

MULTIMEDIA 2021/22

Automotive Solutions



For travel- &
public buses,
trains and
special vehicles



All products can also
be found on the net
www.roscho.de

**ROSCHO**
Automotive Solutions

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Cameras



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USB Charger

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Quad boxes



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DIRECS System



ROSHO Product solutions

Whether land, construction, transport vehicles or buses: ROSHO offers camera, video and multimedia solutions that are perfectly tailored to the various application scenarios in the vehicle. We cover all leading manufacturers with their common vehicle types.

The vehicles you use or offer are not included? No problem!

We also find excellent solutions for less common brands, vehicle types or scenarios. In case of doubt at your location. This is our promise.

We want it to be as easy as possible for you to equip your vehicles with powerful, innovative camera technology. For the protection of health and property, for the benefit of your and our customers.

You have the challenge.
We have the solution. ROSHO

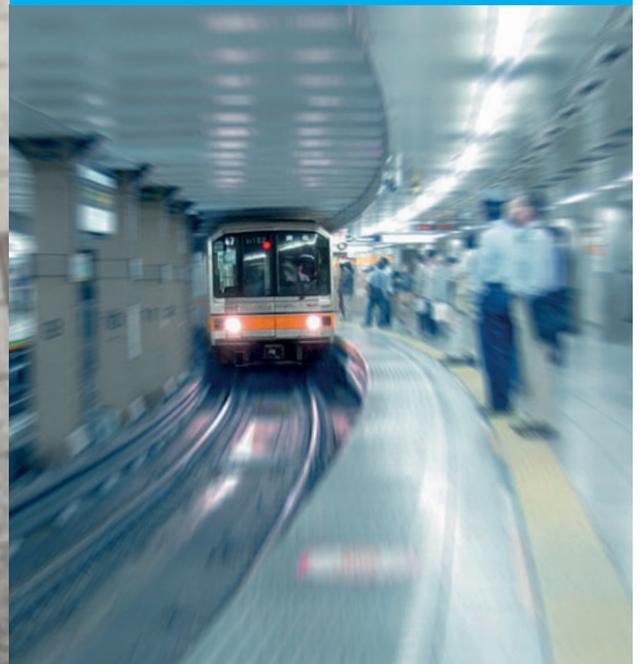
04

MONITORS

High resolution 7-, 8-, 10-Zoll



Critical workflows can be checked with ROSHO systems more efficient



Monitor LCM 706F

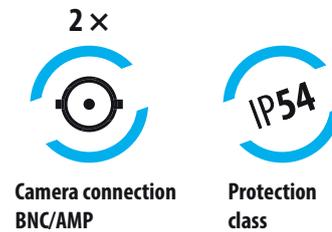
- LCM 706FS with 2 × BNC/AMP** **MB-2-070-05**
150 mm connection cable
- LCM 706FL with 2 × BNC/AMP** **MB-2-070-06**
1000 mm connection cable

7-inch built-in LCD monitor for connecting up to two cameras or video sources. Installation at the driver's workplace or in a molded part optionally available from the vehicle manufacturer.

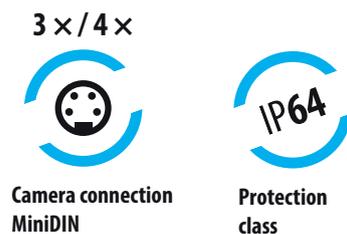
2 × Camera input // Protection class IP 54

Technical specifications

Display resolution	800 × 480
Brightness	500 cd/m²
Operating voltage	10,5 - 36V DC
Temperature range	-30 °C ~ +85 °C
Connections	2 × BNC / AMP
Dimensions (W × H × D)	160.5 × 111.4 × 18 mm



Possible representations



Monitor LCM 703 Serie

- LCM 703T (3 × Camera input)** **MM-3-070-01**
- LCM 703QHD (4 × Camera input)** **MM-4-070-01**

7-inch monitor in an elegant and robust design housing (very flat), which was developed for use in buses and commercial vehicles. 3 or 4 cameras or video sources can be connected, which on the 703QHD can be displayed either as a single image, split or quad display.

3 × / 4 × Camera input // Protection class IP 64

Technical specifications

Display resolution	800 × 480
Brightness	450 cd/m²
Operating voltage	10 - 32V DC
Temperature range	-20 °C ~ +70 °C
Connections	3 × / 4 × MiniDIN
Dimensions (W × H × D)	181 × 122 × 24 mm

06



Monitors 10 Zoll

Monitor LCM 1003T

LCM 1003 with 3 x MiniDIN MM-3-100-01

10" Monitor // 3 x Camera input // Protection class IP 64

Technical specifications

Display resolution	1280 × 800
Brightness	400 cd/m ²
Operating voltage	12 - 32VDC
Temperature range	-10 °C ~ +60 °C
Connections	3 × MiniDIN
Dimensions (W × H × D)	252 × 172.5 × 29.2 mm



With sun visor
and monitor holder



Protection
class

3 ×



Camera connection
MiniDIN

Monitor LCM 1003QHD

LCM 1003 with 4 x MiniDIN MM-4-100-01

10" Monitor // 4 x Camera input // Protection class IP 64

Technical specifications

Display resolution	1280 × 800
Brightness	400 cd/m ²
Operating voltage	12 - 32VDC
Temperature range	-10 °C ~ +60 °C
Connections	4 × MiniDIN
Dimensions (W × H × D)	252 × 172.5 × 29.5 mm



Possible representations



Protection
class

3 ×



Camera connection
MiniDIN



Protection class

2 ×



Camera connection
BNC/AMP



Monitor LCM 806OEM

LCM 806 with 2 × BNC/AMP

MB-2-080-03

8-inch LCD monitor for connecting up to two cameras or video sources.

2 × Camera input // Protection class IP 54

Technical specifications

Display resolution	800 × 600
Brightness	450 cd/m ²
Operating voltage	11 - 36V DC
Temperature range	-20 °C ~ +70 °C
Connections	2 × BNC / AMP
Dimensions (W × H × D)	204 × 156 × 24 mm



Protection class

2 ×



Camera connection
BNC/AMP



Monitor LCM 806

LCM 806 with 2 × BNC/AMP

MB-2-080-02

8-inch LCD monitor for connecting up to two cameras or video sources.

2 × Camera input // Protection class IP 54

Technical specifications

Display resolution	800 × 600
Brightness	450 cd/m ²
Operating voltage	11 - 36V DC
Temperature range	-20 °C ~ +70 °C
Connections	2 × BNC / AMP
Dimensions (W × H × D)	204 × 156 × 24 mm

Monitor LCM 1006

LCM 1006 with 2 × BNC/AMP

MB-2-104-03

10,4-Zoll-LCD-Monitor für den Anschluss von bis zu zwei Cameras or Videoquellen.

