

MultaRadar C

Instructions

Instructions for MultaRadar C

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2 IMPORTANT INFORMATION

These Instructions are intended to inform the user about MultaRadar C and its system components so that the equipment can be used correctly. They contain important information to facilitate correct, economical use of the equipment. They help to avoid hazards and repair costs and to reduce lost time.

2.1 Obligation to read this document

This document must be read carefully, understood and applied by each person who sets up, adapts, operates or maintains the equipment. You must read the **safety information section** very carefully for your own safety. Follow all instruction to avoid placing yourself or others in danger and to avoid damaging the equipment or its system components.

If you have questions that are not answered in these Instructions, please contact ROBOT customer service.

2.2 Target group

The Instructions are intended for technically qualified persons who are already specially trained for operation of MultaRadar C and its system components or who are in the process of such training.

2.3 Presentation of safety information

Safety information is specially identified in these Instructions.

Note:

This denotes a tip which is important for correct use of the equipment and its system components.

**Attention:**

This denotes a danger which can cause damage to the equipment or its system components.

**Warning:**

This denotes a hazard that can result in personal injury in the case of incorrect use of the equipment or one of the system components.



3 PRODUCT DESCRIPTION

MultaRadar C is a speed monitoring system which consists of the components ROBOT SmartCamera II, ROBOT Radarsensor RRS24F-S1 and a screen with a hand-held control unit for operation of the system. The components are mounted securely on a tripod. The system is also equipped with a white flash bulb and a ROBOT flash generator for the purpose of measurement at night or in poor light conditions and to ensure driver identification. All MultaRadar C settings can be done via the display in conjunction with the hand-held control unit.

3.1 Reliability

MultaRadar C is manufactured with high-quality components using the most up-to-date methods. Careful intermediate checks and quality management with DIN EN ISO 9001 certification ensures optimum quality of the system.

Special circuits and shielding protect the system against external interference e.g. radio interference.

The system complies with European conformity guidelines and therefore meets the requirements of the electronic compatibility regulations.



4 SAFETY INFORMATION

The safety information must be read carefully and complied with when handling the equipment and its system components.

Warning:

Incorrect procedure when changing the flash tubes can be lethal. Please see the relevant instructions.



5 IMPORTANT OPERATING INFORMATION

We recommend that you observe the following points in order to fully benefit from maximum performance of the equipment and its system components and to maximise the operational life of the system.

- Protect the system from overheating. Do not expose it to direct sunlight, especially if you keep it in a motor vehicle.
- Protect the equipment and the system components from dust, dirt and moisture.

6 TECHNICAL DATA

6.1 ROBOT SmartCamera II

Sensor	CCD colour, progressive scan
Number of pixels	1.4 mega-pixel (1280 x 1024)
Shutter	Electronic shutter 1/50 to 1/10000 s
Lens mount	C – mount
Interfaces	RS232, ethernet 10/100 Mbit/s, 2 x USB, VGA
Power supply	12 V DC ± 15%
Current consumption	2.5 A
Weight	2 kg
Size (W x D x H)	150 mm x 195 mm x 140 mm (without lens)

6.2 ROBOT screen

Display	7" Digital TFT LCD
Resolution	800 x 480
Weight	1.6 kg
Size (W x D x H)	201 mm x 52 mm x 170 mm

6.3 ROBOT hand-held control unit

Keypad	Keys 1 - 8
Connection	USB
Weight	0.25 kg
Size (W x D x H)	115 mm x 35 mm x 60 mm

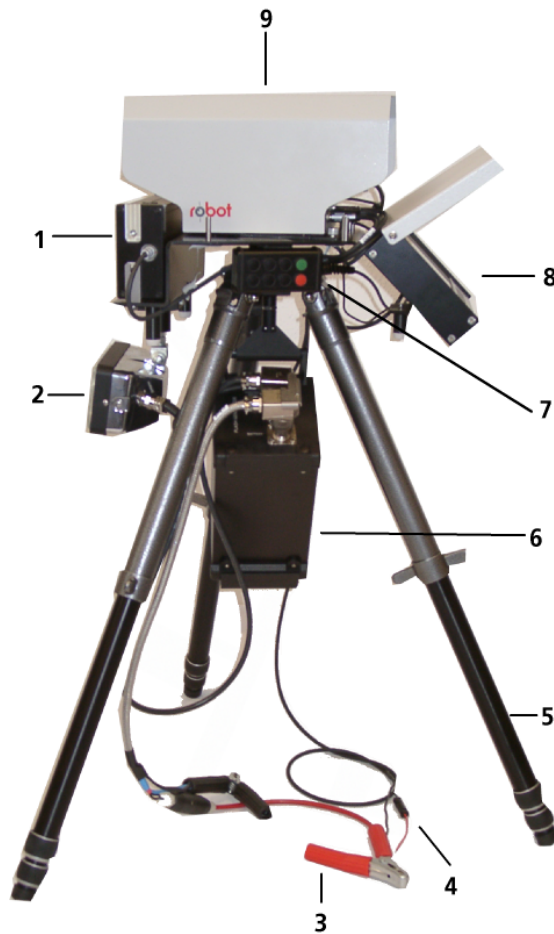
6.4 ROBOT radar sensor RRS24F-S1

Measurement range	25 to 240 km/h	
Measurement accuracy	25 to 100 km/h	± 3 km/h
	100 to 240 km/h	± 3%
Sensitivity	3 levels	
Direction of measurement by choice	Departing traffic	
	Approaching traffic	
	Identification of direction automatic	
Transmission frequency	24.1 GHz	
Weight	2 kg	
Size (W x D x H)	294 mm x 63 mm x 120 mm	

6.5 ROBOT flash generator with ROBOT white flash

Flash power	150 Ws
Flash duration	1/1000 s (half value time)
Flash phase	0.5 s
Range	45 m
Illumination angle	Approximately 30°
Power supply	12 V DC ± 15%
Weight	4.9 kg (without flash bulb)
Size (W x D x H)	147 mm x 330 mm x 183 mm

7 OVERVIEW OF COMPONENTS



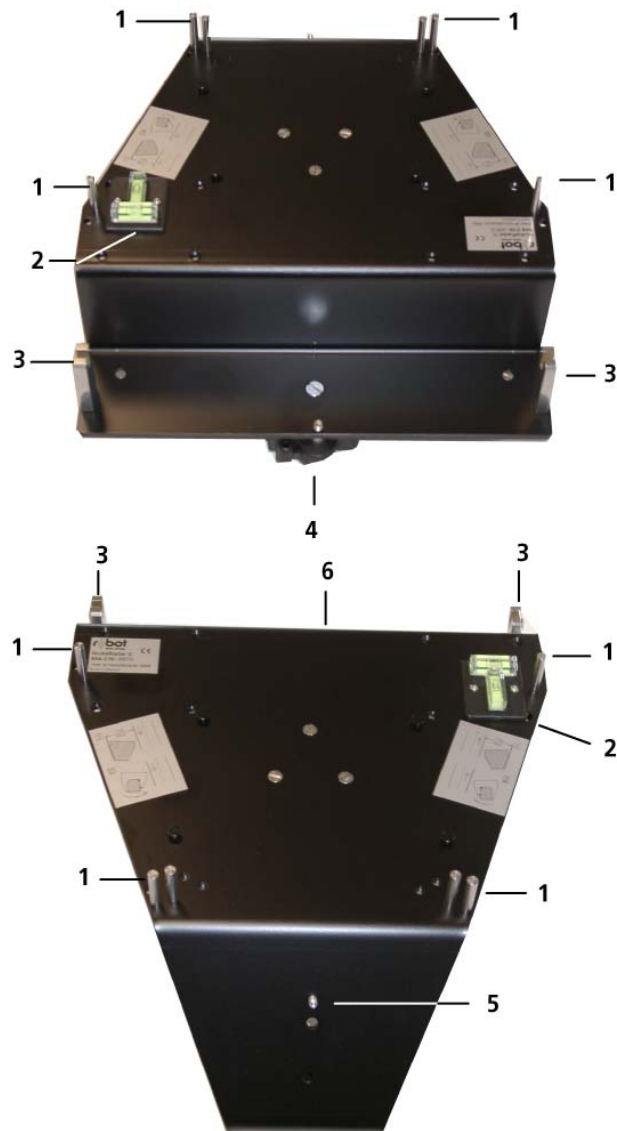
1	Radar sensor RRS24F-S1
2	Flash bulb
3	Connecting cable "flash generator – battery"
4	Connecting cable "SmartCamera II - battery"
5	Tripod
6	Flash generator
7	Hand-held control unit
8	Monitor
9	SmartCamera II on mounting plate

