
T°C Range	-40° to +2100°F
Colorization	Std: Fire, Search, Inverse Option: Cold finder and Multicolour
Housing	
Material	PUR / Elastomer
Drop Test	2m on concrete
IP	IP67 / 1 Meter 30 Minutes
Heat resistance	150°C for 15min / 260°C for 5min
Sensor	
Micro bolometer type	Uncooled 17µ Amorphous Silicon aSi Resolution **384 x 288** (110 592 px)
Spectral range	7 – 14 µm
Thermal sensitivity	NETD: <50mK (<0.05°K)
Optic	
Material	Germanium Carbon Coated Protected by a germanium window
Focus	0,35m to infinity / F/1.3 speed
Visual field / FOV	H: 51° / V: 40° / Diagonal: 65°

General	
Power supply	$LiFePO_4$ recharg. batteries (85g)
Running time (20°C) with Eco-Boost-System since October 2018	>8h (2 batt) / >4h (1 batt) >6h (2 batt) with non-active video >5h (2 batt) with recording video
Boot time	< 5 seconds
Charging voltage	12 / 24 VDC or 100-240 VAC
Charging time (for 2 batt / consider half for 1 batt)	Charging bay: ~2h Mains charger: 100% in ~2h, 90% in ~1h30, 80% in ~1h20
Charging cycles	> 5000
Memory (optional)	8GB internal SD card (8h video or 1000 pics)
Warranty	**5 years** on camera/ **6 years** on batteries / **10 years** on thermal sensor / **1 year** on accessories (chargers, charging bay, etc…)
Options	
Removable pistol grip	Picture capture and/or video recording (8GB capacity)
Neck strap in flame retardant material	Vehicle charging bay or mains charger
1 or 2 Retractable lanyards	Carrying case IP67
Protection hood	Wireless video transmission to computer, tablet or smartphone
Removable pistol grip	Picture capture and/or video recording (8GB capacity)
Analogue output (NTSC or PAL)	

3.6 Characteristics of TEMPEST TIC 4 Long Range LR700 and LR1000:

TEMPEST TIC 4 LR700 and LR1000	
Dimensions	L.175 x W.145 x H.97 mm (H = +110mm with optional pistol grip)
Weight	950g with 2 batt / 865g with 1 batt (+170g with optional pistol grip)
Display	4“ LCD / 320 x 240 (76.800) px / Backlighted / Brightness: 800 cd/m²
Frequency	60Hz Fps
T°C Range	-40° to +2100°F
Colorization	Std: Fire, Search, Inverse Option: Cold finder and Multicolour
Housing	
Material	PUR / Elastomer
Drop Test	2m on concrete
IP	IP67 / 1 Meter 30 Minutes
Heat resistance	150°C for 15min / 260°C for 5min
Sensor	
Micro bolometer type	Uncooled 17µ Amorphous Silicon aSi Resolution **384 x 288** (110 592 px)
Spectral range	7 – 14 µm
Thermal sensitivity	NETD: <50mK (<0.05°K)
Optic	
Material	Germanium Carbon Coated Protected by a germanium window
Lens	24mm for TEMPEST TIC LR700 35mm for TEMPEST TIC LR1000
Focus	10m to infinity / F/1.2 speed for TEMPEST TIC LR700 5m to infinity / F/1.5 speed for TEMPEST TIC LR1000
Visual field / FOV	H: 13° / V: 9.8° / Diagonal: 16.3° for TEMPEST TIC LR700 H: 9.4° / V: 7° / Diagonal: 11.7° for TEMPEST TIC LR1000

General	
Power supply	$LiFePO_4$ recharg. batteries (85g)
Running time (20°C) with Eco-Boost-System since October 2018	>8h (2 batt) / >4h (1 batt) >6h (2 batt) with non-active video >5h (2 batt) with recording video
Boot time	< 5 seconds
Charging voltage	12 / 24 VDC or 100-240 VAC
Charging time (for 2 batt / consider half for 1 batt)	Charging bay: ~2h Mains charger: 100% in ~2h, 90% in ~1h30, 80% in ~1h20
Charging cycles	> 5000
Memory (optional)	8GB internal SD card (8h video or 1000 pics)
Warranty	**5 years** on camera/ **6 years** on batteries / **10 years** on thermal sensor / **1 year** on accessories (chargers, charging bay, etc…)
Options	
Removable pistol grip	Picture capture and/or video recording (8GB capacity)
Neck strap in flame retardant material	Vehicle charging bay or mains charger
1 or 2 Retractable lanyards	Carrying case IP67
Protection hood	Wireless video transmission to computer, tablet or smartphone
Removable pistol grip	Picture capture and/or video recording (8GB capacity)
Analogue output (NTSC or PAL)	

Characteristics and Limits of TEMPEST TIC 4 Long Range LR700 and LR1000:

Detection: You can see something is there
Recognition: You can see that a person is there
Identification: You can see what the person is doing (e.g. holding something)

