

Multimedia 2016 | 17

Coach & city buses

Camera systems, audio and video components







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




 **ROSCHO**
Automotive Solutions

CONT



	4	Monitors
	10	Cameras
	20	Cable & adapter
	24	Multimedia



Whether for agriculture, construction, transport vehicles or buses:
Rosho provides camera or video solutions that are perfectly tailored to
the different scenarios. We cover all the leading manufacturers from
their current vehicle models.

Those of you used or offered vehicles are not among them? No problem!
Even for less widely used brands, types of vehicles or scenarios we find
excellent solutions. This is our promise.

We want you to have it as simple as possible to equip your vehicles
with powerful, innovative camera technology. To protect health and
property, for the benefit of your and our customers.
You have the challenge. We have the solution. ROSHO.

MONITORS

Monitors for mobile special operations must meet stringent requirements in terms of resolution and robustness. Mass-produced helps because no further.

Therefore, we develop our high-resolution 5-, 7- or 10-inch monitors themselves. With all the practical experience that we have gained in 30 years.

You want a seven-incher in heavy-duty version with Quad function? Do we have. Intuitive menu included.

MONITORS

6,5 - 7 INCH

5



Monitor LCM 606

7-inch LCD monitor installation for the connection of up to two cameras or video sources. Mounting the driver's seat or in an optional Bugklappenhalter above the driver (especially for EvoBus and MAN vehicles).

MB-2-065-01

2x Camera input // Schutzklasse IP 54

Resolution / TVL	400 x 234
Brightness	300 cd / m ²
Operating voltage	24V
Temperature range	-30°C – +85°C
Connections	2 x BNC/AMP
Mounting dimensions	(WxHxD) 163 x 109 x 23 mm



Monitor LCM 706

7-inch LCD monitor installation for the connection of up to two cameras or video sources. Mounting the driver's seat or in an optional Bugklappenhalter above the driver (especially for EvoBus and MAN vehicles).

MB-2-070-01

2x Camera input // Schutzklasse IP 54

Resolution / TVL	800 x 480
Brightness	500 cd/m ²
Operating voltage	10,5 - 36 V
Temperature range	-30°C - +85°C
Connections	2 x BNC/AMP
Mounting dimensions	(WxHxD) 162 x 109,2 x 24,3 mm

MONITORS

7 INCH



Monitor LCM 709

7-inch standard monitor with two camera inputs for use in buses.

709 with 2x MiniDIN	MM-2-070-02
709 with 1x MiniDIN, 1x BNC/AMP	SM-1-002-04
709 with 2x BNC/AMP	SM-1-002-05

2x Camera input // Protection class IP 54

Resolution / TVL	800 x 400
Brightness	350 cd / m²
Operating voltage	12 – 36V
Temperature range	-10°C – +65°C
Connections	2x MiniDIN / 1 or 2 adapter BNC/AMP
Mounting dimensions	(WxHxD) 182 x 120 x 30 mm



Monitor LCM 703QHD

7-inch monitor in sleek and sturdy design case (very flat), which was developed for use in buses and commercial vehicles. It can 3 or 4 cameras or video sources can be connected, which are selectively displayed when 703QHD as a single image, split or quad view. In addition, can be activated, which protects the settings on the device to prevent unauthorized changes to a key lock.

LCM 703T (3x Kamera Eingang)	MM-3-070-01
LCM 703QHD (4x Kamera Eingang)	MM-4-070-01

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

Resolution / TVL	800 x 480
Brightness	450 cd/m²
Operating voltage	10 - 32 V
Temperature range	-20°C - + 70°C
Connections	3x / 4x MiniDIN
Mounting dimensions	(W/H/D) 181 x 122 x 24 mm

MONITORS

8 AND 10 INCH

7



Monitor LCM 809

8-inch LCD monitor for the connection of up to two cameras or video sources. Mounting the driver's seat or on the front hatch above the driver.

MM-2-080-01

2x Camera input // Protection class IP 54

Resolution / TVL	800 x 600
Brightness	350 cd/m²
Operating voltage	12 - 36 V
Temperature range	-20°C - + 70°C
Connections	2 x BNC/AMP
Mounting dimensions	(W/H/D) 203 x 163 x 28 mm



Monitor LCM 1009

10.4-inch LCD monitor for the connection of up to two cameras or video sources. Mounting the driver's seat or on the front hatch above the driver.

MB-2-104-01

2x Camera input // Protection class IP 54

Resolution / TVL	800 x 600
Brightness	350 cd/m²
Operating voltage	12 - 36 V
Temperature range	-20°C - + 70°C
Connections	2 x BNC/AMP
Mounting dimensions	(W/H/D) 252 x 207 x 29 mm

MONITORS

ACCESSORIES



Monitor holder
for LCM 709 / 809

ZA-2-002-11



Monitor holder Vesa
for LCM 809 / 1009

ZA-2-002-01



Monitor holder for LCM 706

ZA-2-002-24



CAMERAS

CAMERAS

The camera is the heart of any solution. You must fit: For vehicle, the field of application to your quality requirements.