7.1 Tripod



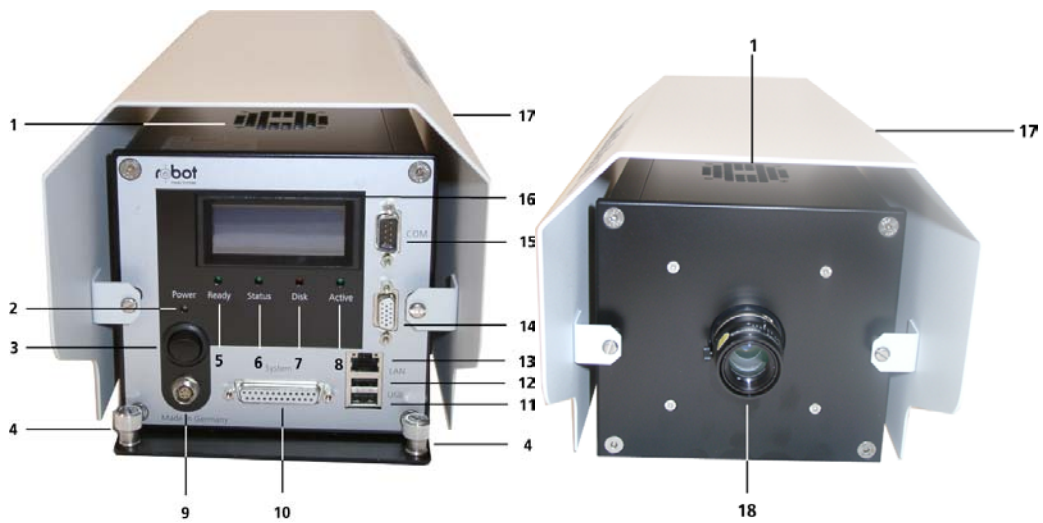
1	Mounting screw for mounting plate
2	Socket for mounting plate
3	Holder for flash generator

7.2 Mounting plate



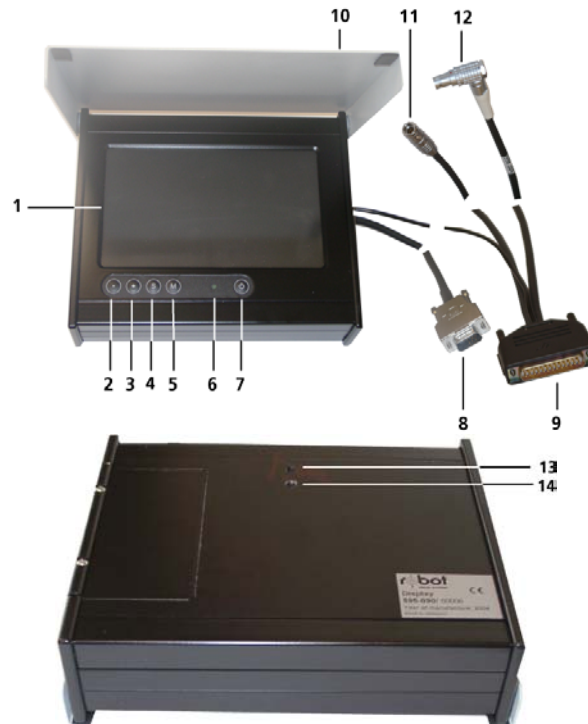
1	Sight unit
2	Spirit level for alignment of MultaRadar C
3	Radar sensor holder
4	Flash bulb holder
5	Holder for screen
6	Radar sensor socket

7.3 ROBOT SmartCamera II



1	Ventilator
2	LED "Power"
3	Switch "Power supply"
4	Mounting screws with holder plate
5	LED "Ready"
6	LED "Status"
7	LED "Disk"
8	LED "Active"
9	Socket "Power supply"
10	Socket "System"
11	Socket "USB" 1
12	Socket "USB" 2
13	Socket "LAN"
14	Socket "VGA"
15	Socket "COM"
16	Display
17	Protective cover
18	Lens

7.4 ROBOT screen



1	Display
2	Key "-", decrease value of the menu item in the settings menu on the display
3	Key "+", increase value of the menu item in the settings menu on the display
4	Key "S", to select menu items in the settings menu on the display
5	Key "M", to switch to the menu to set the display
6	LED "Power"
7	Button "on/off"
8	Connection to SmartCamera II "VGA"
9	Connection to SmartCamera II "System"
10	Light protection
11	Connection to radar sensor
12	Connection to flash generator

7.5 ROBOT hand-held control unit



1	Key 1 – 8
2	Connection to SmartCamera II "USB"

7.6 ROBOT radar sensor RRS24F-S1



1	Screw thread for mounting screw
2	Connection socket
3	Measurement signal indicator
4	Radar signal output window

7.7 ROBOT flash generator



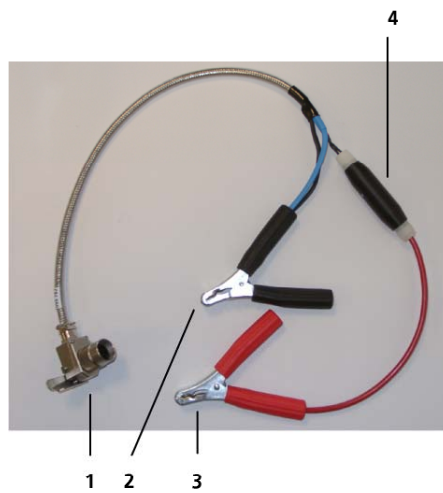
1	Connection CONTROL INPUT
2	Connection FLASH LAMP
3	Connection BATTERY

7.8 Flash bulb



1	Connection to flash generator "FLASH LAMP"
2	Connection point for mounting of mounting plate
3	Flash bulb and reflector with protective glass

7.9 Connecting cable flash generator – battery



1	Connection to flash generator "BATTERY"
2	Battery negative terminal
3	Battery positive terminal
4	Fuse-holder

7.10 Connecting cable SmartCamera II – battery



1	Connection SmartCamera II
2	Fuse-holder
3	Battery, positive terminal
4	Battery, negative terminal

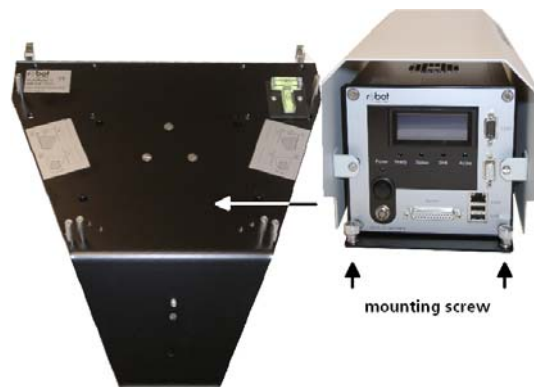
8 BRINGING THE EQUIPMENT INTO OPERATION

This chapter explains how to prepare MultaRadar C for operation.

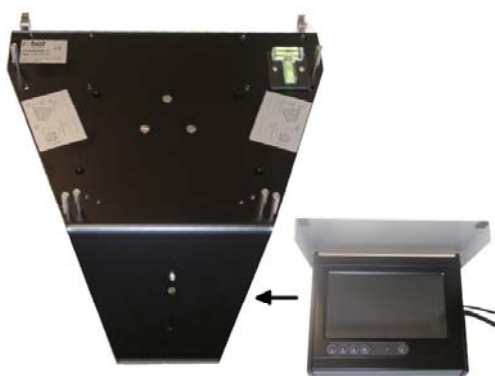
8.1 Fitting the mounting plate



1. Push the radar sensor into the socket.
2. Tighten both mounting screws.



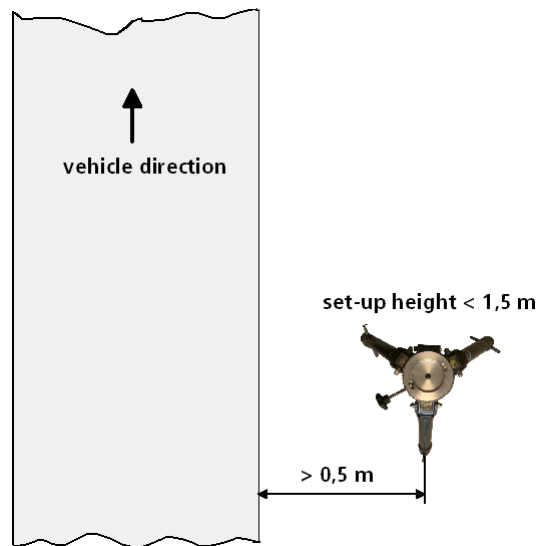
3. Place the SmartCamera on the mounting plate.
4. Tighten both mounting screws.