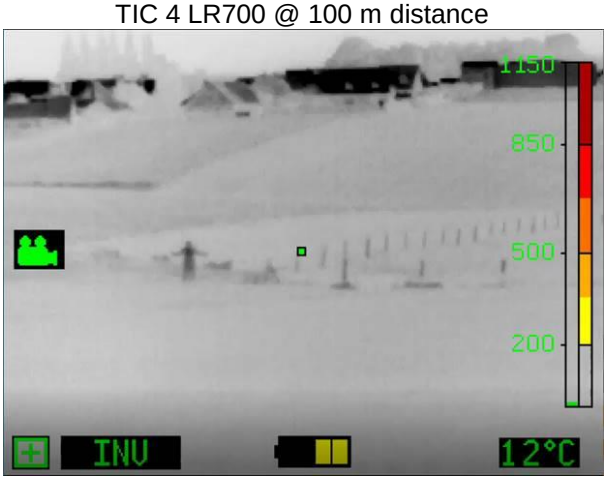
	Estimation of Ranges of TEMPEST LR TICs 17µm sensor, good weather conditions					
	Human Target (1,8m x 0,6m)			Vehicle Target (2,3 x 2,3 m)		
	Detection Range*	Recognition Range*	Identification Range*	Detection Range*	Recognition Range*	Identification Range*
TIC Standard	180 m	40 m	30 m	500 m	100 m	75 m
LR700	700 m	130 m	100 m	1700 m	350 m	260 m
LR1000	1000 m	200 m	150 m	2400 m	500 m	370 m

*Please note that these values are calculated values at ideal conditions. Real values can vary due to atmospheric conditions.

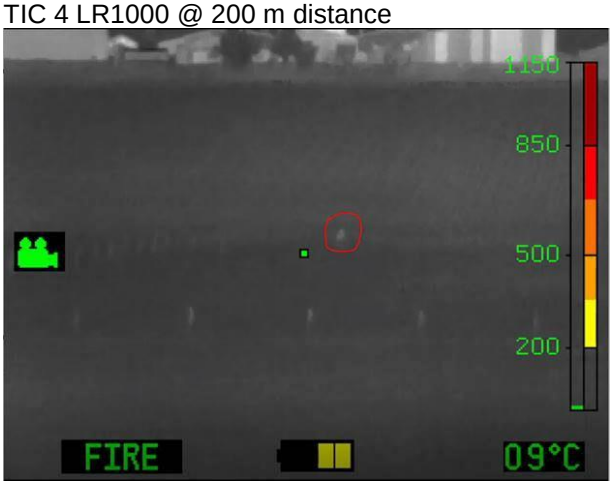
Sample Pictures under real conditions of human detection of TEMPEST TIC LR700 and LR1000:

TIC 4 LR700 @ 150m distance

TIC 4 LR700 @ 100 m distance



TIC 4 LR1000 @ 200 m distance



TIC 4 LR1000 @ 100 m distance

4 Get started

4.1 ON / OFF

On/Off key (GREEN) must be pressed to start the camera.

A start-up screen with TEMPEST logo will appear and the infrared image can be seen within 5 seconds.

Press the On/Off key for at least 5 seconds to switch off the camera. If the screen goes off, the camera is switched off.

Only for models with video/picture feature: The video/picture function and gallery mode need about 10-15s after start-up to be ready to use.

4.2 Color Schemes:

4.2.1 The TEMPEST TIC 4 offers up to 5 color schemes

FIRE

Dark red > 850 °C / 1562 °F
Red > 675 °C / 1247 °F
Orange > 500 °C / 932°F
Dark yellow > 350 °C / 662°F
Yellow > 200 °C / 392 °F
White = Hot
Black = Cold

Switching on any model, the TEMPEST TIC will automatically start in "fire-fighting mode"

SEARCH

The 7 hottest percent of the scene are coloured continuously from Red, Orange to Yellow.

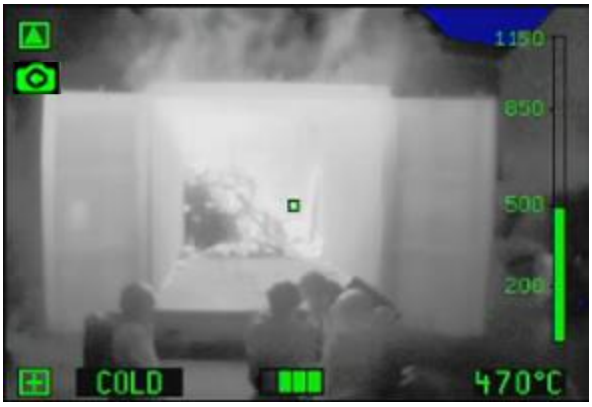
People or hot-spot searches

INVERSE

• White=cold
• Black = hot

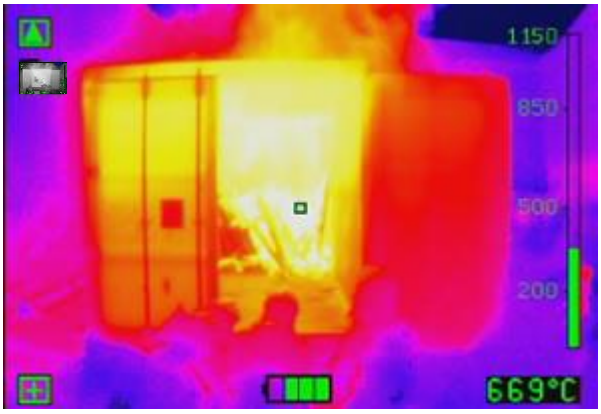
Coloring unchanged

For daylight scenes
For filling level indication



COLD FINDER

Blue color for coldest areas



MULTICOLOR

For Industrial applications

Hazardous material use
For filling level indication

Color schemes except for FIRE mode are marked by a symbol at the bottom left 

4.2.2 The 3 sensitivity levels are automatically adjusted:

- Lower temperature range: -40 to + 300 °F
- Medium temperature range: -40 to + 932 °F (display on screen: )
- Upper temperature range: -40 to + 2100 °F (display on screen: )

4.3 Other screen elements:

4.3.1 Battery display: 

This display informs about the charging status of the battery. A fully charged battery is displayed entirely green (4 bars). 2 yellow bars are displayed from about half of battery run-time onward. A red bar is displayed for the last quarter of battery run-time. Before the system shuts down, the battery symbol is blinking at least for the past 5 remaining minutes.

