Kamera PILOT

Battery operated, digital rear view camera monitor system for mobile use

Document version: 0.5
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Version overview

Date	Version	Description
10.10.2014	0.1	Created
03.02.2014	0.2	Revision and integration of the latest features such as registering any lenses, two-lens operation, etc.
27.04.2015	0.3	Adaptation manufacturer address, chapter numbers
31.08.2016	0.4	Description switching on and fixing the lens
08.08.2019	0.5	Check according to the new radio standard RED (adaptation of the CE Declaration of Conformity)

Contents

1 Introduction

The **CameraPilot** reversing and monitoring radio system has been specially designed for professional and mobile use. Due to the high-quality design with a particularly large wireless range and interference immunity against WLAN and Bluetooth, the system is particularly suitable for high-tech applications.

At the same time, a maximum of two camera images can be shown on the display and up to 100m operating range can be achieved within line of sight.

In addition, the display or the lens can be equipped with a battery pack to ensure autonomous operation for several hours. This allows the system to be used and operated easily and quickly in other locations.

2 Safety information

The components of the KameraPilot must not be opened, so that the impermeability is not impaired.

Before activation, check the receiver type plate to see if the correct operating voltage is used in terms of power and voltage.

If the system is subject to strong vibration, it must be mounted on rubber buffers so as not to shorten its service life.

Never wash the device with water or clean it with high pressure water.

If welding is performed on a machine where the camera-pilot reversing and monitoring system is installed, it must be completely disconnected from the ground and the positive terminal disconnected in order not to be damaged.

The KameraPilot reversing and monitoring system must NOT be used for safety-critical applications where a defect or malfunction of the product may endanger persons or cause material damage.

3 Scope of delivery

1 x 7 " TFT-LCD monitor with gooseneck mount
1 x monitor power cable with cigarette plug
2 x antennae 2.4GHz
1 x camera with battery
1 x hexagonal key for adjusting/attaching the camera or monitor
1 x charger plug power supply 100... 240V ~

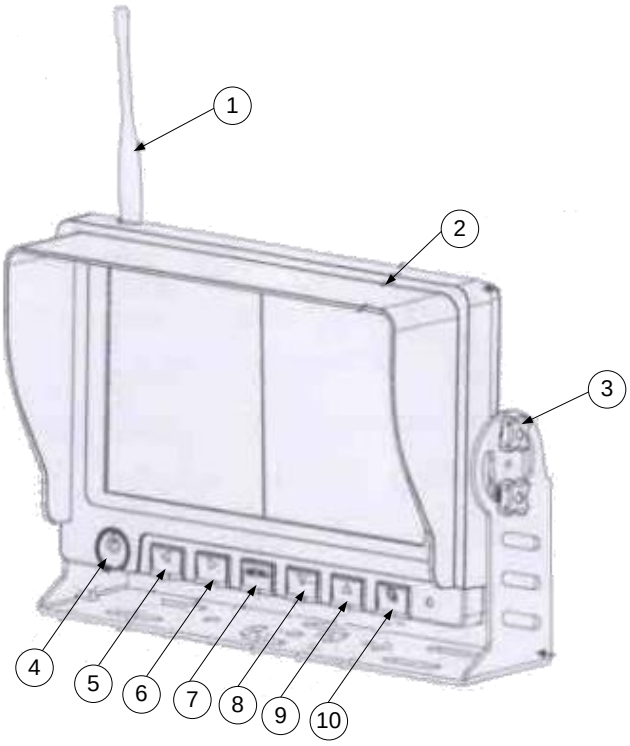
4 The main functions

- 7 " TFT-LCD colour display with high resolution
- Button with backlight
- Removable sunscreen
- Single and dual monitor operation
- Can withstand up to 9G vibration
- Large voltage range of the display (8..32VDC) for use in the car, truck, forklift etc.
- Setting parameters of the monitor such as brightness, contrast and colour

5 Monitor

5.1 Functions

Figure 1: Monitor functions



1: Antenna
2: Sunscreen
3: Mounting screws for position adjustment
4: Power on/off
5: Left (Menu Minus)
6: Right (Menu Plus)
7: Menu/Esc
8: Off (channel switch)
9: On (channel switch)
10: OK button

If the device is in standby, the button (4) lights up red.
If the device is switched on, the button (4) lights up green.

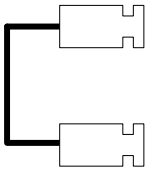
5.2 Start-up monitor

With the aid of the cigarette plug you can supply the monitor (12VDC).