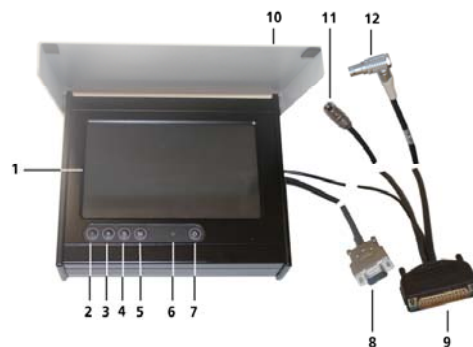
5. Place the screen on the mounting plate.
6. Tighten the mounting screw for mounting plate and screen.

8.2 Setting up MultaRadar C

You go through the following steps to set up MultaRadar C at the measurement location:



1. Set up the tripod.
2. Check the secure standing position of the tripod.
3. Align the tripod with the spirit level on the tripod.
4. Place the fitted mounting plate on the tripod.
5. Slightly tighten the mounting screw on the tripod.
6. Hang the flash generator in the holder on the tripod.
7. Fit the flash bulb on the mounting plate.



8. Connect the individual connections.

8	SmartCamera II, Connection "VGA"	11	Radar sensor
9	SmartCamera II, connection "System"	12	Flash generator, connection "CONTROL INPUT"

9. Connect the flash bulb on the flash generator FLASH LAMP.
10. Connect the connecting cable "flash generator – battery" on the flash generator "battery".
11. Connect the battery.

12. Connect the connecting cable "SmartCamera II – battery" on the SmartCamera II "power supply".
13. Connect the battery.
14. If the battery is charged, the LEDs on the SmartCamera II light up for a very short time.
15. Connect the hand-held control unit to the USB port.

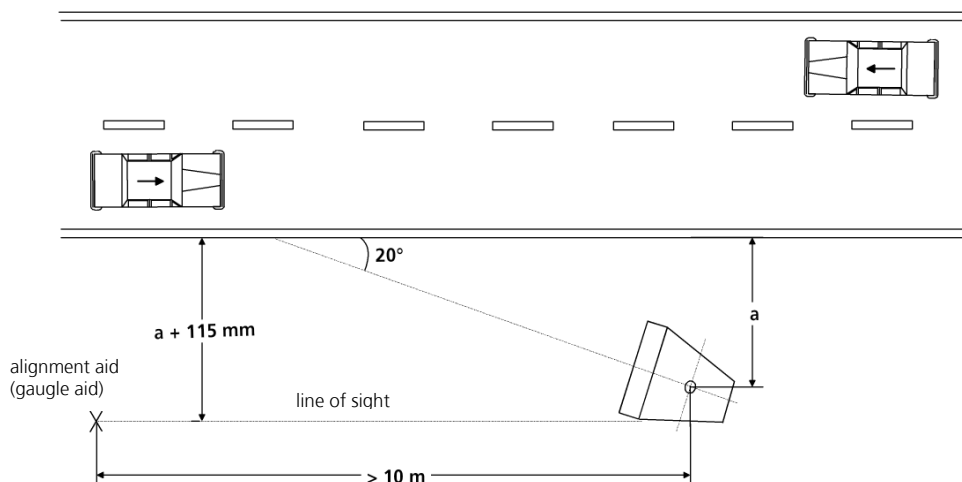
8.3 Aligning MultaRadar C

1. Set up MultaRadar C as described under 8.2 .
2. Check the lateral with the aid of the spirit level.
3. Correct the lateral by extending or shortening tripod legs 2 or 3.
4. Check the longitudinal inclination with the aid of the spirit level.
5. Correct the longitudinal inclination by extending or shortening tripod leg 1.



8.4 Parallel alignment of MultaRadar C

1. Hang a plumb bob in the middle of the tripod.
2. Measure distance 'a' between the centre of the tripod and the edge of the traffic lane.
3. Set up a gauge stick at a gap of "a + 115 mm" at a distance of at least 10 m.
4. With the aid of the sight unit, align the mounting plate by turning in the direction of the gauge stick.
5. Set the position of the mounting plate by tightening the clamping screw. Radar sensor RRS24F-S1 thus has a measuring angle of 20° to the edge of the carriageway.

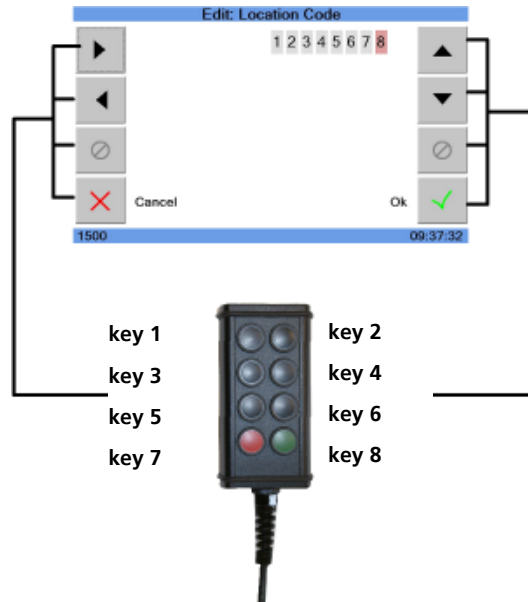


8.5 Switching on the MultaRadar C

1. Switch on SmartCamera II.
2. Switch on the screen.
3. Wait until the MultaRadar C start display appears on the display.
4. Set the parameters of MultaRadar C for the measuring location.
5. Carry out a calibration test.
6. After a successful calibration test, MultaRadar C is ready for measurement.

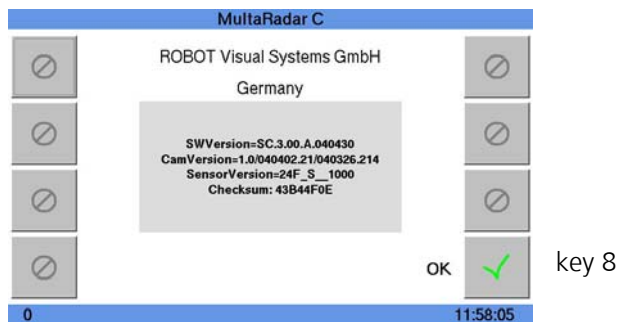
9 OPERATION OF THE ROBOT DISPLAY

You operate the menu on the ROBOT display with the ROBOT hand-held control unit. The keys on the ROBOT hand-held control unit are assigned to the ROBOT display menu as shown in the following diagram.



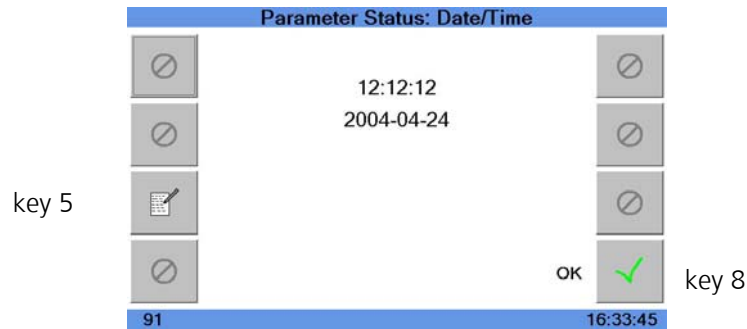
9.1 Start display

When you have switched on the SmartCamera II and the display, the MultaRadar C **start display** appears. Pressing key 8 takes you to the next window.