4.3.2 Shutter Symbol:

The shutter is an important mechanical component of the camera, and is needed for recalibration of the sensor. Upon recalibration, a short interruption of the display for less than 1 second is generated, in which a green square is displayed in the upper left screen corner, and a low clicking can potentially be heard.

4.3.3 Overheat Warning (blinking) 

Warning against high temperature in the infrared sensor. The camera does not switch off automatically. It is highly recommended, though to put the camera in cooler areas immediately when this symbol appears. Otherwise the camera can be irreversibly damaged.

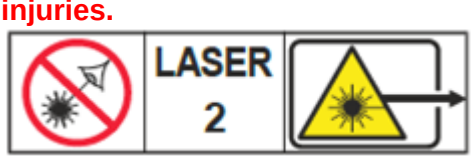
4.3.4 Zoom 

The zoom function is displayed by showing 2X or 4X at the left edge of the display.

4.3.5 Laser pointer 

The laser pointer is activated or deactivated by pushing the round grey button  for >2 seconds. In any case it will be deactivated automatically after 30 seconds. If the laser is active it is displayed by a green star at the left edge of the display.

The laser range finder power output is less than 1mV. In case of laser exposure, the natural reflex to blink and turn your head is enough to protect yourself from eye injuries.



LASER RADIATION / DO NOT STARE INTO BEAM / CLASS 2 LASER PRODUCT / DIN / EN60825-1:2015-07 / λ = 650nm P0 1mW

4.3.6 Temperature "measurement point" – Hot Spot

The Hot Spot allows reading out temperature information of objects. The sensitive measurement point in the middle of the screen for this purpose is therefore to be directed on to the object.

A fixed emission coefficient of Ɛ=0.97 is set in the factory. Actual temperatures may differ depending to the density of the material, its surface composition, and distance from the measurement object.

4.3.7 Digital temperature

The temperature read out in the measurement point is displayed as a digital value in the lower right corner of the image, starting a few seconds after the live image is displayed. This corresponds to temperature measured by the Hot Spot in the middle of the screen. Please note that real temperatures can differ from indicated temperatures due to various thermal emissivity of objects.

4.3.8 Temperature bar

The temperature bar is the graphical display of the temperature read out in the hot spot. A temperature bar with 5 color levels is additionally displayed for the color schemes FIRE/STD and INV. Temperature values are displayed in the respective mode to the left near the bar.

4.4 Freeze / Picture function (option)

Areas that are difficult to access, e.g., sewer shafts, etc., which make “reading off” displays difficult or impossible, can be evaluated using the freeze or still image function.

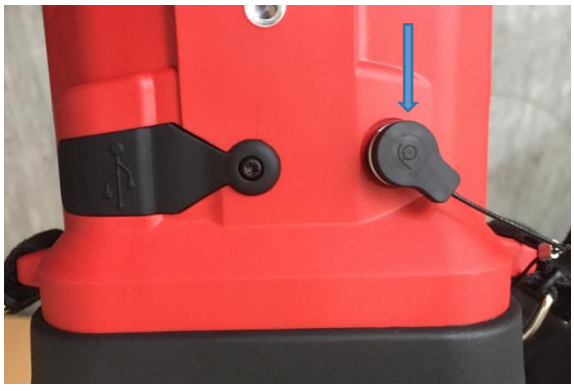
It is activated by shortly pressing the On / Off key. The pictures freezes and can be shown to other people. When the still image is displayed, it can be analyzed with different color schemes.
For models without picture function the screen shows F, for model with picture function the screen shows  on the left side and the picture will be saved on the internal mass storage camera.

By pressing the On / Off key again it switches back to the live mode. The  / F in the display disappears.

The pictures can be viewed in the Gallery-Mode, directly at the camera by pressing the Buttons  simultaneously, or can be downloaded via the USB Connector (Details see in section <Download Pictures and Videos>)

4.5 Analogue Video Output (option)

The TIC 4 camera can be optionally equipped with an analogue video output. The socket is IP67 rated and the cable comes with 5m and open end in the standard version. The cable can be extended by the customer up to 30m without additional video amplifier.



4.6 Video function (option)

Long pressing of the  Button, the video recorder of your TEMPEST TIC is operating. It is displayed by the symbol  for record on the left side of the screen. If an error appears at this point, the recorder is not working and an error message appears.

To stop the video recording, press the same button long again.

While recording a picture can be taken, the color schemes can be switched and the zoom can be activated as well.

The videos can be viewed in gallery mode, directly at the camera by pressing the Buttons  simultaneously, or can be downloaded via the USB Connector (Details see in section <Download Pictures and Videos>)

Please note: video recording, picture capture and gallery mode are only available about 10-15 seconds after switching the camera on.

The maximum recording time is 8 hours for videos and max 1000 pictures. The recorded video is split in sequences of 10 minutes. If the 8GB internal SD card is full, the oldest video sequence is automatically overwritten. In case of taking out both batteries when the camera is running or the camera shuts down due to low batteries, the last video sequence is stored.