Therefore we use the constant development of the optics, the housing and the electronics of our cameras so much energy and care.

Our cameras are always inspected and tested under operating conditions. They offer certified quality, up to the highest protection class.

CAMERAS

ALLROUNDER

11



Camera RK 1002M

Ball camera with extremely robust case (highest protection class IP69K). For hard to reach areas outside of the vehicle. After all sides aligned.

CM-1-110-01

Angle 110° // Protection class IP69K

Resolution / TVL	480 TVL
Sensitivity	0 Lux (IR LED 8)
Lens / angle	2.6 mm (110 °)
Operating voltage	12 V DC +/- 10%
Temperature range	-30 ° - + 70 ° C
Housing	Alu / Alu Plastic Black
IP class	IP 69K
Measurements and weight	(WxHxD) 63 x 76.5 x 50.5 mm, 154 g
Connections	MiniDIN screw



Camera RK 1004M

Ball Camera for outdoor use of articulated buses. After all sides aligned.

CM-1-110-04

Angle 110° // Protection class IP69K

Resolution / TVL	480 TVL
Sensitivity	0 Lux (IR LED 8)
Lens / angle	2.6 mm (110 °)
Operating voltage	12 V DC +/- 10%
Temperature range	-30 ° - + 70 ° C
Housing	Alu / Alu Plastic Black
IP class	IP 69K
Measurements and weight	(WxHxD) 84 x 97 x 79.2 mm, 196 g
Connections	MiniDIN screw



NEW! Camera RK 1405M/1415M

12 and 24V reversing camera with defogger for use on buses. Huge round visibility. Extremely robust (highest protection class IP 69K). Dust, dirt, rain and frost resistant.

RK 1405M **CM-1-130-10**
RK 1415M **CM-1-150-05**

Angle 130°/150° // Protection class IP69K

Resolution / TVL	580 TVL
Sensitivity	0 Lux (IR LED 8)
Lens / angle	130 ° / 150 °
Operating voltage	12V - 24V DC +/- 10%
Temperature range	-30 ° - + 70 ° C
Housing	Aludruckguss in black
IP class	IP 69K
Measurements and weight	(WxHxD) 76 x 70 x 42mm 242g
Connections	MiniDIN screw



NEW! Camera RK 1306M

A small 12 and 24V camera for difficult to access places outside on the vehicle. An extremely robust construction (the highest Protection Class IP 69K). Can be housed almost anywhere.

CM-1-130-11

Angle 130° // Protection class IP69K

Resolution / TVL	540 TVL
Sensitivity	0 Lux (IR LED 5)
Lens / angle	130 °
Operating voltage	12V - 24V DC +/- 10%
Temperature range	-30 ° - + 70 ° C
Housing	Die-cast aluminum in black
IP class	IP 69K
Measurements and weight	(WxHxD) 41 x 29 x 45.5mm 140g
Connections	MiniDIN screw

CAMERAS

REAR AND SIDE CAMERA

13



NEW! Camera SK 1708M

Camera for use as a side and rear view camera. Huge round view (180 degrees). Extremely robust (highest protection class IP 69K). Dust, dirt, rain and frost resistant.

CM-2-180-01

Angle 180° // Protection class IP69K

Resolution / TVL	580 TVL
Sensitivity	0 Lux (IR LED 8)
Lens / angle	180 °
Operating voltage	12 V DC +/- 10%
Temperature range	-30 ° - + 70 ° C
Housing	Die-cast aluminum in black
IP class	IP 69K
Measurements and weight	(WxHxD) 57 x 47.5 x 65.5 mm, 220 g
Connections	MiniDIN screw



Camera RK 1705M/SK 1701M/SK 1702M

Compact, drop-shaped rear view camera for utility vehicles. Extremely robust (the highest Protection Class IP 69K). In the version SK 1701M side camera for the right side of the vehicle. As SK 1701M side camera for the left side of the vehicle.

RK 1705M CM-1-120-01

SK 1701M r CM-2-120-01

SK 1702M l CM-2-120-02

Angle 120° // Protection class IP69K

Resolution / TVL	> 270 TVL
Sensitivity	0.01 Lux (IR LED 4)
Lens / angle	3mm (120 °)
Operating voltage	12 V DC +/- 10%
Temperature range	-30 ° - + 85 ° C
Housing	Die-cast aluminum in black
IP class	IP 69K
Measurements and weight	(WxHxD) 45 x 61 x 41 mm, 180 g
Connections	MiniDIN screw



Camera **RK 1100M**

Rear view camera with an electrical protection cover. Extremely robust (the highest Protection Class IP 69K). The following are included in the scope of delivery: Shutter box for flap control, a 20 metre connection cable.