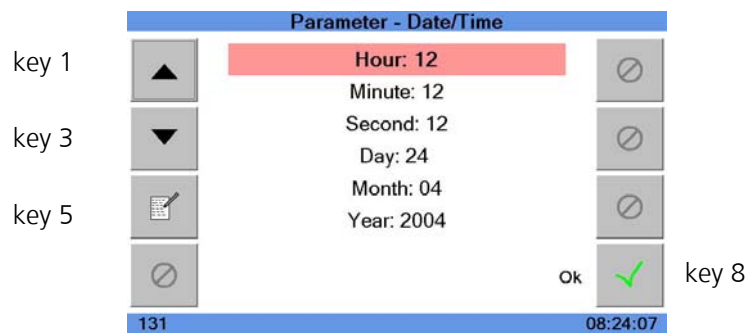


9.2 Date/time

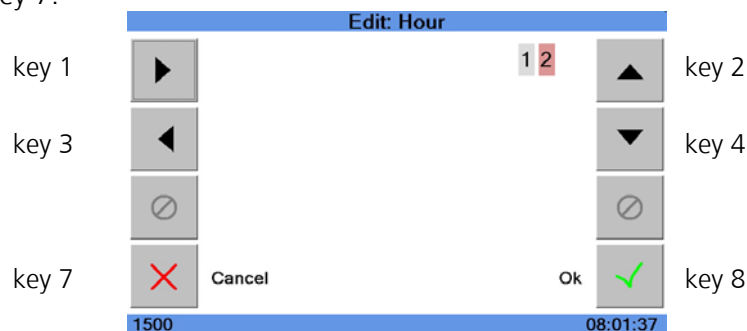
The **date and time** are shown in this window. The time and date can be changed by pressing key 5. If no changes are to be made to the date and time, you can leave the window by pressing key 8.



The cursor can be placed on the required parameter with keys 1 and 3 (hour, minute, second, day, month, year). When the cursor is placed on the parameter that is to be edited, the parameter can be changed with key 5.



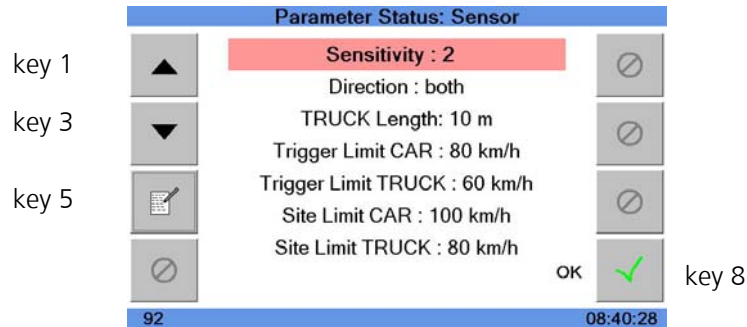
The cursor can be placed on the relevant parameter position using keys 1 and 3. The parameter location can be changed with keys 2 and 4. The changes are accepted with key 8. If the changes are not to be accepted, you can leave the menu by pressing key 7.



9.3 Parameter sensor

This chapter describes the individual menu items which you find under the **parameter sensor** menu.

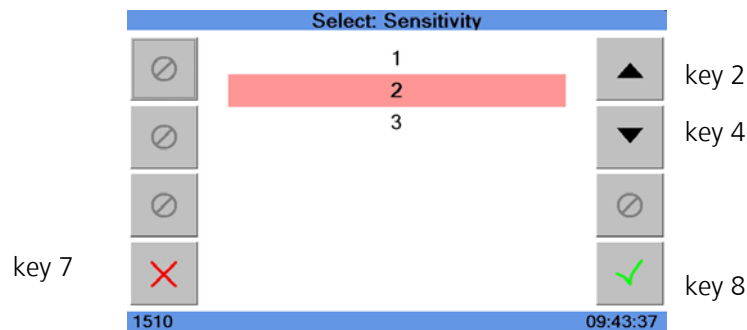
The cursor can be placed on the relevant menu item using keys 1 and 3. When the cursor is placed on the menu item, the parameter is changed with key 5. You leave the parameter sensor by pressing key 8 and all changes made are saved.



9.3.1 Sensitivity

You select the **sensitivity** of the radar beam with keys 2 and 4 and confirm it with key 8. If you press key 7 you leave the menu without accepting the changes.

Sensitivities **1**, **2** and **3** (low, medium and high sensitivity) can be selected for radar sensor RRS24F-S1. The relevant distance is dependent on the gap between the radar sensor and the vehicle to be measured. With a far distance, a higher sensitivity is to be selected.



9.3.2 Direction

In the **direction** menu item you select the traffic direction to be measured with keys 2 and 4 and confirm it with key 8. You leave the menu with key 7 without accepting the changes.

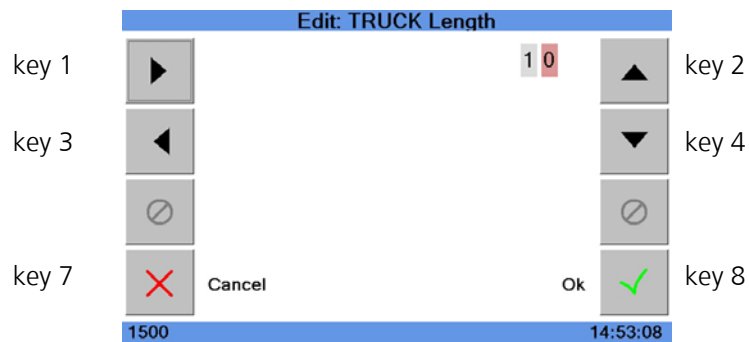
The traffic directions 'approaching', 'departing' or both (approaching, departing) can be selected for the radar sensor RRS24F-S1.



9.3.3 Truck length

In the **truck length** menu item you can enter the length from which a vehicle is identified as a truck. The length is set with keys 1 - 4 and confirmed with key 8. If you press key 7 you leave the menu without accepting the changes. The permissible value range is 0 – 50m.

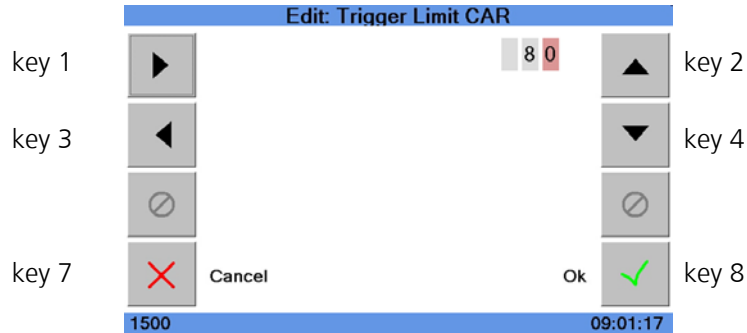
The **truck length** menu item is only suitable for departing traffic as the photograph is triggered when the full length of the vehicle has left the radar beam. For technical reasons, in the case of approaching traffic the photograph is triggered when there is a provisional measured value before the vehicle has fully left the radar beam.



9.3.4. Car limit

In the **car limit** menu item the speed limit value for cars from which a photograph is triggered is set with keys 1 - 4. The photograph is triggered when the set speed limit is reached or exceeded. The changes are accepted with key 8. If you press key 7 you leave the menu without accepting the changes.

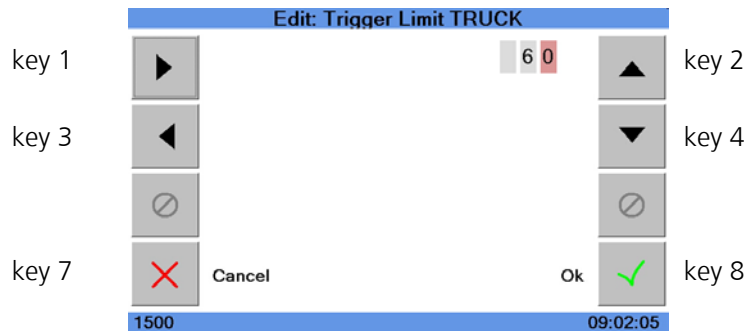
The permissible value range for radar sensor RRS24F-S1 is 020...250.



9.3.5. Truck limit

In the **truck limit** menu item the speed limit value for trucks from which a photograph is triggered is set with keys 1 - 4. The photograph is triggered when the set speed limit is reached or exceeded. The changes are accepted with 8. If you press key 7 you leave the menu without accepting the changes.