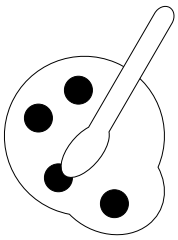
1. Connect the cigarette cable to the monitor cable
2. Connect the cigarette plug to the appropriate socket on your vehicle.
3. Press the On button (4), Figure 1 page 6
4. The display is now in operation

DO NOT charge the battery with the cigarette cable. The battery would not be fully charged with this cable!
Unless you own a KameraPilot **Pro** (see section 6.5, page 12)

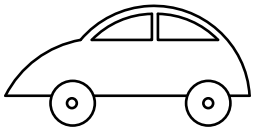
5.3 Menu



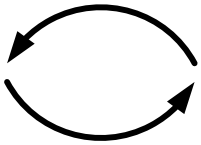
Log a camera/lens into the monitor. If you press this button, you have 30 seconds to turn on the camera/lens to be logged in. If the camera/lens is switched on, it is automatically logged into the monitor.



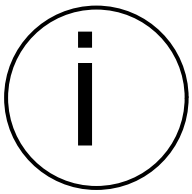
Adjust the brightness, contrast and colour of the monitor



Switch track indicator on/off. Press the track display button and confirm with OK. Then turn the monitor off and on again, and the track display is thus active. Only possible for CAM1.



Select the appropriate camera/lens (CAM1 or CAM2) and press this button "Mirror". The image can now be displayed in 4 different mirror variants. To do this, always press the "Mirror" button.



Program information

6 Lens/camera

6.1 Switching on

The lens/camera is switched on and off on the battery pack via the silicone button. The camera is on when the button lights red.

6.2 Log a camera into the monitor

1. All cameras/lenses must be switched off
2. Select the camera position (CAM1) on the display with the up or down arrow (8/9). Thus, the image is displayed in position CAM1
3. Press the button
4. Switch on the camera/lens to be logged in
5. Monitor finds camera/lens and displays the image in position CAM1

6.3 Log two cameras into the monitor

1. All cameras/lenses must be switched off
2. Select the camera position (CAM1) on the display with the up or down arrow (8/9). Thus, the image is displayed in position CAM1
3. Press the button 
4. Switch on the camera/lens (CAM1) to be logged in
5. Monitor finds camera/lens and displays the image in position CAM1
6. To log in the next camera/lens, turn off all cameras/lenses again.
7. Select the camera position (CAM2) on the display with the up or down arrow (8/9). Thus, the image is displayed in position CAM2
8. Press the button 
9. Switch on the camera/lens (CAM2) to be logged in
10. Monitor finds camera/lens and displays the image in position CAM2
11. Using the arrow keys (8/9) you can now switch between the two cameras CAM1 and CAM2.

6.4 Attachment of camera

The lens/camera can be positioned on a metallic surface with the aid of magnets. The magnets have an adhesive force of 4 x 12 kg and should hold the lens/camera well even with small vibrations. If the lens/camera is used on vehicles, it must be secured in such a way that it cannot fall down even with strong vibrations.

With the aid of the integrated velcro closure, you can additionally secure the lens/camera or mount it to a pole/tube.

Make sure that the lens/camera cannot break loose when it shakes. Secure the lens/camera accordingly!

Damage while driving may otherwise result in accidents.

Check the attachment sporadically (every week) to detect any defects immediately.

6.5 Charging the battery

To charge the battery, you must plug in the plug-in power supply circular connector on the housing. Then connect the power adapter to a 115/230V outlet.

Only use the power adapter supplied

If you have bought a **"**KameraPilo**t Pro"**, you can also charge the battery to 12V with the cigarette cable.
A "KameraPilot **Pro"** supports the input voltage of 8... 16VDC as charging voltage.
You will find information about the camera pilot type on the type plate.