4.7 Downloading Pictures and Videos

For downloading recorded data, connect the TEMPEST TIC with the USB cable to your computer. The USB cable is scope of supply if the video option is ordered. Start or restart the camera and the camera is installed automatically. If the connection is successful, the camera display shows **USB** after about 10-15s. The camera will appear as a normal mass storage camera named TEMPEST TIC4 on your computer. The recorded data can be downloaded or deleted from the DCIM folder.
The videos and pictures names include the date and time information.

Example:
img-yyyymmddhhmmss
vid-yyyymmddhhmmss-000

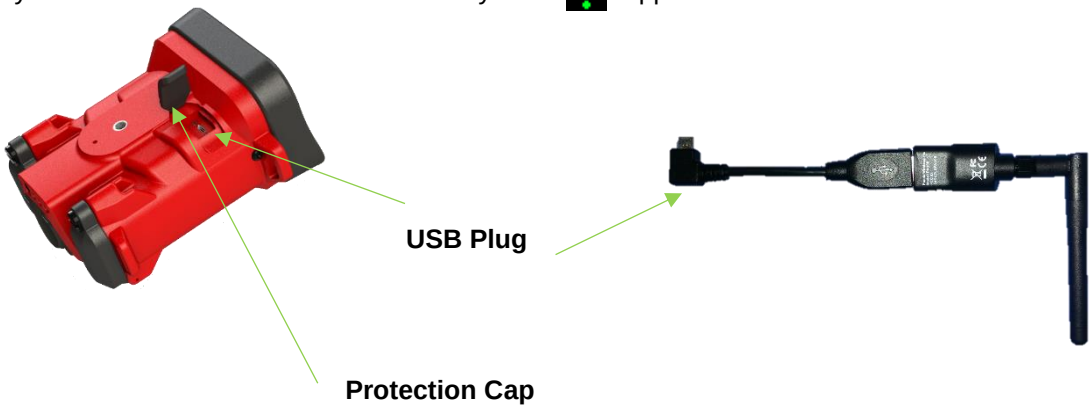
Disconnect the USB camera and remove the cable after download and restart the TEMPEST TIC 4.

4.8 Wireless Video transmission (optional)

Use the heat resistant protection cover to mount the WiFi antenna to the TEMPEST TIC.
Insert the Antenna into the stripes in the cover:

Then mount the protection cover on the handstrap:

Shut down your TEMPEST TIC, then connect the Wifi antenna by opening the protection cap and plug it into the USB port. After the USB Wifi Stick is properly mounted, the Camera can be switched on, then it is ready to transmit the live video and a WiFi symbol appears.



4.9 Establish the Live Video Transmission

The live Video can be viewed on a cell phone (Android, iOS) with Wifi connectivity, or a PC/Notebook equipped with a Wifi antenna. An USB Wifi antenna for i.e. PC is available as an accessory if needed.

As soon as the TEMPEST TIC is ready it can be found as a WiFi access point in your Wlan list:
By default the values are as follows:

SSID : TEMPEST TIC xxxxxx
Password: TICxxxxxx

xxxxxx=Serial number of camera

Up to 3 clients may establish a connection simultaneously. To view the live-stream connect your client to the access point and open an appropriate application (e.g. VLC media player (freeware)).

Once the VLC player is installed on you smartphone, tablet or computer it needs to be configured to establish a connection:

1. Open the menu Media/
2. Open Network Stream
3. Within the combo-box labeled "Please enter a network URL: **udp://:1234** and hit "Play".

Please note: The menus can slightly differ depending on hardware, operating system and player version.

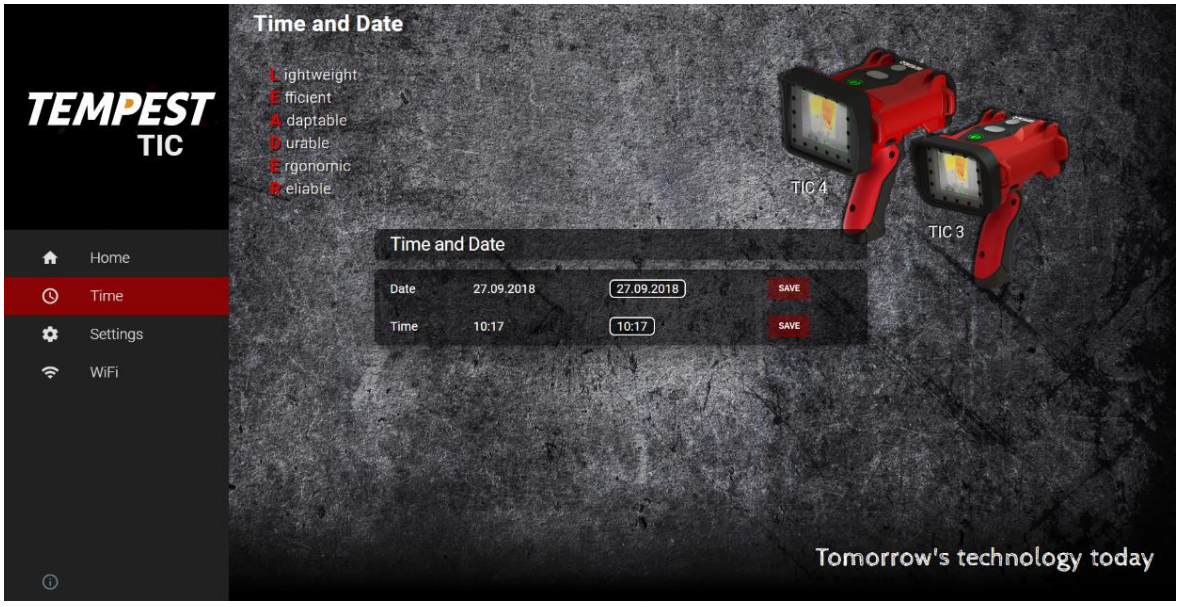
While streaming the gallery cannot be accessed. In order to stop streaming turn off the TIC and unplug the WiFi-stick.

