



MAB2000-Set-2

Digital Radio System

MVRD1000

The MVRD1000 digital communication unit is a robust transmitter/receiver system for wireless image transmission. The compact units transmit the digital signals from a camera quickly and without delay to the monitor over long distances. Up to 10 device pairs operated in parallel offer high vehicle adaptation and visibility flexibility.



Key facts

- High range (up to 120 m)
- Digital transmission
- Up to four device pairs operated in parallel
- Robust metal housing
- Operating and status display
- Small, compact design
- Water and dust-proof (IP67)
- Robust plug connector
- Low power consumption

Standards/certificates/quality seals

- (E13) 10R - 05 13538



Scope of supply

Video signal receiver	405 0042 000
Video signal transmitter	405 0043 000
Operating instructions	103 0000 169

Accessories

Description	Match code	Scope of application
Connection cable	MK761.xx	For connection to vehicle on-board network.
System cable	MKSxx	For the camera/ monitor cable or power supply.
Connection cable	MK496.xx	For direct connection to a Motec monitor via Mini-DIN.
Connection cable	MK715.xx	For direct connection of a MB12xx or a MB14xx to the MVRD1000-TX instead of camera.

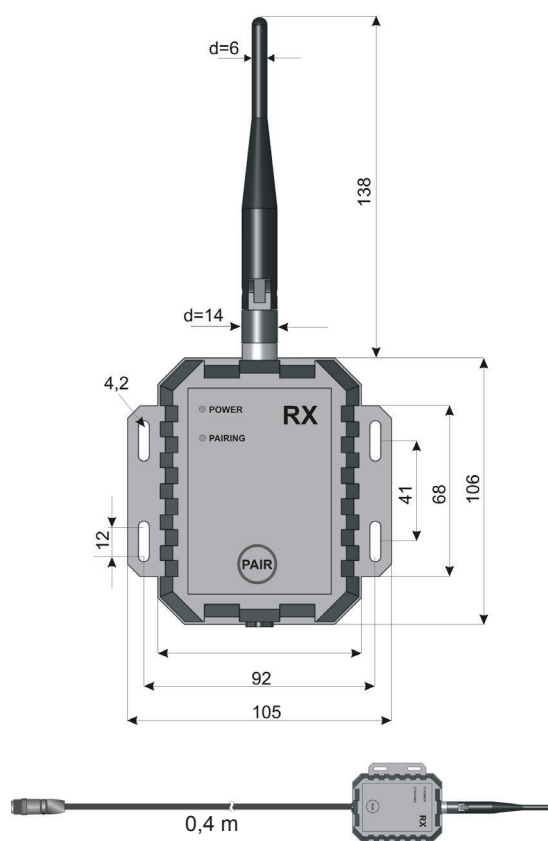
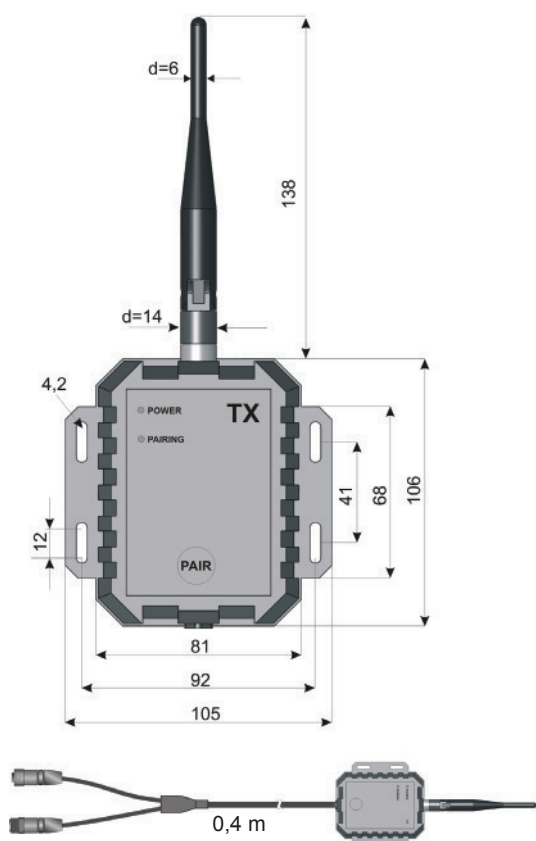
Please make sure that the cable lengths or product types (designated xx above) are customized to their application.