CM-1-130-08

Angle 145° // Protection class IP69K

Resolution / TVL	380 TVL
Sensitivity	0 Lux
Lens / angle	145°
Operating voltage	12 V DC +/- 10%
Temperature range	-40° - + 70° C
Housing	Stainless steel black/silver
IP class	IP 69K
Measurements and weight	(WxHxD) 88 x 65 x 53 mm, 340 g
Connections	MiniDIN screw

15





Dome camera DBD 154643

A high resolution dome camera for interior monitoring of buses and trains. The aluminium housing protects it against vandalism. Perfectly matches the digital recording systems from ROSHO and DEROVIS.

CB-3-070-01

Angle 92°/120°/180° // Protection class IP 10K

Resolution / TVL	560 TV lines
Sensitivity	0.1 Lux
Lens / angle	70 °
Operating voltage	12 V DC +/- 10% on monitor
Temperature range	-10 ° to + 60 ° C
Housing	Aluminum (vandal-proof)
IP class	IP 10K
Measurements and weight	(W x H) 80 x 57 mm, 270 g
Connections	BNC / AMP



Dome camera DBD 154060

A high resolution dome camera for interior monitoring of buses and trains. The aluminium housing protects it against vandalism. Perfectly matches the digital recording systems from ROSHO and DEROVIS.

CB-3-092-01

Angle 92° // Protection class IP 10K

Resolution / TVL	560 TV lines
Sensitivity	0.1 Lux
Lens / angle	92 °
Operating voltage	12 V DC +/- 10% on monitor
Temperature range	-10 ° to + 60 ° C
Housing	Aluminum (vandal-proof)
IP class	10K
Measurements and weight	(W x H) 80 x 57 mm, 270 g
Connections	BNC / AMP

CAMERAS

UP TO 360°

17



Dome camera **DBD 1540600**

A high resolution dome camera for interior monitoring of buses and trains. A particularly large perspective (diagonal 120°). The aluminium housing protects it against vandalism. Perfectly matches the digital recording systems from ROSHO and DEROVIS.

CB-3-120-01

Angle 120° // Protection class IP 10K

Resolution / TVL	560 TV lines
Sensitivity	0.1 Lux
Lens / angle	120 °
Operating voltage	12 V DC +/- 10% on monitor
Temperature range	-10 ° to + 60 ° C
Housing	Aluminum (vandal-proof)
IP class	IP 10K
Measurements and weight	(W x H) 80 x 57 mm, 270 g
Connections	BNC / AMP



Dome camera **DBD 1540360**

A high resolution dome camera for interior monitoring of buses and trains. The aluminium housing protects it against vandalism. Perfectly matches the digital recording systems from ROSHO and DEROVIS.

CB-3-360-01

Angle 180° // Protection class IP 10K

Resolution / TVL	1000 TV lines
Sensitivity	0.1 Lux
Lens / angle	180 °
Operating voltage	12 V DC +/- 10% on monitor
Temperature range	-10 ° to + 50 ° C
Housing	Aluminum (vandal-proof)
IP class	IP 10K
Measurements and weight	(W x H) 75 x 66 mm, 300 g
Connections	BNC / AMP



Design camera DBD 114051/DBD 114052

A high resolution, elegant designer camera for installation in buses. A particularly large perspective (diagonal 120°).

CB-3-120-02

Angle 120° // Protection class IP 10

Resolution / TVL	560 TV lines
Sensitivity	0.1 Lux
Lens / angle	120 °
Operating voltage	12 V DC +/- 10% on monitor
Temperature range	-25 ° to + 60 ° C
Housing	Plastic light gray
IP class	IP 10
Measurements and weight	(WxHxD) 96 x 53x 101 mm, 250 g
Connections	BNC / AMP



Design camera DBD 114051/DBD 114052

A high resolution, elegant designer camera for installation in buses

CB-3-092-10

Angle 92° // Protection class IP 10

Resolution / TVL	560 TV lines
Sensitivity	0.1 Lux
Lens / angle	92 °
Operating voltage	12 V DC +/- 10% on monitor
Temperature range	-25 ° to + 60 ° C
Housing	Plastic light gray
IP class	IP 10
Measurements and weight	(WxHxD) 96 x 53x 101 mm, 250 g
Connections	BNC / AMP

CAMERAS

FRONT-/ BOARDING CAMERA

19



Tube camera DBC 114081/DBC 114082

A tube camera for space-saving and discrete use (only the objective and the protective disc are visible). A particularly large perspective. Fitted with a screw mechanism for simple and precise integration in different moulded parts.