2 × Camera input // Protection class IP 54

Technical specifications

Display resolution	800 × 600
Brightness	400 cd/m ²
Operating voltage	10 - 36V DC
Temperature range	-20 °C ~ +80 °C
Connections	2 × BNC / AMP
Dimensions (W × H × D)	260 × 202 × 28 mm



Protection class

2 ×



Camera connection
BNC/AMP

Monitor mount Vesa

for LCM 809 / 1006

ZA-2-002-01



08

TURN ASSISTANT

TurnCAM®

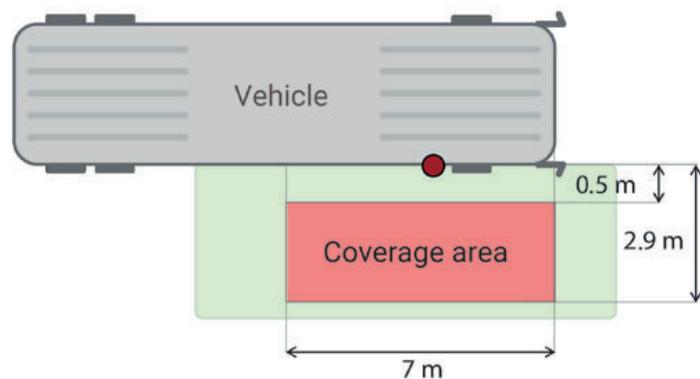
Simply switch off the blind spot

The ROSHO-TurnCAM® consists of a few, high-performance components. This includes the Blind Spot Detection Box, which has a detection function for the side camera. This registers every moving object that is in the detection area. The display will be activated automatically. The corresponding loudspeaker can be switched on and off via the speed signal and / or turn signal or GPIO signals.

Approval by the Federal Motor Transport Authority

TurnCAM® fulfills all the technical requirements that the Federal Ministry of Transport has formulated for turning assistance systems. This includes, for example, a precisely defined coverage area: This includes a rectangle 0.9 to 2.5 meters on the right-hand side of the vehicle; starting from the front right corner of the vehicle up to six meters behind the front of the vehicle.

The turning assistant from ROSHO has passed the extensive DEKRA test procedure and received a general operating permit (ABE No. 91806) from the Federal Motor Transport Authority. The system complies with the instructions and guidelines issued by the Federal Minister of Transport. The TurnCAM® can be used as an officially approved system on European roads.



Coverage area required by the Federal Ministry of Transport and Digital Infrastructure

(19. Sept. 2018 StV 22/7342-13/10)



TURNCAM®

Active turning assistance system

The TurnCAM® recognizes endangered people in the blind spot. The driver receives a visual and acoustic warning. All TurnCAM® systems have a general operating permit and are therefore eligible for funding in accordance with BMVI guidelines.



TurnCAM® System variants

TurnCAM® System variant 01/A

SCM-1-001-80

TurnCAM® System variant 01/B

SCM-1-001-81

TurnCAM® System variant 01/D

SCM-1-001-83

TurnCAM® System variant 01/E

SCM-1-001-88

Other systems on request.

TurnCAM® System variant C

Calibration box

ZA-4-900-47

TurnCAM® GPS Modul

ZA-7-900-108

TurnCAM® Buzzer Switchbox for

Turn signal and door signal

SA-1-007-04

Further accessories on request.

10

CAMERAS

Robust and reliable

Camera RK 1703B

CB-1-130-03

Compact, versatile reversing camera for buses and commercial vehicles.

Point of view 130° // Protection class IP68

Technical specifications

Sensor resolution	760 × 420
Sensitivity	0.1 Lux (8 IR LED)
Point of view	130°
Operating voltage	12V DC +/- 10%
Temperature range	-30 °C ~ +85 °C
Casing	Aluminum
Protection class	IP 68
Dimensions (W × H × D)	60 × 53.8 × 78.5 mm
Connections	BNC / AMP



Connection cable
BNC/AMP



Point of view



Protection
class

Plastickeil for die RK 1703B

PA-1-002-22



Camera SK 1706M / SK 1708M / SK 1710M

Camera SK 1710M (78°) CM-1-078-01

Camera SK 1706M (150°) CM-2-150-01

Camera SK 1708M (180°) CM-2-180-01

A wide-angle camera for good all-round visibility. Extremely robust design (highest protection class IP 69K). Can be used as a reversing and side camera for TurnCAM turning assistance systems.

Point of view 78° / 150° / 180° // Protection class IP 69K

Technical specifications

Sensor resolution	960 × 480
Sensitivity	0 Lux (8 IR LED)
Point of view	150° / 180° / 78°
Operating voltage	12 - 24V DC
Temperature range	-30 °C ~ +70 °C
Casing	Aluminum
Protection class	IP 69K
Dimensions (W × H × D)	57 × 47.5 × 65.5 mm
Connections	MiniDIN screwable



Voltage



Connection cable
MiniDIN



Protection
class



Point of view

Adapter for SK 1706M / SK 1708M / SK 1710M

ZA-1-007-03

Adapter for anti-reflective coating and for use e.g. as a front camera.



Camera

SK 1701M / SK 1702M / RK 1705M SK 1701B / SK 1702B / RK 1705B

Camera SK 1701M (right side) CM-2-120-01

Camera SK 1702M (left side) CM-2-120-02

Camera RK 1705M (reversing camera) CM-1-120-01

Camera SK 1701B (right side) CB-2-120-01

Camera SK 1702B (left side) CB-2-120-03

Camera RK 1705B (reversing camera) CB-1-120-04

Compact, teardrop-shaped reversing camera for buses and commercial vehicles. Extremely robust (highest protection class IP 69K). In the SK 1701M version as a side camera for the right side of the vehicle. As SK 1702M as a side camera for the left side of the vehicle.

Point of view 125° // Protection class IP69K

Technical specifications

Sensor resolution	760 × 420
Sensitivity	0.01 Lux (4 IR LED)
Point of view	125°
Operating voltage	9 - 15V DC
Temperature range	-30 °C ~ +85 °C
Casing	Aluminum
Protection class	IP 69K
Dimensions (W × H × D)	45 × 61 × 41 mm
Connections	MiniDIN screwable BNC / AMP



Connection cable
BNC/AMP



Connection cable
MiniDIN



Point of view



Protection
class

Adapter for SK 1701M / SK 1702M / RK 1705M

ZA-1-900-13

Camera adapter for SK 1701M, SK 1702M, RK 1705M
for camera cables or extension cables.



Clear

Edge circumsppection
with ROSHO-Cameras



12 Cameras Allroander



Connection cable
MiniDIN



Point of view
150°



Protection
class
IP69K

Camera RK 1001M

CM-1-150-09

Ball camera with extremely robust casing. For hard-to-reach areas on the outside of the vehicle. Can be aligned on all sides.

Point of view 150° // Protection class IP 68

Technical specifications

Sensor resolution	500 × 582
Sensitivity	0 Lux (8 IR LED)
Point of view	150°
Operating voltage	12 V DC
Temperature range	-30 °C ~ +70 °C
Casing	Plastic
Protection class	IP 68
Dimensions (W × H × D)	97 × 85 × 79 mm
Connections	MiniDIN screwable



RK 1002M



RK 1004M



Connection cable
MiniDIN



Point of view
110°



Protection
class
IP69K

Camera RK 1002M/1004M

Camera RK 1002M (110°)

CM-1-110-01

Camera RK 1004M (110°)

CM-1-110-04

Ball camera with extremely robust casing (highest protection class IP 69K). For hard-to-reach areas on the outside of the vehicle. Can be aligned on all sides.