Technical data

Video transmitter	MVRD1000-TX
Power Supply	9 V...32 V DC
Power Supply (Camera)	12 V DC
Power consumption	Max. 4,5 W
Housing protection class	IP69K
Housing	Metal
Operating frequency	2400 MHz...2483,5 MHz
TV System	PAL 25 f/s/NTSC 30 f/s
Video-Codec	MPEG4
RF Bit Rate	6 Mbps
Hopping Rate	1200/s
Latency	200 ms
Out Power	18 dBm EIRP
Line of Sight Range	120 m
Operating Temperature	-20 °C...+70 °C RH90 %
Storing Temperature	-30 °C...+80 °C RH90 %
Connection cable	0.4 m
Connector	M12/5pole (female) and M12/5pole (male)

Video receiver	MVRD1000-RX
Power Supply	9 V...32 V DC
Power consumption	Max. 2 W
Housing protection class	IP69K
Housing	Metal
Operating frequency	2400 MHz...2483,5 MHz
TV System	PAL 25 f/s/NTSC 30 f/s
Video-Codec	MPEG4
RF Bit Rate	6 Mbps
Hopping Rate	1200/s
Latency	200 ms
Spread spectrum	FHSS
Receiving Sensitivity	-86 dBm
Line of Sight Range	120 m
Operating Temperature	-20 °C...+70 °C RH90 %
Storing Temperature	-30 °C...+80 °C RH90 %
Connection Cable	0.4 m
Connector	M12/5pole (male)

All dimensions (mm)



Heavy-duty battery box

MAB2000

The MAB2000 is a flexible, robust and utility vehicle-compatible battery box for the digital Motec radio system MVRD1000. It also can be used as a mobile external power supply for all Motec camera systems.



Key facts

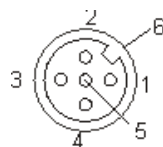
- Automatic switch on and off (extends battery life)
- Robust aluminium housing anodized and painted for special weather resistance
- High pressure and steam jet protected by housing protection IP68 and IP69K
- Flexible mounting position of the radio systems, cameras, chain binders and brackets on the housing

Standards/certificates/quality seals

- EN 13309 construction machinery
- ISO 13766 earth-moving equipment
- EN 14982 agricultural/forestry machinery
- EN 12895 industrial trucks
- EN 50121 railway applications
- ADR



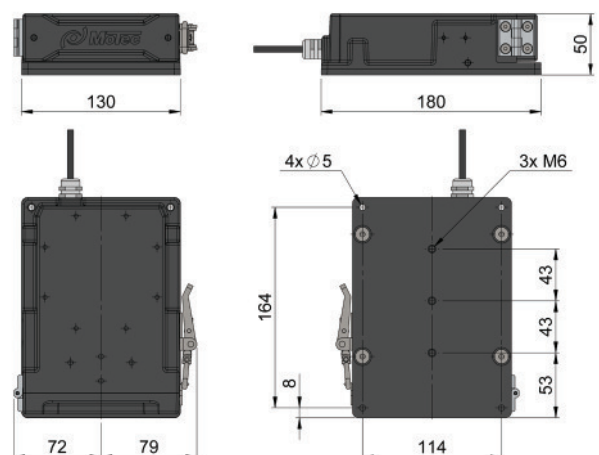
Plug-in connection



View plug side

MKS	Funktion	M12 Connector
red	+ V DC	3
black	0 V DC	4

Dimensions (mm)



Technical data

Battery housing

■ Housing

Robust aluminium housing, anodised and coated for added weather resistance, corrosion and salt spray resistant in accordance with DIN 60068, resistant against direct sunlight (UV-resistant in accordance with DIN 75220), acid and baseresistant in accordance with test plan

■ Housing protection

IP68/69K

■ Cable lenght

300 mm (M12 connector female)

■ Dimensions (B x H x T)