DBC 114081 CB-5-092-04
DBC 114082 CB-5-130-01

Angle 92°/120° // Protection class IP 68

Resolution / TVL	420 TV lines
Sensitivity	0.3 Lux
Lens / angle	92 ° / 130 °
Operating voltage	12 V DC +/- 10% on monitor
Temperature range	-10 ° to + 60 ° C
Housing	Die-cast aluminum in black
IP class	IP 68
Measurements and weight	29.5 (25) x 60 mm, 190 g
Connections	BNC / AMP



Panorama camera set DBC 204064

A special camera set for installation in the dashboard, for presentation of the front area ("panoramic picture"). Using an optional switching unit the video pictures can be optionally transmitted to passenger monitors or recorded.

SC-1-002-01

Angle 55° // Protection class IP 54

Resolution / TVL	650 TV lines
Sensitivity	0.1 Lux
Lens / angle	55 °
Operating voltage	12 V DC +/- 10% on monitor
Temperature range	-10 ° to + 70 ° C
Housing	Die-cast aluminum in black
IP class	IP 54
Measurements and weight	(WxHxD) 32 x 32 x 35 mm, 40 g
Connections	BNC / AMP

CABLE & ADAPTERS

In one system, it does not last on the compounds. And here make the details of the difference.

Quality is evident immediately during installation: If the cable is long enough? Fit couplings and adapter? If additional effort needed to connect everything?

With our accessories you can be sure that everything fits perfectly. We know what is required for which vehicle. And all in good Rosho Quality.

CABLE

CONNECTION CABLE

21

BNC / AMP



Camera cable BNC/AMP

BNC connector plug / AMP connector plugged
BNC connector plug / AMP connector plugged

2m	CW-1-020-02
5m	CW-1-050-01
10m	CW-1-100-01
20m	CW-1-200-01



Video cable BNC

BNC connector plug
BNC connector plug

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

CABLE

CONNECTION CABLE

MiniDIN



Camera cable MiniDIN

Mini DIN connector plug
Mini DIN socket screw

5m	CW-2-050-02
10m	CW-2-100-03
20m	CW-2-200-01



Extension cable MiniDIN

Mini DIN connector screw
Mini DIN socket screw

5m	CW-2-050-06
10m	CW-2-100-04
20m	CW-2-200-03



Camera cable for RK 1705M / SK 1701M / SK 1702M

Mini DIN connector plug
Mini DIN socket screw

5m	CW-2-050-05
10m	CW-2-100-01
20m	CW-2-200-02

ADAPTER

MiniDIN - BNC

23



Adapter navi

for camera use with mobile navigation
Mini DIN connector plug
3.5 mm jack plug can be plugged / AMP connector plugged

Garmin **ZA-5-900-03**
Snooper **ZA-5-900-07**



Adapter AV

Mini DIN connector plug
RCA plug pluggable / AMP connector plugged

ZA-5-900-04



Camera adapter

Mini DIN connector plug
BNC plug / AMP connector plugged

ZA-1-900-12



Monitor adapter

Mini DIN connector plug
BNC plug / AMP connector plugged

ZA-2-900-10



Adapter

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

Mini DIN socket screw
BNC plug / AMP connector plugged

ZA-1-900-07

MULTIMEDIA

To satisfy the demands of the passengers of today, buses have more and more electronics on board. For safety's sake, but also for entertainment purposes.

In Rosho see a comprehensive range of high-performance, certified for the bus-use audio and video components.

Whether wireless or driver announcement: We provide the necessary hardware. In high quality and perfectly matched.

MULTIMEDIA

AUDIO

25



RFM 02/02S

Driver microphone

The sturdy telescopic RFM 02 microphone was developed for use in city buses and trains. A separate control line for switching on and off. Its length can infinitely adjusted and it can be turned in all directions on the integrated 360 degree link on the floor. A 1.5 metre connection cable.

RFM 02 (without a control line)
RFM 02S (with a control line)

A-3-004-01
A-3-004-02



DMV2 MIC

Microphone amplifier, digital

The digital stereo amplifier DMV 2-MIC has a power output of 2x45 Watt. The device has each 2 x Remote In, 2x Line In and can be used for indoor and outdoor announcements. Incl. Bosch Adapter.

SA-1-002-02



DMV4 MIC

Microphone amplifier, digital

A four-channel amplifier with integral 56-bit DSP technology. Output capacity: 4x45 Watt. Coach radios can be connected to the amplifier. With the DSP it is possible to make vehicle-specific sound settings such as an equalizer or a real-time correction (optional).

A-1-003-02

26



MULTIMEDIA USB CHARGER

27



USB charger for handrails

Never again a flat battery!