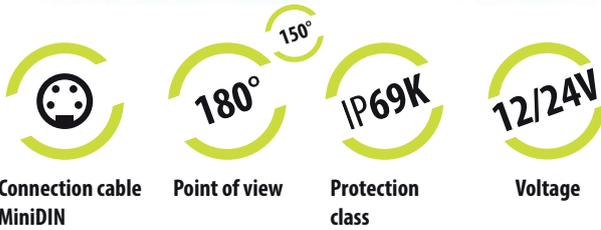
Point of view 110° // Protection class IP 69K

Technical specifications

Sensor resolution	500 × 582
Sensitivity	0 Lux (8 IR LED)
Point of view	110°
Operating voltage	12V DC +/- 10%
Temperature range	-30 °C ~ +70 °C
Casing	Aluminum/Plastic
Protection class	IP 69K
Dimensions (W × H × D)	
RK 1002M	63 × 76.5 × 50.5 mm
RK 1004M	84 × 97 × 79.2 mm
Connections	MiniDIN screwable



Dust, dirt,
and rain-
resistant



Connection cable
MiniDIN

Point of view

Protection
class

Voltage



Connection cable
Fakra/AMP

Point of view

Protection
class

Format

Camera RK 1303M / 1304M

Camera RK 1303M (150°)
Camera RK 1304M (185°)

CM-1-150-10
CM-1-185-01

Extremely robust construction. Can be placed almost anywhere.

Point of view 180° // Protection class IP 69K

Technical specifications

Sensor resolution	1280 × 960
Sensitivity	0.02 Lux (F1.4)
Point of view	150° / 180° diagonal
Operating voltage	12 - 24V DC
Temperature range	-30 °C ~ +85 °C
Casing	Aluminum
Protection class	IP 69K
Dimensions (W × H × D)	23 × 23 × 25 mm
Connections	MiniDIN screwable

Camera RK 1330 / 1331

Camera RK 1330 (PAL)
Camera RK 1331 (NTSC)

CB-1-150-04
CB-1-150-05

Minicamera for various areas of application on and in the vehicle. Extremely robust (highest protection class IP 69K).

Point of view 150° // Protection class IP 69K

Technical specifications

Sensor resolution	1280 × 960
Sensitivity	0.02 Lux
Point of view	150°
Operating voltage	5 - 30V DC
Temperature range	-30 °C ~ +85 °C
Casing	PC ABS
Protection class	IP 69K
Maße (B × H)	28 × 37.6 mm
Connections	Fakra / AMP

14 Cameras Bestseller



Connection cable
MiniDIN



Point of view



Protection
class



Voltage

Camera RK 1306M

CM-2-130-11

Small 12 and 24V cameras for hard-to-reach areas on the outside of the vehicle. Extremely robust construction (highest protection class IP 69K). Can be placed almost anywhere.

Point of view 130° // Protection class IP 69K

Technical specifications

Sensor resolution	960 × 480
Sensitivity	0 Lux (5 IR LED)
Point of view	130°
Operating voltage	12 - 24V DC
Temperature range	-30 °C ~ +70 °C
Casing	Aluminum
Protection class	IP 69K
Dimensions (W × H × D)	41 × 29 × 45.5 mm
Connections	MiniDIN screwable



Connection cable
MiniDIN



Point of view



Protection
class



Format

Camera RK 1112M

Camera RK 1112M (PAL)

CM-1-120-13

Camera RK 1112M (NTSC)

CM-1-120-12

Point of view 120° // Protection class IP 69K

Technical specifications

Sensor resolution	1,23 Megapixel
Sensitivity	0 Lux with IR LED an
Point of view	120°
Operating voltage	12V DC +/-10%
Temperature range	-40 °C ~ +80 °C
Casing	Aluminum
Protection class	IP 69K
Dimensions (W × H × D)	93 × 42 × 70 mm
Connections	MiniDIN screwable



Connection cable
MiniDIN



Point of view



Protection
class



Format



Connection cable
MiniDIN



Protection
class



Format



Voltage

Magnetic base for the RK 14xx series

ZA-1-002-09



Camera RK 1100M

Camera RK 1100M (PAL) **CM-1-130-08**
Camera RK 1100M (NTSC) **CM-1-130-12**

Reversing camera with electrical protective cover. Extremely robust (highest protection class IP 69K). Included in delivery: Shutterbox for controlling the mechanical shutter flap, 20-meter connection cable.

Point of view 145° // Protection class IP 69K

Technical specifications

Sensor resolution	1020 × 507
Sensitivity	0 Lux
Point of view	145°
Operating voltage	12V DC
Temperature range	-40 °C ~ +70°C
Casing	Edelstahl / Plastic
Protection class	IP 69K
Dimensions (W × H × D)	88 × 65 × 53 mm
Connections	MiniDIN screwable

Camera RK 14xx Serie

Camera RK 1404M (78°) **CM-1-070-06**
Camera RK 1405M (130°) **CM-1-130-10**
Camera RK 1415M (150°) **CM-1-150-05**
Camera RK 1415M (150°) NTSC **CM-1-150-06**

12 and 24V reversing camera with window heating for use on agricultural machinery and commercial vehicles. Viewing angles in 78°, 130° and 150° diagonally. Extremely robust (highest protection class IP 69K). Dust, dirt, rain and frost resistant.

Point of view 78° / 130° / 150° // Protection class IP 69K

Technical specifications

Sensor resolution	960 × 480
Sensitivity	0 Lux (8 IR LED)
Point of view	78° / 130° / 150°
Operating voltage	12 - 24V DC
Temperature range	-30 °C ~ +70 °C
Casing	Aluminum
Protection class	IP 69K
Dimensions (W × H × D)	76 × 70 × 42 mm
Connections	MiniDIN screwable

16 Cameras

Built-in cameras



Connection
cable
BNC/AMP



Point of view



Protection
class

Built-in camera

Camera DBC 204075

CB-4-120-04

High-resolution built-in camera for monitoring the door and Stair areas in buses and trains

Point of view 120° // Protection class IP 67

Technical specifications

Sensor resolution	1,23 Megapixel
Sensitivity	0.01 Lux
Point of view	120°
Operating voltage	12V DC
Temperature range	-10 °C ~ +70 °C
Casing	Aluminum
Protection class	IP 67
Dimensions (W × H)	33 × 33 × 31 mm
Connections	BNC / AMP

Built-in camera

Camera DBC 204064

CB-4-055-03

High-resolution built-in camera for use as a front and Panorama camera in buses and trains

Point of view 55° // Protection class IP 67

Technical specifications

Sensor resolution	1,23 Megapixel
Sensitivity	0.01 Lux
Point of view	55°
Operating voltage	12V DC
Temperature range	-10 °C ~ +70 °C
Casing	Aluminum
Protection class	IP 67
Dimensions (W × H)	33 × 33 × 31 mm
Connections	BNC / AMP



Connection
cable
BNC/AMP



Point of view



Protection
class

Rod camera DBC 11xx Serie

Camera DBC 114078 (55°)	CB-5-055-01
Camera DBC 114081 (92°)	CB-5-092-04
Camera DBC 114082 (130°)	CB-5-130-01

Rod camera for space-saving and discreet use in the vehicle (only lens and protective screen visible). With screw mechanism for simple and precise integration into different molded parts.

Point of view 92° / 130° // Protection class IP69K

Technical specifications

Sensor resolution	960 × 480
Sensitivity	0.3 Lux
Point of view	55° / 92° / 130°
Operating voltage	12 - 24V DC
Temperature range	-10 °C ~ +60 °C
Casing	Aluminum
Protection class	IP 69K
Maße (B × H)	29.5 (24.4) × 59.8 mm
Connections	BNC / AMP



Connection cable
BNC/AMP



Point of view



Protection
class



Voltage



**With our
Accessories
you can be sure,
that everything
fits perfectly**



18 Cameras IP Line



Connection
cable
RJ45/AMP



Point of view



Protection
class



Connection
cable
RJ45/AMP



Point of view



Protection
class

IP Dome camera DIP 150161 XR

Camera DIP 150161 XR

CX-3-120-05

High-resolution IP dome camera for interior surveillance in buses and trains. Aluminum casing protected against vandalism. Perfectly matched to the digital recording and fleet management systems from ROSHO.