180 x 130 x 50

■ Weight

Ca. 1,5 kg

Battery

■ Operating Voltage

9 V...12,6 V DC

■ Charging Voltage

12,6 V DC

■ Battery Voltage nominal

10,8 V DC

■ Capacity

7.800 mAh/Li-Ion Akku



■ Storage Temperature

-20 °C...+60 °C

■ Operating Temperature

-30 °C...+60 °C

■ Runtime

> 28 h at minimum +15 °C

■ Chargetime

3...5 hours

■ Weight

Ca. 0,4 kg

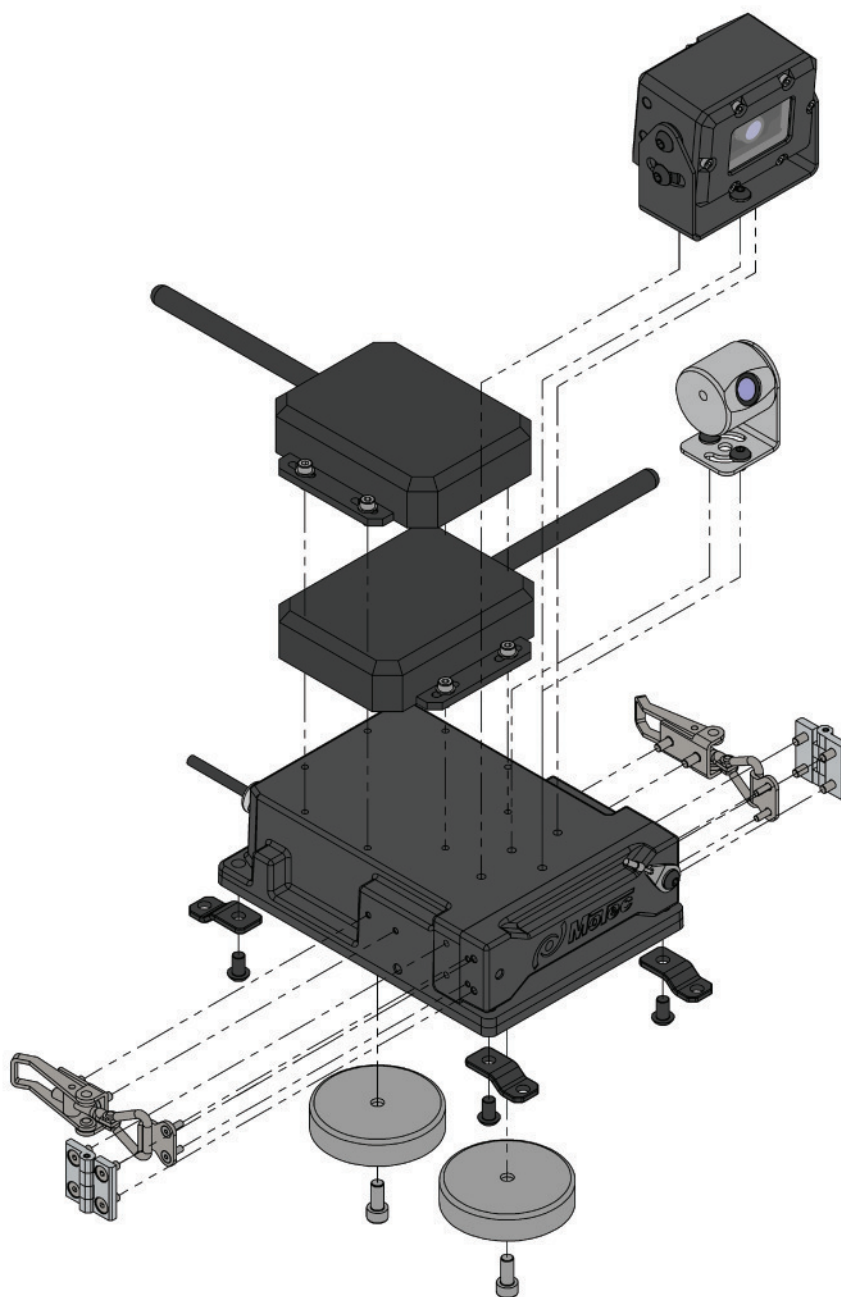
Optional accessories

MAB1000-Akku (Replacement Battery)	406 0250 003
MAB2000-AG (Motec Battery Box without Battery)	406 0190 003
MAB2000-Set-2 (Battery Box, 2 batteries, charger for 1 battery, video transmitter, video receiver)	406 0190 004
MAB1000-LG-1 (allows the loading of 1 Battery)	406 0229 001
MAB1000-LG-6 (allows the loading of 6 Batteries at the same time)	406 0229 006
MAB2000-MH-KIT (magnet set with holding rope and hook)	400 0009 069

Scope of delivery

MAB2000 MAB2000 Motec Battery Box incl. MAB1000-battery	406 0190 002
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Mounting example



Motec Li-Ion-Battery

MAB1000 Akku



Technical Data

Nominal battery voltage	10.8 V DC
Operating voltage	12.6 V to 9 V
Charging voltage	12.6 V DC
Cutoff voltage	7.5 V DC
Maximum discharge current	3.500 mA
Capacity	7,800 mAh / 71Wh
Storage temperature	-20°C to +60°C
Operating temperature	-30°C to +60°C
Charging temperature	0°C to +45°C
Battery type	Lithium-Ion
Life cycle (MVRD1000 + MC9xxx)	Up to 28 hours if temperature is at least +15°C
Charging time	3 to 5 hours
Dimensions (W x H x D)	149.5 mm x 89.3 mm x 20 mm
Weight	Approx. 0.5 kg
Application range	MAB1000 or MAB1000-AG

Scope of delivery

Description	Item No.:
MAB1000 Akku (Motec Li-Ion-Battery)	406 0250 003

Motec Quick charging device

MAB1000-LG1



Quick battery charger for MAB1000 series

The battery charger MAB1000-LG1 allows the user to charge a battery of type MAB1000.