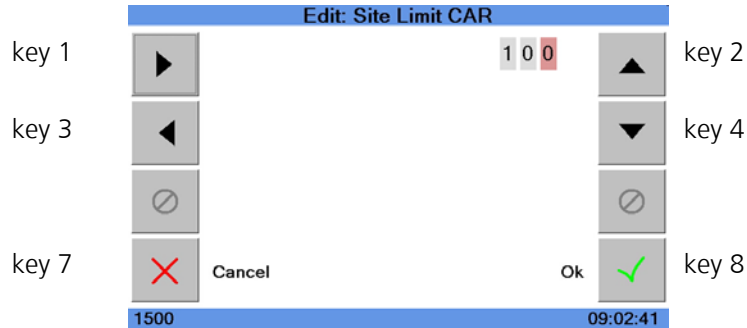
The permissible value range for radar sensor RRS24F-S1 is 020...250.



9.3.6. Car site limit

In the **car site limit** menu item you set the applicable speed limit for the measurement location with keys 1 - 4 (maximum permissible speed for cars). The changes are accepted by pressing key 8. If you press key 7 you leave the menu without accepting the changes.

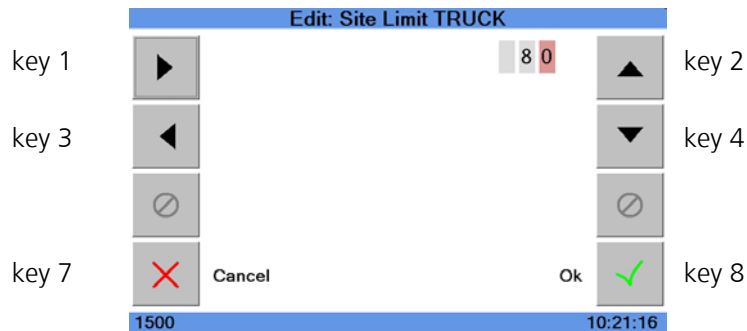
The permissible value range is 000...250.



9.3.7. Truck site limit

In the **truck site limit** menu item you set the applicable speed limit for the measuring location with keys 1 - 4 (maximum permissible speed for trucks). The changes are accepted by pressing key 8. If you press key 7 you leave the menu without accepting the changes.

The permissible value range is 000...250.



9.4 Parameter measure

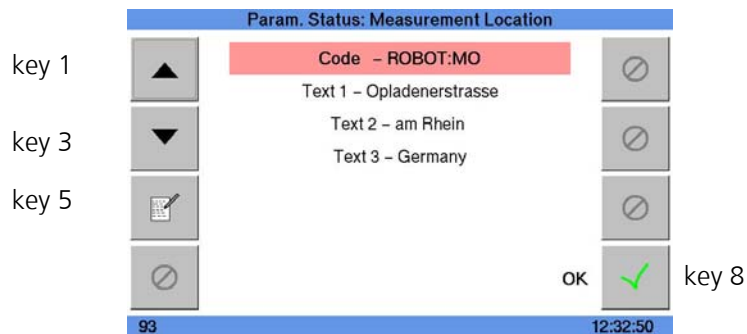
9.4.1 Parameter measurement location

When you leave the **parameter sensor** menu by pressing key 8, you go to the **parameter measurement location** menu.

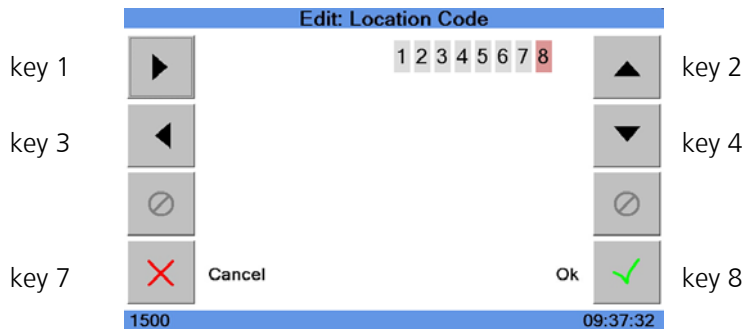
You can move the cursor to the relevant menu item with keys 1 and 3. The entries for the measuring location can be entered with key 5. Under the **code** menu item an 8-character alphanumeric text can be entered for the location of the measurement.

Under the menu items **Text1, Text2 and Text3** you can enter a 16-character alphanumeric text in each case, e.g. for additions for the measurement site.

If you press key 8, you leave the menu and any changes made are saved.



With keys 1 and 3 the cursor can be placed on the relevant parameter. The parameter location can be changed with keys 2 and 4 (alphanumeric). The changes are accepted by pressing key 8. If you press key 7 you leave the menu without accepting the changes.



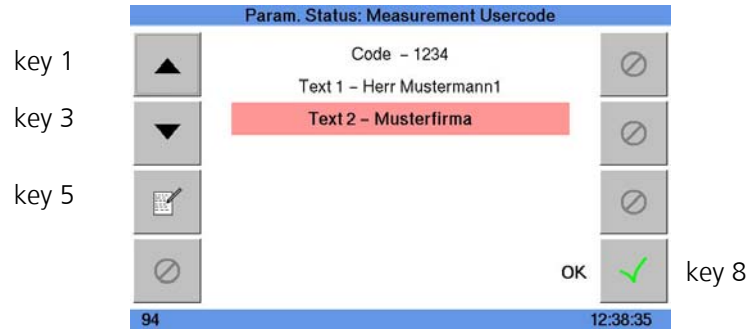
9.4.2 Parameter Measurement User

When you leave the **parameter measurement location** menu, you come to the **parameter measurement user** menu.

The cursor can be moved to the relevant parameter with keys 1 and 3. The **user code** can be entered with key 5. You make the entry as described under section 9.4.1 .

With the **code** menu item, a 4-character alphanumeric text can be entered, e.g. for the personal number.

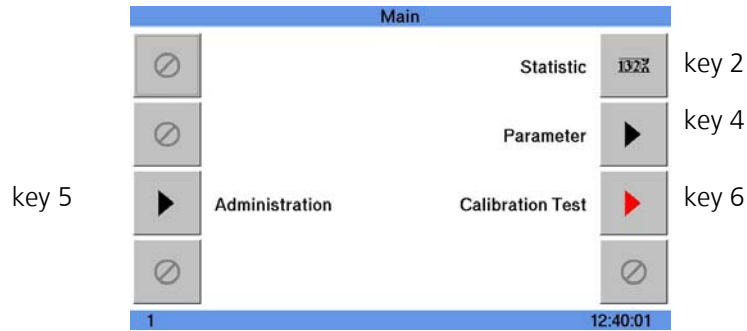
Under the menu items **Text1, Text2 and Text3** you can enter a 16-character alphanumeric text in each case, e.g. for additions to personal data.



9.5 Main menu

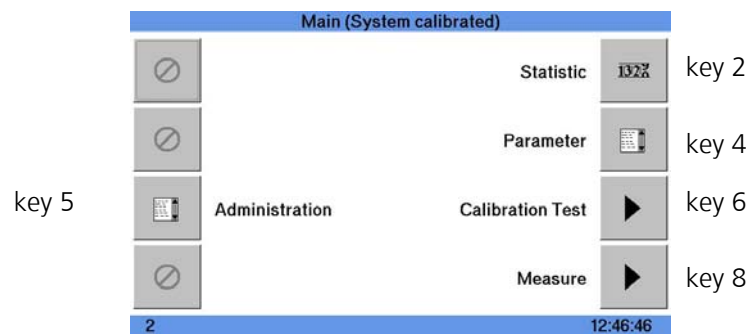
When you leave the **parameter measurement user** menu the main menu is displayed.

If you press key 2 you go to the **statistics** sub-menu. You go to the **parameter** sub-menu by pressing key 4. You get to the **administration** sub-menu by pressing key 5. Pressing key 6 starts a **calibration test**.



9.6 Main menu (system calibrated)

When the calibration test has been initiated, the main menu appears as shown below. The measurement mode menu item (**measurement mode**) also appears. You can switch to the **measurement mode** by pressing key 8.