4.10 Configuration of the TEMPEST TIC (Date/Time/SSID/Password/°C/F)

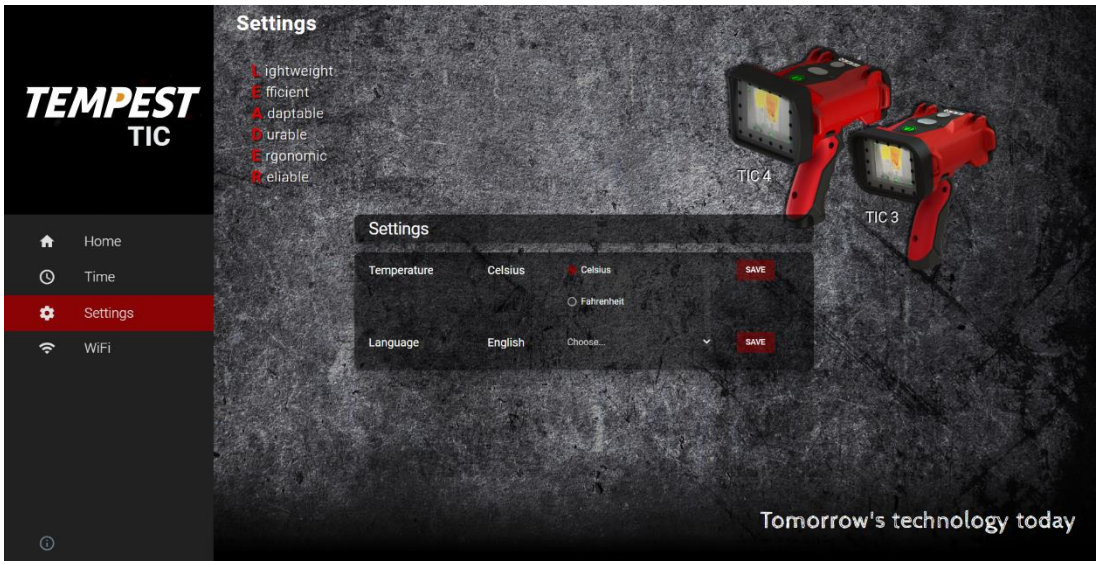
To configure the TEMPEST TIC please install the Software provided on the camera or download the latest version from our webpage.

Connect the TEMPEST TIC with an USB cable to your PC, turn on the TEMPEST TIC and open the camera named TEMPEST TIC 4 on your Explorer.
In the folder named “TEMPEST TIC 4 Configuration” you can find the install files for Mac and Windows 32bit and 64bit version. Please install the correct version and restart your computer. After successful installation you will find the entry TEMPEST TIC 4 in your program list. Start the TIC 4 Configuration and a browser window with the start screen will appear.

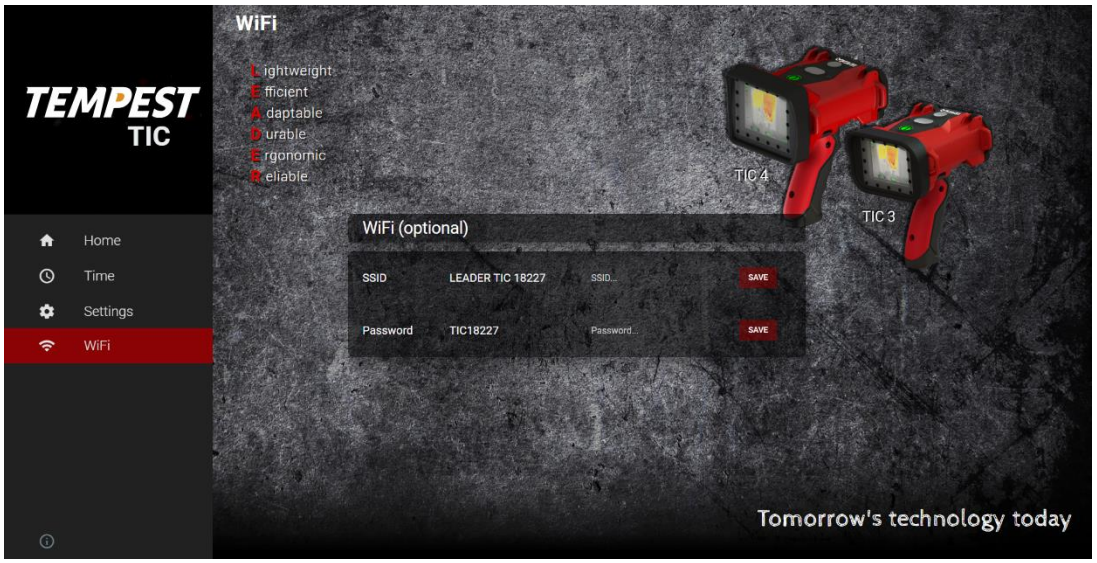
To adjust the time and date click on TIME, change the values in the framed box and click on SAVE.



In SETTINGS you can choose the temperature units Celsius or Fahrenheit and store with SAVE.