Temperature management

State-of-the-art charging technology guarantees a full charge and safe operation even under the most adverse conditions. (For safety reasons, lithium-ion batteries are not being charged if the temperature drops below 5°C.)

If the charging temperature exceeds 50°C, the battery charger automatically cools to 45°C and only then restarts the charging process. If the temperature remains elevated, the timing circuit stops the charging procedure and displays an error. This protects the charger and the battery from damage that may occur if the temperatures remains excessively high and, therefore, provides optimum safety during the charging process.

Signalling the charging process

Four visual signals inform the user of the current status

	RUN	Orange LED lit permanently Orange LED blinks	Battery being charged Battery being conditioned
	READY	Green LED lit permanently	Battery fully charged (battery can be removed)
	FAIL	Red LED lit permanently	Battery is not being charged (temperature too high or battery faulty)

Environmental conditions

Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-40°C to +70°C (40°F to 158°F)

Dimensions

Length x width x height	217 mm x 96,4 mm x 89 mm
Weight	0,825 kg

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Information on how to handle lithium-ion batteries

Risks and dangers

Handling the batteries incorrectly or improperly (disassembling, bursting, short-circuiting, exposing to excessive heat caused by fire or direct sunlight) can cause the batteries to catch fire, explode, or cause a fire. Batteries contain flammable and/or corrosive liquids/lithium salts. If these fluids escape, they can cause skin irritation, injuries to the eyes or damage to the mucous membrane.

Escaping fluids

If a lithium-ion battery leaks such fluids, the area surrounding the battery must be isolated immediately. The toxic vapours generated must not be inhaled. (It is mandatory to vent the room(s) IMMEDIATELY)

Firefighting procedures

Extinguishing:

Usually, lithium-ion batteries do not contain metallic lithium. Therefore, conventional extinguishing agents such as ABC powder extinguisher, CO2 extinguisher or water can be used to fight the fire. However, it must be mentioned here that this depends on the burning material (plastic, wood fibreboard, etc.).

Important firefighting information:

If possible, remove the battery away from the fire fighting area. If the battery is exposed to a temperature exceeding 125°C, the battery's cells can catch fire and/or explode.

Firefighting equipment:

When fighting the fire, the use of a heavy-duty respiratory protection apparatus is mandatory and protective clothing that covers the entire body must be worn.

Dangerous decomposition products:

The battery cells are not flammable; however the organic materials (e.g., alcohol-based solvents (fire classification B or C) as well as the plastic housing of the battery or polymer foil (fire classification A)) inside of the cells are inflammable. Therefore, when fighting burning plastics (toxic gases), appropriate precautions are mandatory and the appropriate extinguishing method must be applied. Combustion products contain, amongst other things, hydrogen fluorides, carbon monoxide, and carbon dioxide.

First aid

If electrolytes, gases, or by-products of the burning lithium-ion battery are released and come in contact with the eyes, compliance with the following first aid procedures is mandatory:

Eyes:

If contact with the eye occurs, the affected eye must be rinsed thoroughly with water for at least 15 minutes. Subsequently, seeking medical advice is highly recommended. When rinsing, open the eye lid wide; this will ensure that the entire area around the eye will be rinsed.

Skin:

If the skin came in contact with the caustic liquid, ensure to rinse the entire area thoroughly for at least 15 minutes. Contaminated clothing must be removed/replaced immediately. If skin irritation persists, seek medical attention!

Respiratory system:

Provide the affected person with fresh air and keep the victim calm. Monitor the breathing and circulation. If necessary, continue with the first aid procedure. Seek medical assistance immediately!

Waste disposal

Never discard lithium-ion batteries or any other batteries into household waste. They must be disposed of in a commercially available battery collection boxes. It is the law! Battery collection boxes must be available wherever batteries are being sold. On one hand, separate collection keeps hazardous materials away from household waste and the environment. On the other hand, it allows the recycling of batteries and recovery of valuable materials such as steel, zinc, and nickel. In order to prevent a short circuit, wrap a tape around the terminals of the lithium containing batteries.

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