9.6.1 Statistics

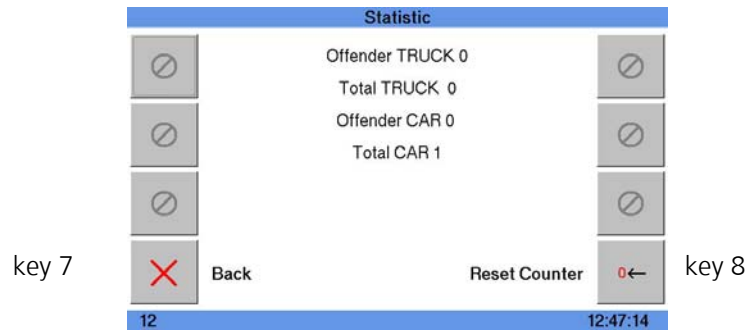
The current traffic meter readings are shown under the **statistics** sub-menu.

Offender truck shows the number of trucks that have exceeded the speed limit.

Total truck shows the number of all trucks monitored irrespective of whether a speed limit is exceeded or not.

Offender car shows the number of cars that have exceeded the speed limit. **Total car** shows the number of all trucks monitored irrespective of whether a speed limit is exceeded or not.

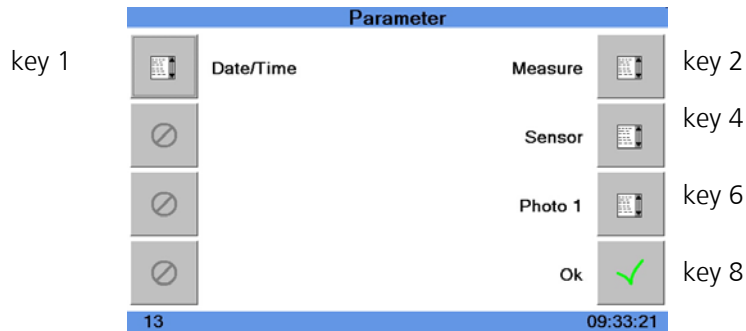
If you press key 8, all counters are set to zero. You leave the menu by pressing key 7.



9.6.2 Parameter

With the **parameter** sub-menu various parameter settings can be made via further sub-menus.

If you press key 1 you come to the date/time sub-menu (see section 9.2). Key 2 takes you to the **measurement** sub-menu (see section 9.4). Key 4 takes you to the **sensor** sub-menu (see section 9.3) and key 6 takes you to **photo1** sub-menu. If you press key 8 you return to the main menu.



9.6.2.1 Photo1

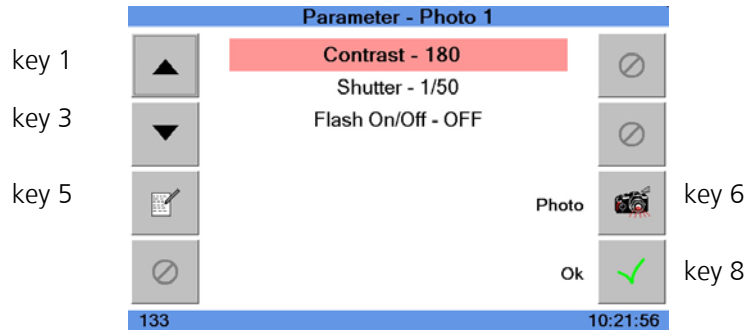
You can move the cursor to the relevant menu item with keys 1 and 3. The relevant parameter can be changed with key 5.

The contrast for the display can be set under the **contrast** sub-menu. The permissible value range is 000 – 255 (default 100).

You set the shutter speed for the picture under the **shutter** menu item. **1/50, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000** or **1/10000** can be selected as shutter speeds (default: 1/1000).

The flash is switched on or off using the **flash** sub-menu.

A photo can be triggered by pressing key 6. You then go to a window in which the test photo is displayed.



You can zoom with key 4. A further photograph can be triggered by pressing key 6. If you leave the menu by pressing key 8, you go to the previous menu.



You leave the **Photo1** menu by pressing key 8.

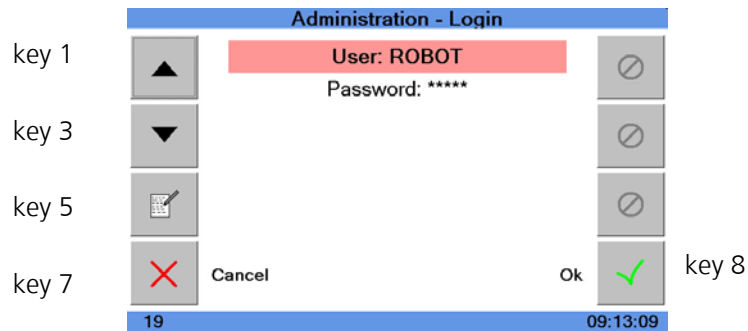
9.6.3 Administration

You enter the username and password in the **administration** menu. There is one user level for the ordinary user and one for the administrator. If you log on as administrator, you can make some additional settings which we will now explain in more detail.

With keys 1 and 3 you can specify whether the **user name** or the **password** is to be entered. In the window which then appears the desired entry can be made as usual by pressing key 5.

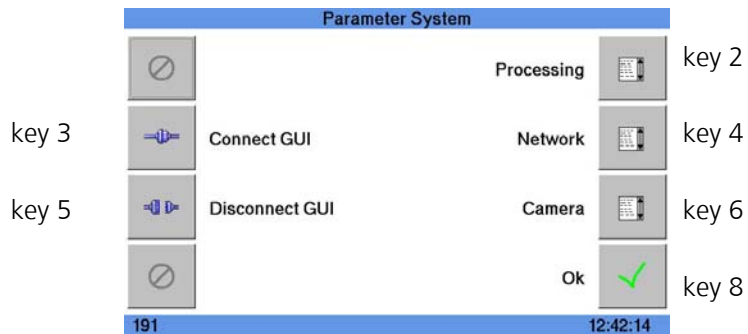
You confirm the entry with key 8. The username and password are then checked. If the username and password are correct, you go to the next window. Otherwise the log-on screen is displayed again.

If you press key 7 you return to the main menu without accepting the changes.



9.6.4 Parameter System

When you have logged on successfully as administrator, you go to the **parameter system** menu.



You go to the **processing** menu by pressing key 2.

9.6.4.1 Processing

You set the image compression with the quality menu item. The permissible value range is 1 – 99%.

Note:

If you select a higher compression, this may lead to loss of picture quality.



You set the image format of the picture (JPEG, BIF) in the **image format** menu item.

The individual menu items are selected with keys 1 and 3 and edited with key 5. Pressing key 8 saves the settings and you return to the **parameter system** menu.



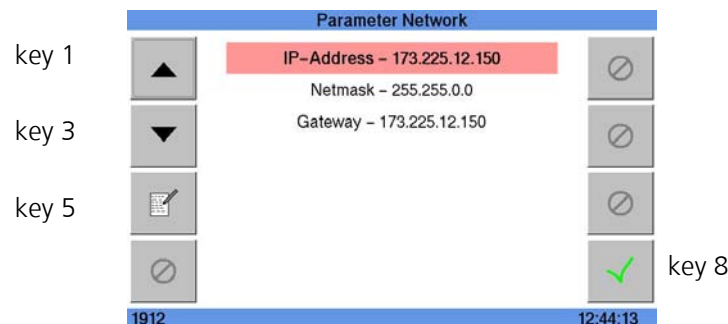
9.6.4.2 Connect/disconnect GUI

With the help of this sub-menu the display (GUI – graphic user interface) is connected with the camera (**connect GUI**) or the existing link is broken (**disconnect GUI**).

9.6.4.3 Network

Pressing key 4 takes you to the **Network** menu.

With the menu items **IP address, Net-mask and Gateway** the SmartCamera is connected to the network in which it is to be used. Please contact your network administrator if you have further questions.

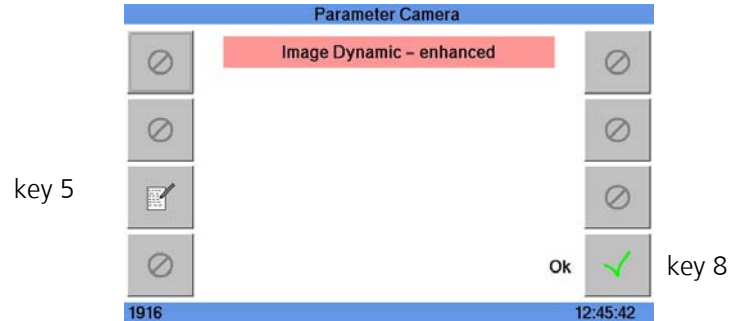


9.6.4.4 Camera

Pressing key 6 takes you to the **camera** menu.