7 Technical specifications

Table 1: Technical Data Monitor/Display

Display size	7 "Digital Screen TFT LCD Monitor with removable sunshade
Technology	Integrated 2 channel, 2.4GHz radio receiver
Operating frequency	2400 ~ 2483.5MHz
Receiver sensitivity:	≤-86dBm (1MHZ QPSK MD300RE)
Overlapping Hopping Channel	80
Colour system	PAL/NTSC
Display resolution	800RGB (H) X 480 (V) points
Brightness	450 cd/m 2
Contrast ratio	500:1
Operating temperature	-20°C to +70°C
Storage temperature	-30°C to +80°C
Input voltage range	8 ~ 32VDC
Dimensions (L x W x D)	185 x 122 x 28 mm (without sun screen)
Approx. weight	400 g
IP rating	IP40
Mounting	Gooseneck with suction function (can be removed)
Conformity	CE, Class II type B, IEC/EN 60950

Table 2: Specifications Battery Camera/Lens Standard

Image processor	1/3 inch Colour CMOS
Technology	Integrated 2.4GHz radio transmitter
Operating frequency	2400 ~ 2483.5MHz
Transmitting power	6.89dBm with power control
Antennae	2.5GHz, 10dBi gain
Radio distance (line of sight)	<100m
Horizontal resolution	600 TV Lines
Effective pixels	NTSC: 960 (H) X480 (V); PAL: 960 (H) X480 (V)
Usable lighting	0Lux (integrated 18 pcs. IR LEDs for image support at night)
Night vision	Yes
Angle of view	120°
IR Cut	Automatic switch between day and night
Impact resistance	<10g
Operating temperature	-20°C to +70°C
Storage temperature	-30°C to +80°C
Integrated battery	Lithium Ion 10.8V / 51.8Wh
Charging device	230VAC / 13.5VDC (power supply),
Operating time with battery	Approximately 15h (if new battery)
Charging time	Approximately 5h
Dimensions (L x W x D)	160 x 148 x 184 mm (with battery)
Approx. weight	1300g (with battery)
IP rating	IP65
Mounting	4 x 15kg holding force magnets and Velcro fastening straps
Conformity	CE, Class II type B, IEC/EN 60950

Table 3: Specifications Battery Camera/Lens Pro (Optional)

Image processor	1/3 inch Colour CMOS
Technology	Integrated 2.4GHz radio transmitter
Operating frequency	2400 ~ 2483.5MHz
Transmitting power	6.89dBm with power control
Antennae	2.5GHz, 10dBi gain
Radio distance (line of sight)	<100m
Horizontal resolution	600 TV Lines
Effective pixels	NTSC: 960 (H) X480 (V); PAL: 960 (H) X480 (V)
Usable lighting	0Lux (integrated 18 pcs. IR LEDs for image support at night)
Night vision	Yes
Angle of view	120°
IR Cut	Automatic switch between day and night
Impact resistance	<10 g
Operating temperature	-20°C to +70°C
Storage temperature	-30°C to +80°C
Integrated battery	Lithium Ion 10.8V / 51.8Wh
Charging device	100 ... 240V ~ / 13.5VDC (plug-in power supply) **or** **Cigarette plug 8 ... 16VDC**
Operating time with rechargeable battery	Approximately 15 hrs (if new battery)
Charging time	Approximately 5 hrs
Dimensions (L x W x D)	160 x 148 x 184 mm (with battery)
Approx. weight	1300 g (with battery)
IP rating	IP65
Mounting	4 x 15 kg holding force magnets and Velcro fastening straps
Conformity	CE, Class II type B, IEC/EN 60950

The difference between the "KameraPilot" and "KameraPilot Pro" is that the "KameraPilot Pro" can be charged from a cigarette plug (greater charging input voltage range)

8 CE Declaration of Conformity

Device: Battery-powered reversing camera

Trade mark: KameraPilot / KameraPilot Pro

Type: DF-723 (complete system) consisting of DF-827 (lens) and SP-766 (monitor)

Further information: See technical data sheet and operating instructions

The undersigned, acting as Authorised Representatives, declare that the equipment mentioned above complies with the following Radio Equipment, EMC and Electrical Safety Requirements

DIRECTIVE 2014/53/EU Radio Equipment Directive (RED)

DIRECTIVE 2014/30/EU Electromagnetic Compatibility (EMC)

DIRECTIVE 2014/35/EU Low Voltage Directive (LVD)

DIRECTIVE 2011/65/EU Restriction of Hazardous Substances (RoHS)

The following standards were applied:
EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011 + A2: 2013
EN 62479:2010
ETSI EN 301 489-1 V2.2.0 (2017-03)
EN 55032: 2015
EN 55024: 2010 + A1: 2015
ETSI EN 301 489-3 V2.1.1 (2017-03)
ETSI EN 300 440 V2.1.1 (2017-03)

Test laboratory: *Shenzhen Anbotek Compliance Laboratory Limited*

Manufacturer: Meier Elektronik AG, Gewerbezone 61, CH-6018 Buttisholz

Authorised representative: Buttisholz 02.07.2019

Place date

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