To change the SSID and Password, click on WIFI, set the new values and click on SAVE.
To disable the password leave the “Password” field empty and press save. Afterwards “Password DISABLED” will be displayed.



5 Charging the batteries:

The batteries can be comfortably charged in the camera! Only the charger delivered with the camera is to be used. It has the required electronics and software to charge the batteries safely, quickly and carefully. Similar chargers meant for other cells destroy the batteries and may cause consequential damage. The manufacturer does not assume any liability for and does not provide any guarantee against damage resulting from using other chargers.

SAFETY RULES:

SAFETY RULES ARE ALWAYS TO BE RESPECTED IN ORDER TO GUARANTEE THE FUNCTION AND SAFETY OF THE CHARGER. THE MANUFACTURER DOES NOT ASSUME ANY LIABILITY OR GUARANTEE FOR NON-COMPLIANCE

- **THE BODY OF THE CHARGER WORKS AS A HEAT RADIATING SURFACE. PLACE IT IN A MANNER THAT HEAT CAN BE DISSIPATED FROM ITS SURFACE.**
- **IF THE CHARGER OR BATTERIES BECOME TOO HOT, THEY NEED TO BE REMOVED FROM THE POWER SUPPLY IMMEDIATELY. AN OPERATING TEMPERATURE OF 45 °C IS ABSOLUTELY NORMAL FOR QUICK CHARGE.**
- **THE CAMERA IS TO BE OPERATED ONLY WITH ORIGINAL BATTERIES (LIFEPO4) FROM THE MANUFACTURER, BATTERIES OF OTHER MANUFACTURERS ARE NOT PERMITTED.**
- **THE CHARGER IS ONLY CONFIGURED FOR CHARGING THE CAMERA'S BATTERIES. NEVER CHARGE OTHER BATTERIES WITH THE CAMERA.**
- **DO NOT CHARGE IN WET ENVIRONMENTS (E.G. ON WET GRASS).**
- **DO NOT OPEN THE CHARGER, IF THERE ARE MALFUNCTIONS, CONTACT YOUR SERVICE CONTACT.**
- **NEVER CLEAN THE CHARGER WITH AGGRESSIVE SUBSTANCES CONTAINING SOLVENTS.**

5.1 Rechargeable battery technology TEMPEST TIC

LiFe-PO$_4$

(Lithium iron phosphate battery)

Properties:

- intrinsically safe
- no flammable degassing when heated up
- extremely tolerant to overcharging / deep discharging
- no memory effect
- minimum self-discharge
- extremely tolerant against vibration/knocks/shocks
- very high readiness of operation even at temperatures < -20 °C
- very high life cycle > 5000 loading cycles without maintenance

The TEMPEST TIC is fully functional even with a single rechargeable battery.

If the thermal image camera (TIC) is operated with 2 rechargeable batteries, you can remove one rechargeable battery and replace it in operation without having to switch the TIC off.

The runtime highly depends on camera model and options but can be indicated from 5 to 8h with two batteries.

Charging time:
~ 2 hours with charging bay
~ 2 hours with charging cable

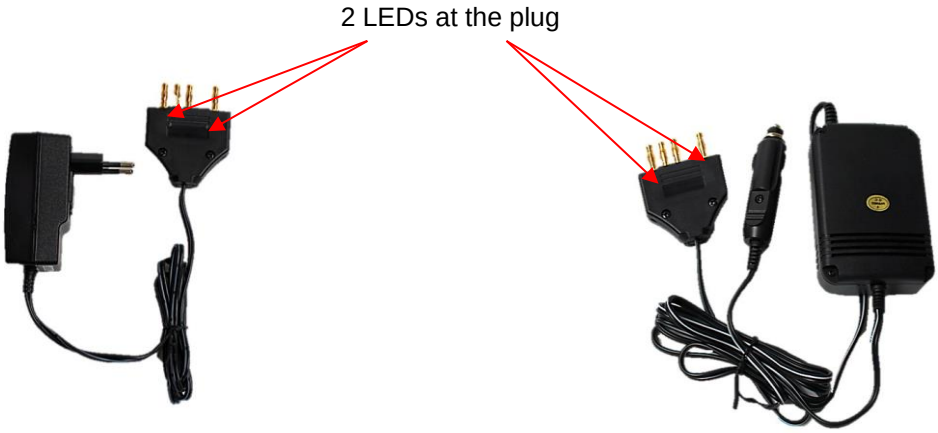
Charging Temperature: 32°F – 113°F (0°C – 45°C)

⚠ Do neither replace nor charge batteries when in hazardous atmosphere.

In case of disposal please follow your national regulations for proper disposal of Li-based batteries.

5.2 Charging with the cable charger 100-240V or 12-24V (option)

1. Use only the delivered original charger.



2. Connect the charging cable to all **4 charging contacts** of the camera as shown. If turned on, the camera will switch off automatically.

3. The charger will automatically start charging. The two LEDs at the plug will light up **ORANGE**.
4. Charging is automatically terminated and the LEDs at the plug will light up **GREEN** after charging is complete.