You use the **Image Dynamic** to set the dynamic range of the picture (**standard** or **enhanced**).

If you select the **enhanced** menu item (greater dynamic range) you can show the driver as well as the registration number in the picture.



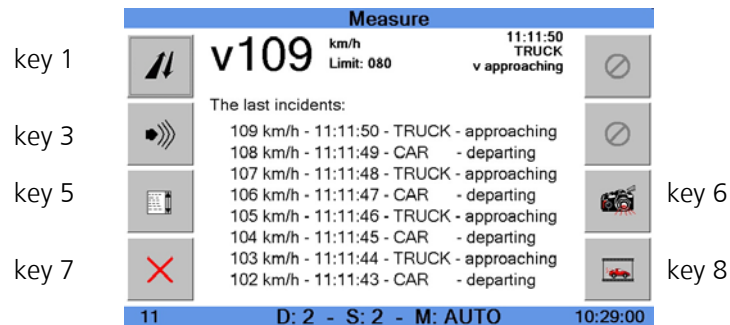
When these special parameters have been changed (the setting of which is reserved for the administrator), you leave the **parameter system** menu and return to the main menu with key 8.

As soon as you are in the main menu, it is possible to carry out a new setting of the special parameters if you register again as administrator in the administration menu with the relevant password.

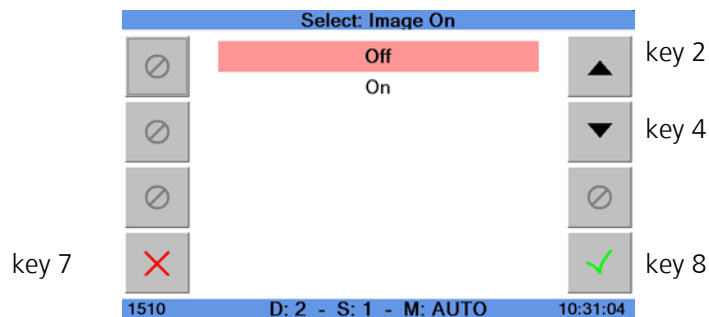
9.6.5 Measuring

The measured speed is shown on the top left of the display in the measurement menu. The speed limit, the direction of measurement and the vehicle type are shown next to it. Underneath you see a list of the last measurements with the measured speed, the time, the vehicle type and the direction of measurement.

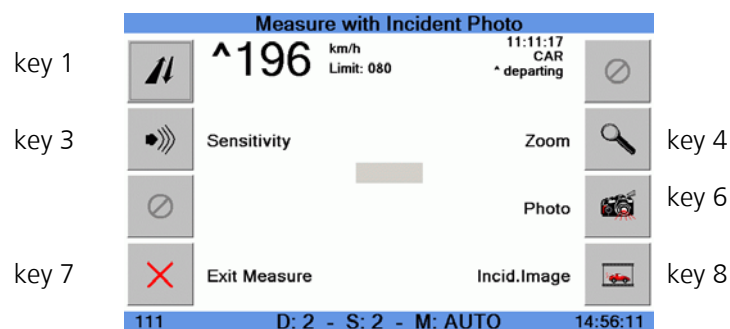
You can change the **direction of measurement** with key 1 (see section 9.3.2) and the **sensitivity** with key 3 (see section 9.3.1). Key 6 triggers a photograph. " * " before and measurement denotes a speeding offence.



Key 8 activates the display of the measurement photograph during the measuring process.



If the display of the measurement photograph is activated, the measurement screen will be as shown below.



10 OPERATING SMARTCAMERA II

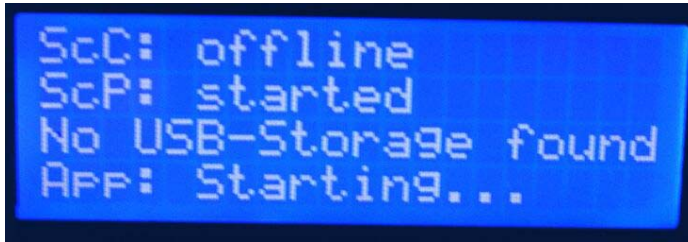
This chapter explains the significance of the LED displays and the information on the SmartCamera II display.

10.1 SmartCamera II LED displays



LED Power	green permanent	Indicates camera switched on and power supply present.
	green flashing	Indicates camera is being shut down.
	red	Indicates under-voltage or high-temperature shut-down.
LED Ready	green	Indicates successful initialising (operational readiness) of the camera.
LED Status	green flashing	Indicates data transfer to the serial ports.
LED Disk	red	Indicates "camera's internal hard disk is full". The camera will not be triggered any more and no further pictures can be stored. The hard disk can be cleared again by extraction via a USM mass storage device.
LEDActive	green	Indicates camera is reacting to an external trigger.

10.2 Text in the display



line 1

line 2

line 3

line 4

10.2.1 At the start

Line	Text	Description
1	MA:xx:yy:xx:yy:xx:yy	Indicator of the MAC-ID
2	IP:xxx.yyy.xxx.yyy	Indicator of the IP address
3	NM:xxx.yyy.xxx.yyy	Indicator of net-mask
4	GW:xxx.yyy.xxx.yyy	Indicator of the gateway (optional)

10.2.2 Subsequent displays

Line	Text	Description
1	SmartCamera II	
2	Ver:SC.2.00.X.040404	Version of the application
3	Detected USB device	Medium identified
	Check for update	Medium, checking for update package
	No update found	No update package available
	USB device removed	Medium removed
4	App:	Status of the application: Start

10.2.3 With software update

Line	Text	Description
1	SmartCamera II	
2	Ver:SC.2.00.X.040404	Version of the application
3	SC updating system SC locked>>no update Update already done Copying update Copy '*.sup'failed Copy '*.key'failed Update key invalid No update key No update package	SUP found. Starting the update SmartCamera is calibrate, update is refused This update has already been done Copying of the SUP package started Copying of the SUP package defective Copying of the code defective Invalid code, update refused No key, update refused No SUP package, update refused
4	App:	Status of the application: Start

10.2.4 Standard operation

Line	Text	Description
1	ScC: online ScC: offline ScC: trigger XXX ScC: error XX Sensor missing Disk full	SmartCamera II is online, measurement mode SmartCamera II is offline, operating mode Photograph triggered, frame counter Error no. occurred Error no. occurred Internal medium full
2	ScP: disk 30% free ScP: error XX ScP: image processed	Process active Error no. occurred Processing an event
3	Starting ScIc USBCopy 0005 of 1230 Copy to USB complete Shutdown system Rebooting system	Starting the ScIncidentCopy process Number of the copied file Copying finished or medium full Resetting the application Resetting the application
4	<RUSP-Data>	Date of the serial interface

10.3 Connection of a USB mass storage device

A USB mass storage device can be connected to the USB port on the SmartCamera II at any time. Memory sticks, USB hard disks and MOD-drives can be used as USB mass storage devices.

Note:

The files system of the USB mass storage device must be FAT32. Only the primary partition is usable. Further partitions are not used by SmartCamera II.



If USB hard disks or MOD drives are used, an external power supply is required. With a connection of more than one USB mass storage device at the SmartCamera II USB ports, only the first USB mass storage device to be connected is used.

If a USB mass storage device is connected with SmartCamera II, the following messages will appear on the SmartCamera II display. They become visible for different lengths of time depending on the duration of the individual events:

Message	Meaning
Detected USB device	A USB device was detected
USB mount failed	The file system on the USB device could not be accessed. The file system on the USB device must be FAT32. Only the primary partition is usable
Check for update	The system is checking the attached USB device for an SUP package. This is done with EVERY connection of a USB device with SmartCamera II
No update found	No SUP found. This is the normal message with connection of a USB device with SmartCamera II
Check logfile demand	A check is being made to ascertain whether the "scgetlog" directory is on the USB device. If this is the case, the log files are copied. See below.
No logfile requested	The "scgetlog" directory was not found on the USB device.
Check backup demand	A check is being made to ascertain whether the "scgetback" directory is on the USB device. If this is the case, the backup files of the operational files will be copied. See below.
No backup requested	The "scgetback" directory was not found on the USB device.
Checking filesystem.	Check file system on the USB device.
Starting SCIC	Start copying process "SCIncidentCopy" on SmartCamera. It copies the data from SmartCamera II to the USB device.
ScICopy CRC Error EX	The program has identified an error in the internal check of its checksum and it is terminating.
ScICopy SUP found EX	There is an SUP on the medium from the copying process. This must not happen. The USB device must be exchanged.