Point of view 120° // Protection class IP 10K

Technical specifications

Sensor resolution	3 Megapixel
Sensitivity	0 Lux bei IR on
Point of view	120°
Operating voltage	12V DC and PoE
Temperature range	-25 °C ~ +60 °C
Casing	Aluminum/Polycarbonat
Protection class	IP 10K
Dimensions (W × H × D)	97.4 × 114.5 × 53 mm
Connections	RJ45 / AMP (opt.M12)

IP Dome camera DIP 1540600XR

Camera DIP 150200XR

CX-3-120-20

High-resolution IP dome camera for interior surveillance in buses and trains. Aluminum casing protected against vandalism. Perfectly matched to the digital recording and fleet management systems from ROSHO.

Point of view 120° // Protection class IP 10K

Technical specifications

Sensor resolution	2 Megapixel
Sensitivity	0.24 Lux
Point of view	120°
Operating voltage	12V DC
Temperature range	-25 °C ~ +60 °C
Casing	Aluminum/Polycarbonat
Protection class	IP 10K
Maße (B × H)	80 × 57 mm
Connections	RJ45 / AMP (opt.M12)

More safety
with ROSHO
Systems



Dome camera DBD 15xx Serie

Camera DBD 154643 (70°)	CB-3-070-01
Camera DBD 154060 (92°)	CB-3-092-01
Camera DBD 1540600 (120°)	CB-3-120-01
Camera DBD 1540150 (150°)	CB-3-150-01

High-resolution dome camera for interior surveillance in buses and trains. Aluminum casing protected against vandalism. Perfectly matched to the digital recording systems from ROSHO.

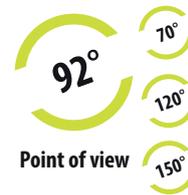
Point of view 70° / 92° / 120° // Protection class IP 10K

Technical specifications

Sensor resolution	1280 × 960
Sensitivity	0.01 Lux
Point of view	70° / 92° / 120° / 150°
Operating voltage	12V DC +/- 10%
Temperature range	-10 °C ~ +60 °C
Casing	Aluminum/Acryl
Protection class	IP 10K
Maße (B × H)	80 × 57 mm
Connections	BNC / AMP



Connection
cable
BNC/AMP



Point of view



Protection
class

Design camera DBD 11xx Serie

Camera DBD 114051 (120°)	CB-3-120-02
Camera DBD 114052 (92°)	CB-3-092-10
Camera DBD 114052 (55°) Silber	CB-6-055-01

High-resolution, elegant design camera for installation in buses.

Point of view 92° / 120° // Protection class IP 10

Technical specifications

Sensor resolution	1280 × 960
Sensitivity	0.1 Lux
Point of view	92° / 120°
Operating voltage	12V DC +/- 10%
Temperature range	-25 °C ~ +60 °C
Casing	Plastic
Protection class	IP 10K
Dimensions (W × H × D)	96 × 53 × 101 mm
Connections	BNC / AMP

CB-6-055-01



CB-3-120-02
CB-3-092-10



Connection
cable
BNC/AMP



Point of view



Protection
class

20

CABLE & ADAPTER

Always the best connection



On every
vehicle
tailored



Camera cable BNC/AMP

2 m	CW-1-020-02
5 m	CW-1-050-01
10 m	CW-1-100-01
15 m	CW-1-150-01
20 m	CW-1-200-01
25 m	CW-1-250-01
30 m	CW-1-300-01
35 m	CW-1-350-01



BNC socket pluggable / AMP socket pluggable

Video cable BNC

3 m	VW-1-030-01
6 m	VW-1-060-01
10 m	VW-1-100-01

BNC socket pluggable





Extension cable MiniDIN

2 m	CW-2-020-02
5 m	CW-2-050-06
10 m	CW-2-100-04
15 m	CW-2-150-03
20 m	CW-2-200-03
with slotted corrugated pipe / 10 m	CW-2-100-14
with slotted corrugated pipe/ 15 m	CW-2-150-14
MiniDIN plug screwable	
MiniDIN socket screwable	



Camera cable MiniDIN

2 m	CW-2-020-01
3 m	CW-2-030-05
5 m	CW-2-050-02
10 m	CW-2-100-03
15 m	CW-2-150-02
20 m	CW-2-200-01
MiniDIN plug pluggable	
MiniDIN socket screwable	

Adapter AV

ZA-5-900-04

MiniDIN socket pluggable
Cinch plug pluggable / AMP plug pluggable



Camera Adapter

ZA-1-900-12

MiniDIN socket screwable
BNC socket pluggable / AMP plug pluggable /
Open wire for reflection



Monitor Adapter

ZA-2-900-10

MiniDIN socket pluggable
BNC socket pluggable / AMP socket pluggable



Adapter for RK 1705M/ SK 1701M/SK 1702M

ZA-1-900-07

MiniDIN socket screwable
BNC socket pluggable / AMP socket pluggable



MULTIMEDIA

Audio and video components

Multimedia Audio



RFM 02/02S Driver microphone

RFM 02 (without control line)	A-3-004-04
RFM 02S (with control line)	A-3-004-05

Robust telescopic microphone, which was specially developed for use in city buses and trains. Switching on and off takes place either via direct activation on the amplifier or, in the alternative variant, by means of a control line. It is infinitely adjustable and can be rotated in all directions thanks to the 360-degree joint integrated on the foot. 1.5 meter microphone cable.



DMV2 MIC Microphone amplifier

DMV2 (without accessories)	SA-1-002-01
DMV2 (Including Bosch adapter)	SA-1-002-02

The digital stereo amplifier DMV 2-MIC has an output power of 2×45 watts. The device has $2 \times$ Remote In, $2 \times$ Line In and can be used for indoor and outdoor announcements.



DMV4 MIC Microphone amplifier

DMV4 MIC (without accessories)	A-1-003-02
--------------------------------	------------

The four-channel amplifier with integrated 56-bit DSP technology has an output power of 4×45 watts. Various sources such as radios, microphones, etc. can be connected to the amplifier. With the DSP it is possible to adjust vehicle-specific sound settings such as B. Equalizing or runtime correction (optional).



Die **DMB** verbindet die Fahrgastmonitors in Ihren Bussen with Smartphones, Tablets or Notebooks, um digitale Inhalte zu übertragen.

This is how the system works:

The DMB should be connected to the composite video input (F-Bus or yellow cinch socket) and the analog audio input (red and white cinch socket) of the Bosch / Blaupunkt radio.

The digital device is connected to the HDMI port on the DMB. You can connect any iPhone / iPad to a Lightning connector using the special HDMI video output cable. In the same way you can connect Android smartphones with an MHL cable.

Notebook or laptop can be connected via an HDMI cable as soon as the corresponding connection is available. We also offer a wireless function. This enables iOS, Android and Microsoft Nomadic devices to be connected without cables, simply through the standard Air Play, Chromecast and Miracast solutions. This works with most known devices, but requires prior setup (Wi-Fi and connectivity) on the device.