- For pipe diameters 30/34 and 35mm
 - 12/24V connection to existing on-board network
 - 2 x 2.5A charging current (sufficient for all standard smartphones and tablets)
- At the customer in any RAL color * (* depending on number)

Item number on request



USB socket

Mounted socket with 1x 3A 5V USB for installation in the dashboard

without cover	ZA-7-900-51
with cover	ZA-7-900-53

USB double socket

Mounted socket with 2x 2.5A 5V USB for installation in the dashboard

without cover	ZA-7-900-49
with cover	ZA-7-900-54

MULTIMEDIA SWITCH BOXES



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

Audio/video switch box (24V) including mounting bracket. Switches over audio and video sources via a 24V signal.

ZA-1-004-01



Video switch box (24V) without holder

Video switch box (24V). Switches over video sources via a 24V signal.

ZA-1-004-00



MULTIMEDIA QUAD BOXES

29



Quad Control Box M1

Split box for splitting of up to 4 video sources. MiniDIN connections. Including remote control.

ZA-1-002-01



Quad Control Box M3

Splitbox for connection up to 6 video sources. Two monitor outputs. Max.6 seconds to start.

ZA-1-002-20



30

MULTIMEDIA LTE-WLAN-ROUTER



D-Wi Public LTE-WLAN-Router

The LTE wireless vehicle router D-Wi Public offers broadband connections to the Internet for all types of vehicles such as travel, - distance buses or trucks. It also offers new wireless and multimedia services, for example:

- Internet access to 100 Mbps
- Multimedia Server for Audio / Video
- Position and Fleet Management
- Integrated Configuration Management (Web server)
- Remote Management
- Send / receive SMS
- Public access interface
- Firmware update over-the-air

ZA-7-900-10



ATLAS WiFi comfort

Comfort router for Internet access on the bus. With integrated 3G modem (2.4 GHz and 5 GHz), guaranteed use of the same for up to 35 users. Separate antennas for uplink and downlink. SIM card is required. Optional with LTE-enabled modem.

ZA-7-900-45

MULTIMEDIA DISPLAY SYSTEMS

31



LED signal sign

LED signal sign, for installation in MAN transit buses. Available in ten further languages.

STOP MB-0-100-01

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

DURACAK

DURACAK MB-0-100-10

Digital recording and monitoring system Direcs 4/8

The DIRECS systems offer excellent value for money and a large number of functions such as active alarm management, live transmission of data, automatic sabotage and motion detection, a digital signature on the recording data, integration into the existing vehicle systems and much more.

The DIRECS products reflect the extensive experience we have gained and the high level of technological know-how we have acquired. They are characterised by their excellent performance parameters and a high degree of reliability.

The preventative effect alone clearly results in a reduction of vandalism damage of more than 80%!



High-performance hybrid recorders

- Specially designed for use in public transport, logistics and valuables transport
- All required certifications (e/E, EN 50155) for use in the mobile area
- Optimised for use under extreme conditions (-15 to +70°C)
- Minimal power take-up
- Recording of video, audio and additional data (IBIS, Logfile, GPS)
- Recording from up to 8 analogue CCTV and digital network cameras
- Efficient Codec: MJPEG
- Signature of the recording data
- Usability of cameras from different manufacturers
- Wear-free recording onto hard disks (HDD) and flash (SSD)
- Permanent and alarm recordings into separate archives
- Up to 8 digital outputs to control external systems
- Up to 6 digital inputs
- Automatic motion and sabotage detection
- Automatic deletion and activated overwrite protection
- Automatic self-monitoring of the systems (Watchdog)
- Top value for money due to the huge range of functions offered
- High-quality recording in real time with up to 200 fps
- A sturdy and service-free industrial design
- Space-saving and easy to install
- USB-connection to a PC or TV monitor via an integrated read-out unit
- Black box function with an interface to connect to vehicle systems
- Integration in a fleet management solution
- Active alarm management to monitor an alarm control panel (optional)
- Transfer of recording data via WLAN and radio (GPRS) (optional)
- Efficient analysis and monitoring software
- Automatic display of system errors and alarm records
- Integration into vehicle systems (IBIS, CAN), connection to RBL systems

MULTIMEDIA

DIRECS ACCESSORIES 33

Schematic representation OFFENDER IDENTIFICATION PROCESS

happened crime



data recording



Data / Images
analysis



transmission
to authority



preliminary proceedings



Removable hard disks SSD

128 GB	DF-1-128-01
250 GB	DF-1-250-10
500 GB	DF-1-500-10



Removable hard disks HDD

80 GB HT	DF-1-080-02
100 GB HT	DF-1-100-01
320 GB	DF-1-320-01
500 GB	DF-1-500-01



USB evaluation unit

USB evaluation unit for DIRECS hard disks to connect to a PC or laptop, including a power supply.