ScICopy 0001 of 0156	The first of 156 files is being copied.
USB Free iii MB - (+)	There is "iii" free space on the USB device. The last character changes periodically between "+" and "—" with an active process.
ScICopy subdir Err	No sub-directory could be created on the USB device. The USB device may be full or incorrectly formatted. Data on the device must be deleted
ScICopy backup fail(ed)	The data successfully copied to the USB device could not subsequently be copied into the backup directory on the internal hard disk. The internal hard disk must be checked.
ScICopy FileIO Err	The copying process to the USB device was not successful. Please check the USB device.
USB media full EXIT	The USB device is full. It is being detached from the Smartcamera II file system and the process is being terminated.
USB device removed	A USB device was detached.
Stop SCIC	Stop copying process.

The USB mass storage device is detected automatically by the SmartCamera II and the copying of the operational files from the SmartCamera II internal hard disk to the USB mass storage device is started. It checks the internal directory of SmartCamera II for operational files. The number of operational files on the SmartCamera II hard disk is ascertained automatically and shown on the SmartCamera II display.

The progress of the copying process for each display is then shown:

USBCopy 0002 of 1239

The internal directory of the SmartCamera II is then checked again at cyclical intervals. If new operational files have been created in the meantime, this is shown again and the processes automatically repeated for continued. The level of the USB mass storage device is stated in megabytes and the last digit of this line changes in cycles as long as the process is running.

USB Free:00431 MB

If the media is full, it is automatically removed from the SmartCamera II file system and the processes terminated. The following message appears:

USB media full EXIT

Attention:

To change the USB mass storage device, you must first terminate the measuring operation and wait for the copying process to be concluded. This is the case if the message relating to the end of the copying process appears on the SmartCamera II display for several seconds (approximately 10 seconds). The SmartCamera II must then be switched off to separate the USB mass storage device.



Attention:

Incorrect disconnection of the USB mass storage devices can lead to errors in the file system of the USB mass storage device.



These errors have different characteristics. It can happen that a USB mass storage device is not recognised by the SmartCamera II even though the device can be accessed normally under Windows. The file system must then be repaired.

Every operational file is copied from the source directory on the internal hard disk to the USB mass storage device. When this copying process has been successful, the file is copied into a backup directory (optional), if it is configured, and then deleted on the internal hard disk.

10.3.1 Repairing the data system on a USB mass storage devices

1. Connect the USB mass storage device with a Windows PC.
2. Then open Explorer.
3. Right-click with the mouse on the drive symbol of the USB mass storage device.
4. Selects the "Properties" menu item.
5. Then click on the "Extras" tab ("Tools") and click the "Check Now" button.
6. Selected both options: "Automatically fix file system errors" and "scan for and attempt recovery of bad sectors" and click on the "Start" button.
7. The file system on the USB device is repaired and you can try again to connect it to the SmartCamera II. If this is still unsuccessful, the USB device must be formatted again with the **FAT32** file system. If this also fails, you need to use the software provided by the manufacturer to format the USB mass storage device.

10.4 Updating the SmartCamera II via USB

The SmartCamera II can receive a new software release via a suitable USB mass storage device. A special directory "/scupdate" is provided by the manufacturer on a storage medium for this purpose. This directory contains the service/update package as well as a key file. With the help of this key file the SmartCamera II software checks to ascertain whether the service/update package which is included is made for this SmartCamera II. This data must be copied to a USB device. To carry out the updating of the software, the USB mass storage device must be connected with the USB port of the SmartCamera II. The USB mass storage device is detected automatically and the availability of the service/update package on the USB mass storage device is recognised. The package is unpacked, the special log-file is created on the USB mass storage device and the SmartCamera II is re-started. The update is then carried out automatically after the re-start.

During the procedure some messages are shown on the SmartCamera II display for the operator's information:

Message	Meaning
Detected USB device	A USB device was recognised
Check for update	The system is checking the attached USB device for an SUP package. This is done with EVERY connection of a USB device with SmartCamera II
SC updating system	SUP found. Starting the update.
SC locked>>no update	The SmartCamera is calibrated, an update was refused.
Update already done	The update has already been done. If the SUP is nevertheless to be carried out, the "/scupdate" directory must be copied to an empty USB device again and the procedure repeated.
Copying update	Copying has started.
Copy '*.sup' failed	The SUP package could not be copied. The "/scupdate" directory must be copied to an empty USB device again and the procedure repeated.
Copy '*.key' failed	The key could not be copied. The "/scupdate" directory must be copied to an empty USB device again and the procedure repeated.
Update key invalid	The key was not valid for this SmartCamera. The update was refused. Please contact the manufacturer.
No update key	No key exists. The "/scupdate" directory must be copied to an empty USB device again and the procedure repeated.
No update package	No SUP package exists. The "/scupdate" directory must be copied to an empty USB device again and the procedure repeated.
No update found	No SUP found. This is a normal message with connection of a USB device with the SmartCamera II
USB device removed	A USB device was separated
Shutdown system...	The SmartCamera II software is shut down.
Rebooting system	The SmartCamerall is being shut down and re-started.

10.5 Transfer of SmartCamera II log files via USB

If the "scgetlog" directory is on the USB mass storage device, all SmartCamera II log files will be copied to this directory automatically. This is done initially in a sub-directory the name of which is unique for the relevant SmartCamera. It is the MAC-ID of the network adapter. Under this directory, a further sub-directory is then created. It is named in accordance with the current date. All log files are located here in the end.

Example: "I:\scgetlog\00E033550110\20040422_1716\"

Message	Meaning
Check logfile demand	A check is being made to ascertain whether the "scgetlog" directory is on the USB device. If this is the case, the log files are copied. See below.
Copying Logfiles	The "scgetlog" directory was found on the USB device and the log files are being copied to it.
not enough space (log)	The free space on the USB device is not sufficient to copy the log files.
No logfile requested	The "scgetlog" directory was not found on the USB device.

10.6 Transferring operational files (measuring results) from the backup of the SmartCamera II via USB

If the "scgetbak" directory is on the USB device, all operational files from the SmartCamera II backup directories will be copied to this directory automatically. This is done initially in a sub-directory the name of which is unique for the relevant SmartCamera. It is the MAC-ID of the network adapter. Under this directory, a further sub-directory is then created. It is named in accordance with the current date. All operational files from the backup directories are located here in the end.

Example:

"I:\scgetbak\00E033550110\20040422_1716\"

Message	Meaning
Check backup demand	A check is being made to ascertain whether the "scgetbak" directory is on the USB device. If this is the case, the backup copies of the operational file are copied. See below.
Moving Backup	The "scgetbak" directory was found on the USB device and the backup directory of the operational files are moved to the USB device!
not enough space	The free space on the USB device is not sufficient for the backup.
mv backup failed	The attempt to move a backup directory failed.
No backup available	No /usr/bif/backup directory is available or it cannot be accessed. Connect the USB device again after booting up the SmartCamera. Remove the USB device only after shutting down the SmartCamera.
No backup requested	The "scgetback" directory was not found on the USB device.

11 MAINTENANCE AND SERVICE

Maintenance and repair of the equipment and its system components must only be carried out by the customer service personnel of ROBOT Visual Systems GmbH or an authorised service workshop.

11.1 Cleaning

Use a soft cloth for cleaning. Remove any stubborn dirt or spots with a damp cloth. Do not use any aggressive solvents (petrol, alcohol, paint thinner etc.).

11.2 Customer service

If maintenance or repair is necessary, please send the equipment or the necessary system components, packed carefully, to the customer service department (Kundendienst), ROBOT Visual Systems GmbH at the following address after agreement:

ROBOT Visual Systems GmbH
Opladener Straße 202
D-40789 Monheim am Rhein
Germany

Tel: +49 (0)2173 39 40-0
Fax: +49 (0)2173 39 40-131