With the 12-48V DC voltage supply connected to the ignition (pin 15) and the earth cable (PIN 31) in the bus, we can charge the iPhone / iPad versions with a maximum of 2.1A - please use our USB connection function on the DMB- Device.



Digital Mirroring Box

ZA-7-900-90

Technical specifications

Operating voltage	14V – 36V
Supply current	0.5A, (max. 1A)
Standby-Supply current	< 0.1 mA
Temperature range	-10 °C ~ +80 °C
Video input connector	HDMI
Resolution	max. 1080p
Video connection	RCA Cinch (color coded)
Video signal	PAL
Audio connection	RCA Cinch (color coded)
Audio signal	Stereo
USB-Output voltage	5V
USB Output current	Max. 2.15A
Certifications	E13 10R - 05 14575
Dimensions (W x H x D)	110 x 20 x 60 mm

24 Multimedia USB Charger



USB-A Double socket structure

SW-4-000-31

24V Input and 2 x 2,14A Output



Universal USB charging station

ZA-7-900-61

12/24V Input and 1 x 3A Output



USB-A Socket

Without protective cover ZA-7-900-51
With protective cover ZA-7-900-53



12/24V Input and 1 x 3A Output
including overvoltage protection



USB-A Double socket

Without protective cover ZA-7-900-49
With protective cover ZA-7-900-54



12/24V Input and 2 x 2,5A Output
including overvoltage protection

USB-A Double socket

ZA-7-900-48

12/24V Input and 2 x 2,14A Output
including overvoltage protection



USB-A Double socket

ZA-7-900-60

12/24V Input and 2 x 2,5A Output inkl.
Übertagesschutz

USB-A Double socket EH

Part number on request

12/24V Input and 2 x 2,14A Output
including overvoltage protection



USB-A Double socket EL

Part number on request

12/24V Input and 2 x 1A Output
including overvoltage protection





Multimedia USB Charger



USB Charger set for handrails

Part number on request

- Never again an empty battery!
- For tube diameter 30.34 and 35 mm
 - 12/24 V Connection to the existing on-board Electrical system
 - $2 \times 2,5A$ Charging current (sufficient for all standard smartphones and tablets)

In any RAL color upon request*
(* depending on the number of items).

RAL 7001 – grey	RAL 9005 – black
RAL 1023 – yellow	RAL 5017 – blue
RAL 3020 – red	RAL 6024 – green



USB-C/A Double socket

ZA-7-900-490

12/24V Input and 3,6A Output
including overvoltage protection

USB-C/A Double socket

Part number on request

12/24V Input and 3,6A Output
including overvoltage protection



USB-C/A Double socket

Part number on request

2/24V Input
USB-A (2,1A)
USB-C (40W)
including overvoltage protection



USB-C/A Double socket structure

ZA-7-900-500

12/24V Input and 3,6A Output
including overvoltage protection



26 Multimedia Toggle boxes



Audio / video switch box (24V) incl. holder

ZA-1-004-01

Switches audio and video sources using a 24V signal.



Video switch box (24V) without holder

ZA-1-004-00

Switches video sources with a 24V signal.

Quad Control Box M1

ZA-1-002-01

Quad Control Box for connecting up to four cameras and video sources.
Automatic switch-on possible via trigger signals.

Possible representations



Quad Control Box M3

ZA-1-002-20

Quad Control Box for connecting up to 6 cameras and video sources.
Two monitor outputs. Including extensive configuration software (e.g. for zooming or mirroring the individual cameras, horizontal and vertical split or quad display, etc.).

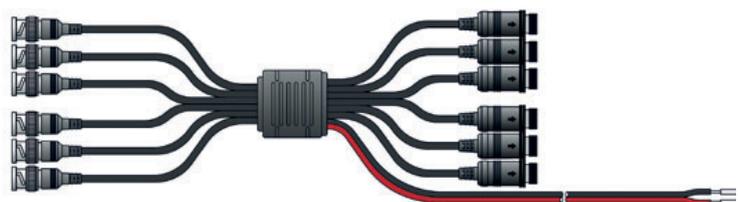
Possible representations



M3-Adapter BNC / MiniDIN

ZA-6-900-06

Adapter for easy connection of up to six ROSHO MiniDIN cameras to the Quad Control Box M3.





LED Signal sign

STOP **MB-0-100-01**

LED signal sign, for installation in MAN city buses.

WAGEN HÄLT

WAGEN HÄLT

MB-0-100-02

DE BUS HÄLT

DE BUS HÄLT

MB-0-100-03

ARRET DEMANDE

ARRET DEMANDE

MB-0-100-04

PARAR

PARAR

MB-0-100-05

STANNAR

STANNAR

MB-0-100-06

**FERMATA
PRENOTATA**

FERMATA PRENOTATA

MB-0-100-07

STOPP

STOPP

MB-0-100-08

STOPPER

STOPPER

MB-0-100-09

DURACAĞ

DURACAĞ

MB-0-100-10

BIS (Modular system infrastructure)

System- & Fehleranalyse

Die automatisierte Datenerhebung und Auswertung kann zur Validierung von Systemen im ÖPNV, z.B. zur Fahrgastzählung oder bezüglich der Verfügbarkeit (Funktionsfähigkeit) von Komponenten genutzt werden. Durch längerfristiges Datenlogging auf im Einsatz befindlichen Fahrzeugen und Systemen bestehen umfangreiche Möglichkeiten zur Fehleranalyse, die sich im stehenden Fahrzeug oder bei kurzfristiger Betrachtung nicht ergeben.

HotSpot

Wer auf dem Weg zur Arbeit im Bus bereits eMails abfragt oder im Internet die wichtigsten morgendlichen Informationen abrufen, kann die oft knappe Zeit sinnvoll nutzen. Wenn es ÖPNV-Unternehmen gelingt, Fahrzeiten für die Fahrgäste in wertvolle Zeit umzuwandeln, dann stärken sie ganz erheblich ihre Attraktivität und erhöhen durch diesen klaren Vorteil gegenüber dem Individualverkehr ihre Fahrgastzahlen.

Fahrgastinfo

Das FahrgastInfo Softwarepaket, bildet die Basis für dynamische Fahrgastinformationssysteme. Es ermöglicht die Darstellung von (Echtzeit-) Informationen, Unterhaltung und Werbung auf TFT-/LCD-Anzeigen.

Fahrgastzählung

Durch die automatische Erfassung, Aufbereitung und Übermittlung von Zählergebnissen, Türereignissen und Positionsdaten, sowie durch eine exakte Ermittlung von Fahr- und Standzeiten können aus Daten Handlungen abgeleitet werden.

SafetyNet

Das SafetyNet stellt verschlüsselte Datenverbindungen zwischen den gegenseitig authentifizierenden Netzwerkeinheiten zur Verfügung, über die IP-Datenverkehr transparent geleitet wird. Die Hannover Networks stellt die zum Betrieb des SafetyNet erforderliche Infrastruktur zur Verfügung.



WLAN Router LTE WiFi LOCAL 2

ZA-7-900-91

WLAN router with integrated LTE Cat 4 modem for convenient internet access on the bus.