ZA-3-900-05

General terms

General terms and conditions for shipping and e-commerce

I. General Provisions

The provisions of the contract between ROSHO GmbH - Rose & Holiet (hereinafter referred to as „us“) and its purchasers are solely governed by these General Terms and Conditions. Deviating business terms of the purchaser, even if they are known to us, shall not become a part of the contract. Our offers are always subject to change without notice. Our General Terms and Conditions of Sale and Delivery are considered accepted upon placement of order, at the latest upon receipt of goods. In the case of repeated business relations these General Terms and Conditions of Sale and Delivery also apply for all future transactions. Should individual provisions be or become completely or partially ineffective, then the validity of the other provisions shall thereby not be affected. ROSHO and the purchaser shall agree upon a regulation the economic success of which shall be as close as possible to the ineffective one. Until such agreement the laws, administrative practice and judicature effective at the time of execution are to be applied.

II. Conclusion of Contract and Prices

1. By ordering merchandise the purchaser bindingly declares that he wants to buy the merchandise ordered. He shall be bound to this statement for two weeks. We are entitled to accept the offer of a contract underlying in the order within two weeks upon receipt of the latter by us. The acceptance may be declared in writing, electronically, or by delivery of the goods to the purchaser.
2. The obligations in electronic commerce according to Section 312e, par. 1 sentence 1, Nos. 1 to 3, and sentence 2 of BGB (German Civil Code) are excluded.
3. The conclusion of the contract takes place subject to the correct and timely delivery by our sub-suppliers to us. This applies only in case we are not responsible for the non-delivery, especially in case of the conclusion of a congruent hedging business transaction with our sub-suppliers. The purchaser shall be informed about the non-availability of the product without delay, and the equivalent, insofar as already paid, shall be reimbursed immediately.
4. All contractual financial obligations are to be fulfilled solely in EURO.
5. Prices are understood to be net as ex factory or supply depot. Freight, packaging and import costs, customs duties and other additional taxes are payable by the purchaser.

III. Period of Delivery and Supply Commitment

1. Our written or electronic order confirmation shall be decisive for extent, type, and date of the delivery. Partial shipments shall be permitted.
2. A liability in meeting delivery deadlines determined as binding shall only be accepted under the condition of undisturbed flow of operations and distribution. In particular in cases of acts of God and other disruptive events at our facilities or those of our sub-suppliers or transport contractors, for example operational or traffic disruptions, fire, flooding, labour-, energy-, or traffic shortages, strikes, lockouts, official measures as well as technical or technological situations that considerably aggravate the execution of the contract, release us from liability in punctual delivery or give us the right to stop delivery without obligation for subsequent delivery.
3. If not agreed otherwise, we have the right to deliver earlier than the delivery deadline. Unless otherwise agreed upon, delivery effected by us one up to a maximum of two weeks after the stipulated delivery date shall not be considered as delayed.
4. Delivery deadlines shall be considered met when the goods have left the works or dispatch depot or the purchaser has received notice by expiration of the deadline of our readiness to deliver. Subsequent alteration of contract shall be cause for a reasonable extension of delivery deadlines.
5. In the case of contracts whose performance consists of several deliveries, non-performance, defective or delayed performance of one delivery remains without influence upon the other deliveries of the contract.
6. Default of payments, application for the opening of an insolvency proceeding, handing in of a state meant in lieu of an oath of disclosure in accordance with § 807 ZPO (German Code of Civil Procedure), temporary shortage of liquid funds, or public knowledge of a considerable deterioration of the financial circumstances of the purchaser shall entitle us to stop deliveries immediately and to deny performance of current contracts. At the same time we shall be entitled to make immediately due and payable those accounts receivable from the purchaser which are not due yet.

IV. Shipment, Passage of Risk

1. Packing, shipping route and method of transportation remain at our discretion unless special agreements have been made.
2. The risk of accidental loss and accidental deterioration of the merchandise shall pass over to the purchaser upon handing it over, in case of a mail order purchase upon delivery of the matter to the forwarding agent, the carrier, or another person or institution determined to execute the shipment. If the purchaser is overdue in accepting, this shall be equal to a handing over of the merchandise.
3. Merchandise out of call orders shall be accepted within 3 months after issuance of the acknowledgement of order, unless otherwise agreed.
4. Insurance against breakage and transportation risks shall only be taken out upon special request and shall be billed.
5. Customs duties and other expenses, also the costs for payment of the necessary papers for import into the country of destination, shall be payable by the purchaser.