Each rechargeable battery has its own LED status lamp at the plug:

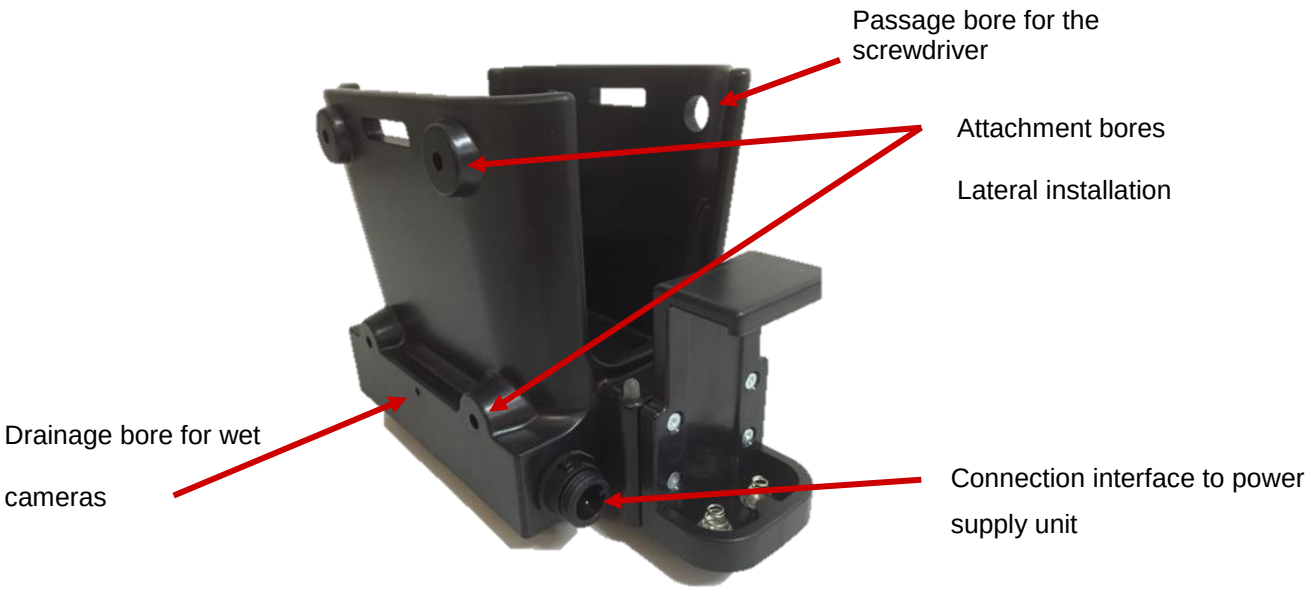
Left battery with corresponding status LED on the charger

	LED left battery	LED right battery	Information
Cable charger connected to power supply	green	green	Camera is not connected
The cable charger is connected to the power supply and the camera	green	green	Both rechargeable batteries are completely charged
	orange	orange	Both rechargeable batteries are being charged
	orange	green	Rechargeable battery left is being charged Rechargeable battery right is completely charged
	green	orange	Rechargeable battery left is completely charged Rechargeable battery right is being charged

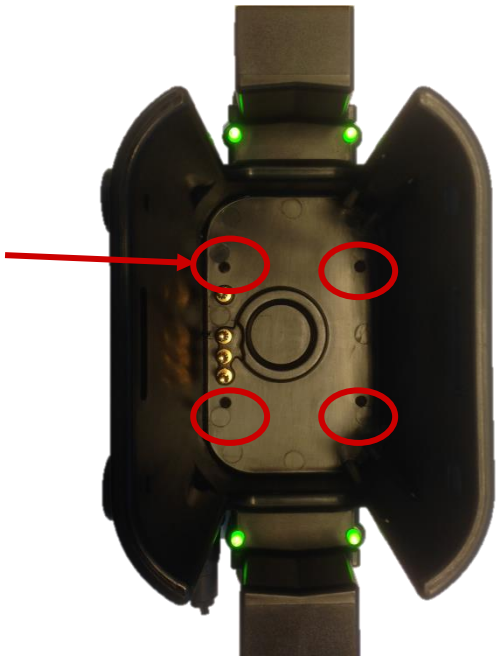
5.3 Vehicle Charging Station (option)

The vehicle charging station has an integrated smart charger for charge maintenance. 4 x LED display the charging process (1 x per rechargeable battery). Simultanous charging of 1 or 2 spare rechargeable batteries on the left and right side is possible.

The charging tray can be bottom or wall mounted via the prepared bores. Screws are not within scopy of supply. The maximum tighening torque is 2 Nm.



4 x Attachment bores
for front installation



Charging Bay	Characteristics
Material	PC/ABS
Weight	ca. 1,32 lb
Temperature	-4°F to 176°F (-20°C to 80°C) *(While charging the batteries, the temperature of the batteries should be in the range between 32 and +113°F)*
Dimensions for charging bay with extra battery charger	ca. 230(L) x 105 (W) x 125(H) mm, (90,5"(L) x 41,3" (W) x 49,2" (H))
Dimensions for charging bay without extra battery charger	ca. 170(L) x 105 (W) x 125(H) mm, (67"(L) x 41,3" (W) x 49,2" (H))
Power	<50W
Power supply	100-240 VAC or 12/24V VC
Protection Class	IP42

5.4 Connection of the vehicle charging station to the supply voltage:

The connection to the supply grid in the vehicle is established via the enclosed connection cable. Depending on supply voltage, the corresponding mains unit/cable must be used.

THE DELIVERY INCLUDES EITHER THE 12/24VDC OR THE 100-240VAC POWER SUPPLY UNIT

Power supply unit 12/24 VDC
(incl. melt fuse)

Power supply unit 100V-240 VAC

(short-circuit-proof, protective insulation,protective low voltage <50V)

Different plugs included (US, EU, UK, AUS)

5.5 Charging with the vehicle charging station:

Push the TIC into the charging tray to the stop (lens first). The charging contacts of the camera are automatically connected to the charging plugs of the charging tray and the corresponding LEDs light up red.