- Use up to 40 users at the same time up to 4 SIM data cards possible (manual switching), 2 SIM card slots outside, 2 SIM card slots inside (for permanently integrated data cards)
- SSID can be set manually
- Password can be set manually
- APN identifier can be set manually
- Automatic firmware update via server (manufacturer) and Remote monitoring
- Including CMS software * for individual settings by the Operator (* expected to be available from 2nd quarter of 2019)



WLAN Router LTE WiFi COMFORT 2

ZA-7-900-113

WLAN router with integrated LTE Cat 4 modem for convenient internet access on the bus.

- Use up to 60 users at the same time up to 4 SIM data cards possible (manual switching), 2 SIM card slots outside, 2 SIM card slots inside (for permanently integrated data cards)
- SSID can be set manually
- Password can be set manually
- APN identifier can be set manually
- Automatic firmware update via server (manufacturer) and remote monitoring
- Including CMS software * for individual settings by the Operator (* expected to be available from 2nd quarter of 2019)



Flotten- / Statusmanagement

Das FleetManagement ermittelt in Echtzeit Positions- und Statusinformationen von Fahrzeugen, Fahrzeugkomponenten und von in den Fahrzeugen installierten Systemen. Die erfassten Daten werden an zentrale Serversysteme übertragen, dort protokolliert, aufbereitet und auf Client-Systemen angezeigt. Meldungen über Statusänderungen können zudem per eMail oder SMS ausgelöst werden.



Videosicherheit

Die DIRECS-Systeme bieten bei einem exzellenten Preis-Leistungsverhältnis ein Maximum an Funktionen, wie aktives Alarmmanagement, LiveÜbertragung von Daten, automatische Sabotageund Bewegungserkennung, digitale Signatur der Aufzeichnungsdaten, Integration in bestehende Fahrzeugsysteme und vieles mehr.



NB2800, LTE-WLAN-Router

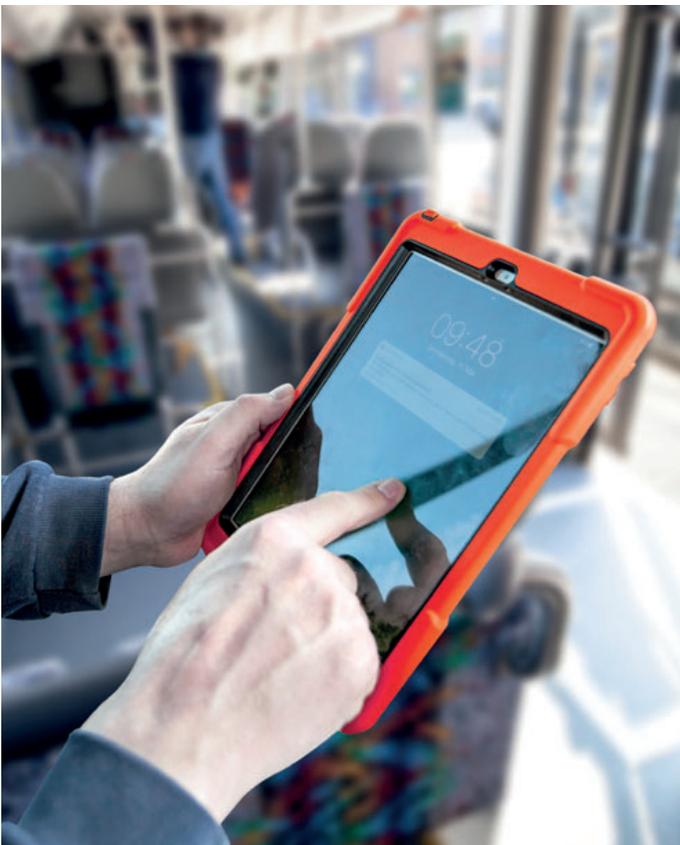
(with LTE + GPS)* **ZA-7-900-94**
 (with Dual-LTE + GPS)* **ZA-7-900-87**
 *(Additional accessories required)

*Roof antenna MIMO LTE + GPS - 3 m cable,
 Series NB2800 **ZA-7-900-88**

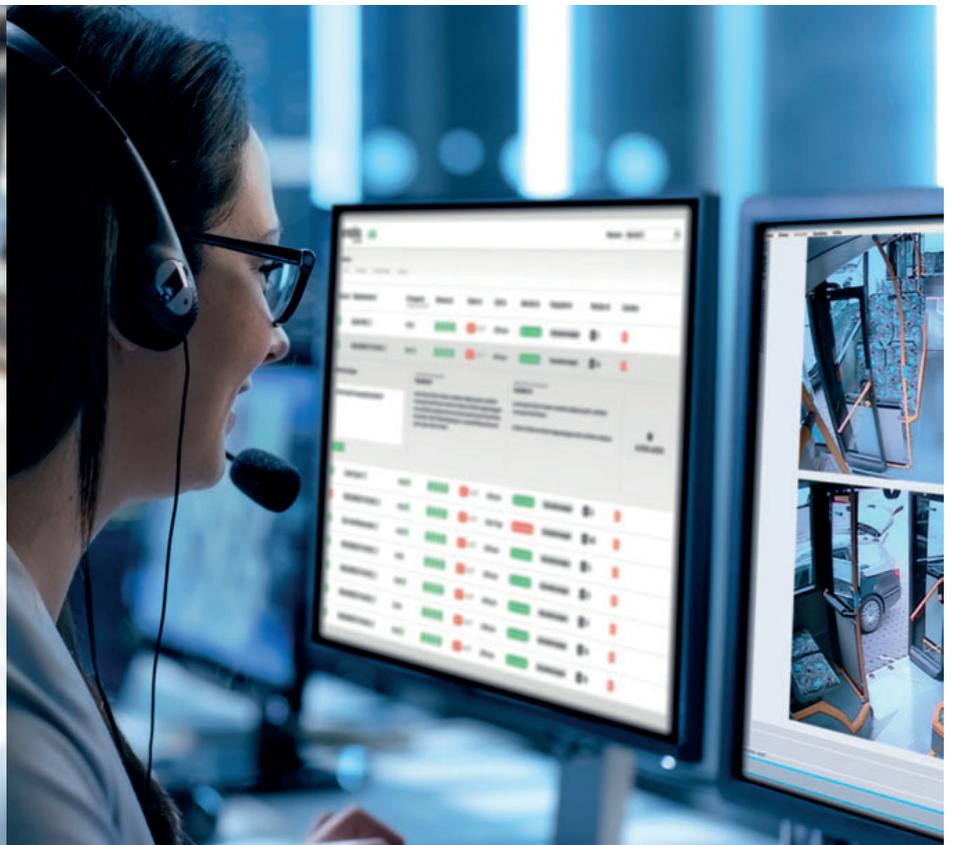
*Indoor sticky antenna MIMO WLAN, 3m cable,
 Fakra - Series NB2800 **ZA-7-900-89**

- Router for LTE internet access in the bus
- Media server functionality
- Up to one terabyte of local storage
- Several LTE modems
- Several WLAN-ac AP / clients
- 2 Gigabit Ethernet Ports
- VLAN, RSTP, LLDP
- 12 / 24V