V. Payments, Terms of Payment

1. Invoices shall be payable: within 30 days from date of invoice without cash discount of the accumulated invoice value.
2. Cash discount shall only be granted after all payment commitments out of earlier deliveries have been fulfilled and the invoice amount has been punctually paid to us in cash or has been credited to our account by the aforementioned due dates. The drawing of a bill of exchange can thus not lead to the granting of a cash discount. In case of cashless payment, especially when a cheque is submitted, the date of the credit entry shall be decisive. A cash discount cannot be granted in the case of payment or credit entry under reserve, with limiting conditions or any other restrictions. The purchaser shall assume all risks of method of payment. Invoices for tools are subject to immediate payment without cash discount.
3. Bills of exchange and checks shall only be accepted on account of payment. Corresponding credit entries are made only under the limiting condition of correct receipt of the complete amount due. We reserve the right to take in external or own acceptances. Costs and discount expenses are payable by the purchaser. We assume no responsibility for submission and protest. Protest imposed against the purchaser's own bills of exchange or non-immediate repayment of protested external bills of exchange shall entitle us to return all bills in circulation. At the same time we shall be entitled to make immediately due and payable those accounts receivable from the purchaser which are not yet due. Antedated checks shall not be accepted.
4. Interest on defaulted payment of 8% over the discount rate of the German Central Bank referred to in § 247 BGB (German Civil Law) shall be charged in the case of missed payment dates. The right of assertion of further damages caused by delayed performance and other claims shall remain reserved.
5. Advance and part payments are not subject to interest payments.
6. The purchaser shall only be entitled to offset or withhold payment if his counterclaim is undisputed or has been determined legally binding. The purchaser may execute a right of retention only if his counter claim is based on the same contractual relationship.
7. Customer and invoice numbers are to be given by the purchaser when invoices are balanced. Delays or incorrect booking resulting from failure to do so shall be payable by the purchaser.

VI. Retention of Ownership, Factoring

1. The delivered goods shall remain our property until payment of all claims has been received. The purchaser has the right to resell the proviso goods within the scope of proper and orderly course of business; however, a pledge or transfer by way of security is not permissible. The purchaser is required to ensure our rights in the case of resale of proviso goods on credit.
2. The accounts receivable by the purchaser based on the resale of the merchandise subject to reservation shall now already be transferred to us in the amount of the invoice. We hereby agree to accept this transfer. Regardless of the assignment, the purchaser shall retain the right to collect payment under the condition that he fulfils his responsibilities to us according to the underlying contractual relationship and does not fall into financial decline. Otherwise the purchaser must provide the information about the assignment necessary for collection upon our demand and notify his debtors of the respective assignment. In this case we reserve the right to collect the accounts receivable by ourselves.
3. A possible finishing or processing of the merchandise sold subject to reservation by the purchaser shall always take place on our behalf and by order of us, without any obligations resulting for us from this, however. In the case of processing of proviso goods with other goods not belonging to us, we are entitled to the co-owner portion of the resulting product corresponding to the value of the proviso goods in relation to the other processed goods. Insofar as here and in the following the value of the proviso goods is referred to, this value results from our invoice value.
4. Should the purchaser acquire sole ownership of the new product according to § 947 paragraph 2 BGB, it is agreed upon that the purchaser grants co-ownership in the proportion of the value of the processed, attached, or mixed proviso goods, and that he protects these free of charge.
5. In the case of resale of the proviso goods together with other goods, regardless of with or without processing, attachment or mixing, the assignment in advance agreed to above shall be valid only to the extent of the value of proviso goods that were resold together with the other goods. We shall be obligated to release on demand the securities entitled as provided above, if the value exceeds secured payments by 20 %.
6. The purchaser must immediately notify us and provide the material necessary for an intervention in the case of compulsory execution by third parties against the proviso goods or in case of claims assigned in advance. Any costs resulting from such intervention shall be payable by the purchaser.
7. The purchaser shall be obligated to adequately insure the merchandise sold subject to reservation against fire and burglary and has to prove such insurance to us on demand.

VII. Warranty

1. The period of limitation for any warranty claim shall be 24 months as from handover of the goods.
2. First of all, we shall remedy a defect or make a substitute delivery at our discretion. In case of failure to rectify defects or to substitute delivery, the purchaser can demand rescission of the contract or reduction of the payment. In case there is only a minor contract violation, especially if there are only minor defects, the purchaser shall not have the right of contract cancellation, however.
3. The purchaser must notify us in writing of any obvious flaws immediately, at the latest within 7 days after receipt of the goods, and must refrain from any eventual working of protested goods. Otherwise claims based on defects are excluded. The timely dispatch shall suffice for the observance of the warranty deadline. The full burden of proof for all claim prerequisites rests with the purchaser, especially for the defect itself,

and conditions

for the date of the establishment of the defect, and for the timeliness of the complaint about the defect.