4 x charging contacts and charging plug

The TIC can be inserted into the charging tray either with or without the protective hood.

Once the TIC has been inserted, charging will start automatically.

Once all rechargeable batteries are charged, the system will switch to maintenance mode.

The battery voltage is monitored continuously in this mode, and the battery automatically recharged if required.

LED display: A total of 4 rechargeable battery packs at most can be charged at the same time (2 in the TIC and 2 others outside of it)

GREEN Supply voltage is pending, no rechargeable battery present or fully charged

RED Charging

6 MAINTENANCE

- The instructions for care, use and maintenance given in this manual must be understood and carefully followed before the equipment is put into use.
- All personnel involved in repair actions must have received appropriate training from the manufacturer.
- Clean the camera with water or mild soapy water.
- Clean the germanium protective disc with a soft cloth.
- Clean the display with a soft cloth.
- Keep the camera in a suitable, safe place, e.g., in the carry case or the vehicle charging tray.

NOTE:
Do not use any solvents or acids to clean the camera. Use of such substances may permanently damage the camera and destroy the body's properties and the functionality in general.
Do not intentionally submerge the camera too long under water or subject it to high water pressure.
Follow the cleaning instructions of this user's manual. Damage due to contravention are not covered under the warranty claim.

WARNING
Do not disassemble your thermal imaging camera yourself. In case of a malfunction, the camera needs to be sent to the manufacturer for inspection immediately. Disassembly causes any warranty claims to lapse.
The thermal imaging camera is not an independent safety system. Thermal imaging technology is not a replacement for common fire-fighting measures. It needs to be understood as an accessory that enables the user to make effective decisions.
User must be trained in: Uses and limitations of technology, its application, interpretation of thermal images.
Contravention may lead to death and damage health, the equipment and other objects.

7 WARRANTY

TEMPEST guarantees the first buyer with delivery of defect-free equipment, and correct design, and gives the following guarantees (material plus labor) with proper use and services, valid from the delivery date:

5 years on the thermal imaging camera

6 years on the batteries (with the physical aging characteristic)*

10 years on the thermal image detector

1 year on accessories (chargers, charging bay, etc…)

*LiFePO4 battery cells are subject to natural aging like any other battery technology. The associated natural loss of charging capacity can be indicated at about 5% per year. Thus, battery cells must show at least 70% of the original charging capacity after 6 years.

TEMPEST reserves the right to check parts returned within the warranty period and only to repair or replace them if the following conditions are fulfilled:

The object must be sent to TEMPEST

The object may not be changed with respect to its original configuration.

The object may not be misused, operated wrongly, overloaded or damaged during transportation.

TEMPEST is not responsible under any circumstances for damage or loss and is not answerable for any consequential damage and indirect or incidental losses that the client may suffer. This also applies to the case where TEMPEST was informed about the possibility of these eventualities.

Repair of the products

It is written that the customer shall not repair the product this will **void the product warranty** and invalidate IP67 and other certifications. The customer must return to the assigned dealer who will arrange the return to the manufacturer.

8 SAFETY INSTRUCTIONS

- **ESSENTIAL READING**
  - This manual is valid for the TEMPEST TIC 3 range of thermal imaging cameras.
  - It is assumed that personnel using these cameras are professional users and it is recommended that they be fully trained by a qualified instructor in the techniques associated with their use.
  - Should you have any doubts or require clarification of the instructions given in this manual, please contact you authorized TEMPEST group representative.
  - The TEMPEST TIC 3 thermal imaging camera is approved for electromagnetic compatibility [EMC] as laid down by the European Directive EMC Directive 2014/30/EU. This compliance is based on the harmonized European standards EMC Testing to EN 61000-6-3:2007 & EN61000-6-2:2005.
  - LEADER Photonics is committed to the production of consistent, high quality products in accordance with European Directives and technical standards as well as the international standard EN ISO 9001:2015 which is an independently verified quality system.
  - LEADER Photonics is an EN ISO 9001:2015 quality standard approved manufacturer and supplier.

EXPLOSION HAZARD WARNINGS

When operating the unit in a Division 2 Hazardous location:

⚠ - Do not connect or disconnect in hazardous atmospheres.

⚠ - Do not connect or disconnect when energized or equivalent.

⚠ - Do not replace batteries when in hazardous atmosphere.

The unit is battery operated and is not connected to an equipment supply.

	Important guidelines for safe and efficient operations.
	Carefully read through the User's Manual before operating the device.
	Familiarize yourself thoroughly before the initial use of the device.
	Please continue to observe all normal standard operating procedures and safety measures while fighting a fire.
	Shift the camera off before storing in the transport case. Loss of energy and dangerous overheating would be the consequence of storing running equipment in insulated
	Recharge batteries after every use.
	Observe the battery charge indicator during operation
	Perform regular and periodic function checks.
	Do not throw the device
	Never look directly into the sun with the device.
	Do not use the device in environments which are susceptible to explosions.
	Do not open the device or attempt to disassemble it.
	Do not use liquid cleaners or chemical dusters to clean the device.
	Do not immerse the device into liquid cleaners.
	Do not use a brush or any other hard type of cleaning material (sharp corners, rough surface) to clean the device.
	Handle the device carefully and always store it in a dry and clean environment at room temperature.
	The safety guidelines apply to all of LEADER Photonics' products. If a device does not work properly, please send it to an authorized partner or directly to LEADER Photonics.