Service and entertainend for passengers



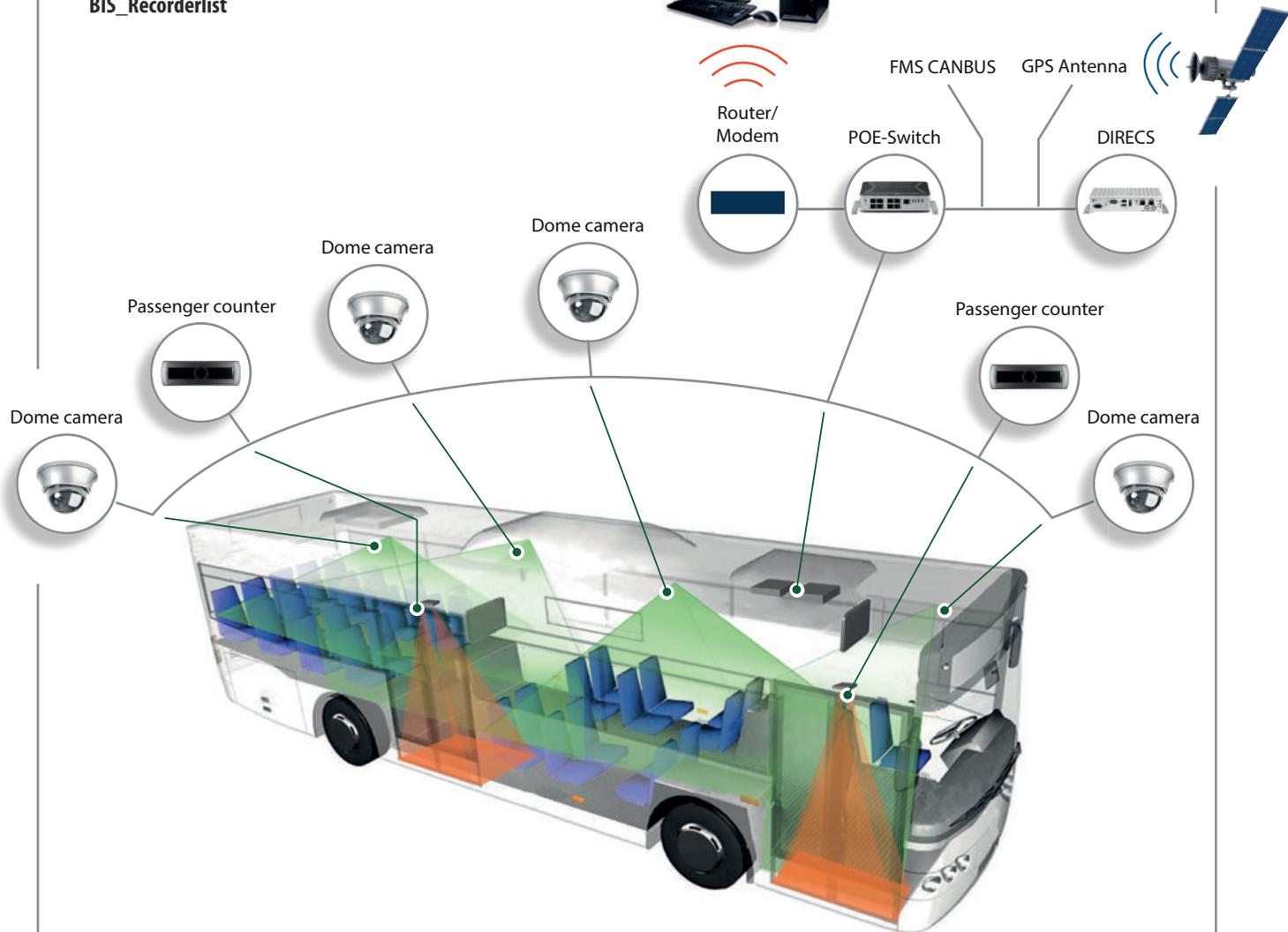
System data transfer to the control center



BIS system infrastructure for more mobility

Status	Bezeichnername	Firmware	Kameras	Fehler	Zeit	Aktivität	Festplatte	Notizen	Löschen
✓	Buslinie 11a	16.100	1 2 3 4	0/0	2 Minuten	aktiv in Betrieb	Statistiken anzeigen	1	✕
✓	MOB (DIRECS 111-09-041)	15.104	1 2 3 4	0/0	2 Minuten	aktiv in Betrieb	Statistiken anzeigen	14	✕
<p>Notiz hinzufügen</p> <p>Bitte hier das Firmwareupdate auflisten</p> <p>15.01.2019 um 16:20 schriftlich Techniker BA...</p> <p>16.01.2019 um 16:20 schriftlich Techniker BA...</p> <p>ALTERNATIVE LADEN</p>									
✓	Lorem ipsum	15.104	1 2 3 4	0/0	2 Minuten	aktiv in Betrieb	Statistiken anzeigen	8	✕
✗	MOB (DIRECS 111-09-041)	15.104	1 2 3 4	0/0	Über 3 Tage	aktiv in Betrieb	Statistiken anzeigen	140	✕
✓	Bus in der Musterstraße	15.104	1 2 3 4	0/0	2 Minuten	aktiv in Betrieb	Statistiken anzeigen	5	✕
✓	MOB (DIRECS 111-09-041)	16.100	1 2 3 4	0/0	2 Minuten	aktiv in Betrieb	Statistiken anzeigen	0	✕
✓	MOB (DIRECS 111-09-041)	15.104	1 2 3 4	0/0	2 Minuten	aktiv in Betrieb	Statistiken anzeigen	11	✕
✓	MOB (DIRECS 111-09-041)	16.100	1 2 3 4	0/0	2 Minuten	aktiv in Betrieb	Statistiken anzeigen		✕
✓	MOB (DIRECS 111-09-041)	15.104	1 2 3 4	0/0	2 Minuten	aktiv in Betrieb	Statistiken anzeigen		✕

BIS_Recorderlist



Basic Version BIS:

- External surveillance
- Overview of all recorders
- Recorders can be given their own name
- Firmware version can be displayed and there is an information whether there is an update
- A note can be added to a recorder as a history is built. The user is also displayed.
- The list of recorders can be filtered differently:
 - Normal view, all recorders one below the other with current status
 - Recorder with current error
 - Recorder with errors in the last xx days
 - Recorder with outdated firmware status
 - List of a recorder with history (various filters)
 - Log for the workshop
 - Export the list as an Excel / CSV file
 - Print function for the list
 - A detailed view can be displayed for each recorder
 - The errors are possibly linked to the GPS position of the bus
 - Link the alarm button with GPS.
 - The storage of the status data in the BIS system is limited to 100 days.
 - Error counter can be reset

Modular extension BIS:

1. AFZ (Passenger counting)

- Transmission of counting results in real time or at time intervals
- Preparation of the data on server systems
- Support of common interfaces
- Integration in evaluation systems from any provider

2. Videoschutz

- Transmission of alarm data and images
- Remote access to camera systems
- Transmission of the GPS coordinates
- Setting of alarm markers

3. FMS-CANBus

- Real-time status of vehicles and systems

Further modules and extensions on request and project-related possible at any time!