4. Defects which could not be ascertained within this time span despite careful inspection are to be reported to us in writing immediately upon discovery. If the purchaser opts for a withdrawal from the contract because of a legal imperfection or a physical defect after a failed subsequent fulfilment, then he shall not be additionally entitled to a claim for compensation because of the defect.

5. If, after a failed subsequent fulfilment, the purchaser opts for a compensation of the damage, then the merchandise shall remain with the purchaser if this can reasonably be considered acceptable. The compensation is restricted to the difference between the purchase price and the value of the defective product. This shall not apply if we caused the contract violation maliciously.

6. Goods which replaced by us become our property.

7. Claims cannot be made for damages that resulted from the purchaser's culpably

- a)** improper handling or overstressing the purchased item or
- b)** altering the purchased item in a manner not agreed upon or
- c)** not following the instructions of the mounting or operating manual or
- d)** not observing the complaint and delivery responsibility according to points 3 and 4 above or
- e)** further using the purchased item after ascertaining the defect.

Natural wear and tear is excepted from the warranty.

VIII. Liability

1. In case of simply negligent violations of obligations our liability shall be restricted to an average damage predictable for the type of merchandise, typical for such a contract, and immediate. This also applies in case of

simply negligent violations of our legal representatives or agents. We shall not be held liable in case of a simply negligent violation of nonessential contract obligations.

2. The liability by virtue of acceptance of a guarantee as well as due to product liability remains unaffected; the same applies in case of bodily harm or health impairment attributable to us or in the event of loss of life of the purchaser

3. Compensation claims of the purchaser because of a defect shall superannuate after one year from the delivery of the merchandise to the purchaser. This shall not apply if we can be charged with gross negligence as well as in case of bodily harm or health impairment attributable to us or in the event of loss of life of the purchaser.

IX. Returns

Properly ordered and delivered goods shall in principle not be taken back. Returns that have been agreed upon with us shall remain the exception, which additionally require the following pre-requisites to be met:

1. The products must have been acquired directly from us or from one of our works depots.

2. Flawless and unaltered condition of the goods.

3. In principle, return shall only be possible when the articles in question are still in our product range.

4. Return shipment must be „free domicile“ to our Ergersheim works or to the appropriate works depot with accompanying delivery note date and number. Value reduction for returns:

- in the first year after delivery date ./ 10 % of the contract price

- in the second year after delivery date ./ 25 % of the contract price

- goods older than 2 year shall not be taken back.

Technical inspection and completion of the credit slip shall be carried out under consideration of eventual value reduction upon receipt of the articles. Freight costs, insofar as any occurred to **us for the** original shipping, reduce the remaining value.

X. Industrial Property Rights

1. The purchaser is held liable to us for the exemption from industrial protection rights of third parties on articles ordered, indemnifies us against any possible claims of third parties and has to reimburse any damage to us possibly resulting from a violation of this obligation.

2. Our designs and design proposals are to be kept confidential and may not be passed on to third parties.

3. All drawings, construction plans, and samples which the purchaser has received, shall remain our intellectual property.

XI. Place of Fulfillment and Jurisdiction, Other Agreements

1. On principle, the product description of the manufacturer is understood to be decisive for the characteristics of the goods. Public statements, sales talks, or advertisements made apart from this do not represent a contractual description of the characteristics of the goods. Samples and specimens serve as approximate illustrative articles in terms of quality, measurements and colour. Legal claims cannot be inferred from this. Technical changes as well as alterations in shape, colour, and/or weight are reserved within reasonable scope.

2. If the purchaser receives a faulty assembly instruction, we shall only be obliged to furnish a faultless assembly instruction, and this only if the fault of the assembly instruction is in contradiction with a proper assembly.

3. The purchaser does not receive warranties in the legal sense of the word from us; warranties of the manufacturers, however, shall remain unaffected by this.

4. Place of fulfillment for our deliveries ex works shall be the delivery works, for delivery ex storage the warehouse. Place of fulfillment for all payments shall be Bad Nenndorf / Lower Saxony.

5. The exclusive place of jurisdiction for all litigations from this contract shall be Stadthagen / Lower Saxony, Germany. This also applies to lawsuits based on a cheque or bill of exchange.

6. These provisions shall be governed by the Law of the Federal Republic of Germany. The provisions of the UN Purchase Law shall not be applicable. The wording of the German language version of our „General Terms and Conditions of Sale and Delivery“ shall solely be decisive for these General Business Terms.

7. The special terms of our products published with the appropriate price lists shall additionally be applicable.

8. The purchaser itself shall be responsible to examine the suitability of the goods for the intended final usage.

9. German law (BDSG-Federal Data Protection Law) requires us to inform you that all data of our purchasers are electronically saved.



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