Display systems and surveillance systems of the latest Generation for mobile use

DIRECS 4/8plus Recorder

DIRECS 4 (4 Camera connections)	DR-1-004-01
DIRECS 8 (8 Camera connections)	DR-1-008-01
DIRECS 8plus (8 Camera connections)	DR-8-008-01
(Additional accessories required)*	

*DIRECS 4 Voltage supply and inputs / outputs	ZA-3-900-12
*DIRECS 8 Voltage supply and inputs / outputs	ZA-3-003-02

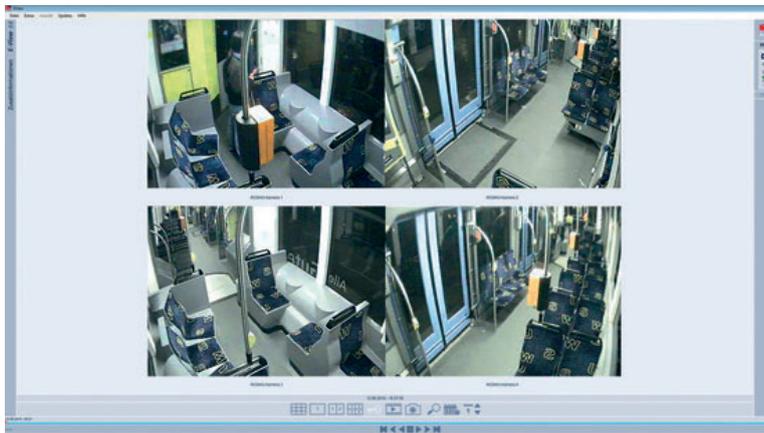
- Specially designed for use in public transport, logistics and valuables transport
- All necessary certifications (e / E, EN 50155) for use in the mobile area
- Optimized for use under extreme conditions (-15 to + 70 °C)
- Recording of video, audio and additional data (IBIS, log file, GPS)
- Recording of up to 8 analog CCTV and digital network cameras
- Wear-free recording on hard disks (HDD) and flash (SSD)



DIRECS 8plus



DIRECS 4/8



EView overview

DIRECS equipment

USB Evaluation unit

ZA-3-900-05

USB evaluation unit for DIRECS exchangeable hard disks for connection to a PC or laptop, incl. power supply.



Removable drive SSD

250 GB (linear)
500 GB (linear)

DF-1-250-11
DF-1-500-02



Removable drive HDD

320 GB (linear) **DF-1-320-02**
320 GB **DF-1-320-03**
(linear + extended temperature range)
500 GB (linear) **DF-1-500-11**
1000 GB (linear) **DF-1-1000-01**



**4 × IP cameras + up to more 8 × IP cameras via switch
+ 4 x analog cameras**



DIRECS Vbox5*

HW-1-0005

Fanless embedded PC for recording IP cameras and Connection of passenger counting sensors in buses and trains.

- 4 x LAN with PoE + 1 x LAN
- 2 x USB 3.0
- Intelligent energy management with switch-on / switch-off delay the ignition via software control and low voltage protection
- LTE modem
- GPS
- Wide range input from 9 - 48V
- Operating temperature -40 °C ~ 70 °C
- Dimensions 240 × 161 × 85 mm
- Weight 1.4 kg

*Further embedded PC products on request



LCM 800W

HW-4-0003

8" Monitor // 1 × VGA Input // 2 x A/V Input via adapter cable*
*further accessories required

- LED touch display
- 800 (W) x (RGB) x 480 (H)
- Brightness 500 cd / m2
- Contrast 500: 1
- Point of view 40/60/60/60
- Wide range input from 9 - 36V
- Operating temperature -30 °C ~ 85 °C (ambient W / 0.6M / S air flows around)
- Dimensions 220 × 135 × 29 mm
- Weight approx. 0.8kg

Removeable drive HDD or SSD

Storage sizes from 320GB to 2TB available; further information on request

Schematic representation of the **perpetrator identification process**



34 Multimedia

Automated passenger counting



IRMA MATRIX-Structure-Variant



IRMA MATRIX-Installation-Variant

IRMA MATRIX R2

Sensor-Variant DIST500-A

HW-2-0019

Sensor-Variant DIST500-F

HW-2-0020

Efficient, precise, robust. The IRMA MATRIX sensor records the number of passengers entering and exiting. To do this, it is installed over passage-ways that passengers have to pass when using Verkehrswithtel (e.g. over a bus door). The sensor calculates the distance values to the object in each of the 500 pixels simultaneously from the phase difference and the delay time shift between transmitted and received light. *

* Other accessories required



Installation variants



APS-R-PoE

HW-2-0008

The APS-R-PoE is the more passenger counter. It uses 3D image processing algorithms to analyze the flow of people. A counting accuracy of 98% or higher is achieved. The APS-R-PoE improves user-friendliness, maximizes options for the new remote connectivity and automates many processes that typically require manual intervention. As a result, the labor costs for installing, commissioning and operating traditional APC units can be reduced. *

* Other accessories required

APS-B

HW-2-00080

The APS-B offers the proven range of functions of the APS family and, with its slim design, is designed for easy ceiling mounting in buses. Despite the significantly more powerful hardware, the device is smaller, lighter and more energy-efficient than its predecessor. In addition, the APS-B impresses with its excellent computing power and attractive pricing. Thanks to the device software proven from APS-R and APS-R-PoE, the APS-B has an identical range of functions with the same excellent counting accuracy. *

* Other accessories required





PoE-Switch 4S

ZA-7-007-14

The PoE switch 4S has 5 Giga-Bit Fast Ethernet ports, including 4 PoE ports according to IEEE 802.3af, to transfer large amounts of video streaming, voice and critical data smoothly and quickly over the Ethernet network. Since the power source of a vehicle is inherently unstable, the mobile PoE switches support a wide input voltage range from 9 VDC to 36 VDC and offer intelligent power management with protection against low battery voltage, switch-on and switch-off delay timers and auto-ignition on / off. Switch-off functions. These unique features can ensure reliable operation and prevent premature failure of both the PoE switches and the vehicle.

- PoE connection with 4 x 10/100/1000 Mbit / s (802.3af compatible)
- 15.4 W at 48 VDC for each PoE port
- CE / FCC, E13 certification
- -30 ~ 70 °C operating temperature



PoE-Switch 8S

ZA-7-007-15

The 8S PoE switch offers 9 Giga-Bit Fast Ethernet ports, including 8 PoE ports compliant with IEEE 802.3af, to transfer large amounts of video streaming, voice and critical data smoothly and quickly over the Ethernet network. Since the power source of a vehicle is inherently unstable, the mobile PoE switches support a wide input voltage range from 9 VDC to 36 VDC and offer intelligent power management with protection against low battery voltage, switch-on and switch-off delay timers and auto-ignition on / off. Switch-off functions. These unique features can ensure reliable operation and prevent premature failure of both the PoE switches and the vehicle.

- PoE port with 8 x 10/100/1000 Mbit / s (802.3af compatible)
- 15.4 W at 48 VDC for each PoE port
- CE / FCC, E13 certification
- -30 ~ 70 °C operating temperature

PROFINET-Patch-cable 2 x RJ45-socket

1 m	CL-4-010-01
2 m	CL-4-020-01
5 m	CL-4-050-01
10 m	CL-4-100-01
15 m	CL-4-150-01
25 m	CL-4-250-01



PROFINET-Patch-cable RJ45 and M12 socket

1 m	CL-4-010-02
2 m	CL-4-020-02
5 m	CL-4-050-02
10 m	CL-4-100-02
15 m	CL-4-150-02
25 m	CL-4-250-02



PoE-Switch 8T

ZA-7-007-16

The unmanaged switch offers 8 Fast Ethernet ports. With the M12 Connector technology on the IP54 casing, the switch is ideal suitable for use in vehicles of the public transport company. The switch is plug & play, easy to use and has a very good price-performance ratio.

Further switch variants on request

Further cable variants on request



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 **ROSHO**
Automotive Solutions

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