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RFID  
Transponder

RFID  
Reader

RFID  
Antennas

Cables +  
Accessories

## General

### HARTING Ha-VIS RFID System components

Real-time information and the close synchronization of computer data and real processes play a critical role in process management and process optimization. Ensuring that information precisely maps and concurs with reality is the only way to control processes optimally and reap savings potentials accordingly.

One important prerequisite for guaranteeing that data and processes are synchronized is an intelligent infrastructure that makes data transparent and available throughout a company in order to achieve the maximum savings potentials.

RFID offers you the full potential to create intelligent infrastructures: benefit from the simultaneous identification of up to several hundred objects - without the need for the direct line of sight as required by barcode solutions. The collected data are immediately ready for further processing throughout the company.

Moreover, a transponder can be used to store information directly on the product at the same time it is identified. This means that these data are also always available wherever the product may happen to be located.

HARTING offers smart infrastructure solutions based on optimally coordinated components from a single source. These solutions enable the reliable control and steering of production and business processes, thereby resulting in lower costs.

The HARTING RFID Reader and components have been designed for harsh industrial applications. Deployed in the transportation, machinery and energy markets, HARTING RFID components guarantee secure and reliable information processing - also under the most challenging environmental conditions



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Passive UHF Transponder  
Ha-VIS RFID LT 89 (NT)-G2AH3

## Technical characteristics

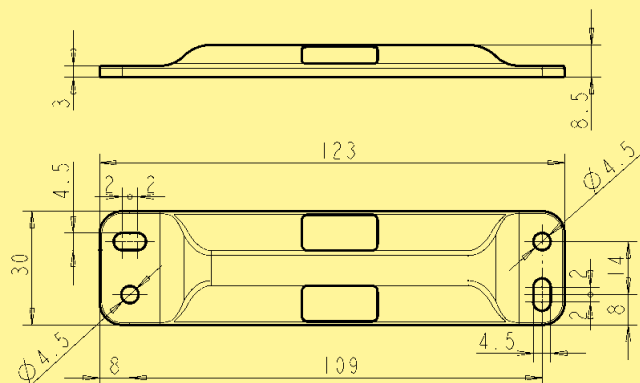
Frequency range	860 MHz ... 960 MHz
Protocol	EPC C1Gen2
Chip	Alien Higgs 3
Memory	512 bit
Lesereichweite (Freiraum, 2 W ERP)	≥ 2.5 m
Abmessungen (B x H x T)	123 x 30 x 8 mm
Degrees of protection	IP 64 / IP 67 / IP 69K
Temperature range	
Operational range (read)	-40 °C ... +85 °C
Operational range (write)	-40 °C ... +85 °C
Storage	-50 °C ... +85 °C
Mounting	M4 screws or rivets with washers
Colour	Black
Merkmale	<ul style="list-style-type: none"> <li>• On any objects including metallic surfaces like skeleton boxes or over fluids (e.g. container)</li> <li>• Robust housing</li> <li>• EPC C1 Gen2 compatible</li> <li>• Extended memory</li> </ul>

Identification	Part number	Drawing	Dimensions in mm
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Passive UHF Transponder  
Ha-VIS RFID  
LT 89 (NT)-G2AH3

Package with 10 units  
Package with 50 units

20 92 641 0001  
20 92 641 0002





Passive UHF Transponder  
Ha-VIS RFID LT 89 (NT)-G2AH3

## Technical characteristics

Frequency range	860 MHz ... 960 MHz
Protocol	EPC C1Gen2
Chip	Alien Higgs 3
Memory	512 bit
Lesereichweite (Freiraum, 2 W ERP)	≥ 2.5 m
Abmessungen (B x H x T)	41 x 11 x 5 mm
Degrees of protection	IP 64 / IP 67 / IP 69K
Temperature range	
Operational range (read)	-50 °C ... +85 °C
Operational range (write)	-50 °C ... +85 °C
Storage	-65 °C ... +160 °C
Mounting	Adhesive film
Colour	Black
Merkmale	<ul style="list-style-type: none"> <li>• Extremely robust and durable transponder for maintenance and life cycle applications in rough environments</li> <li>• Robust housing, resistant against chemicals</li> <li>• EPC C1 Gen2 compatible</li> <li>• Extended memory</li> </ul>

Identification	Part number	Drawing	Dimensions in mm
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Passive UHF Transponder Ha-VIS RFID LT 89 (NT)-G2AH3  Package with 10 units Package with 50 units	20 92 641 0101 20 92 641 0102		
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Passive UHF Transponder  
Ha-VIS RFID SL 89 (MT)-G2AH3

## Technical characteristics

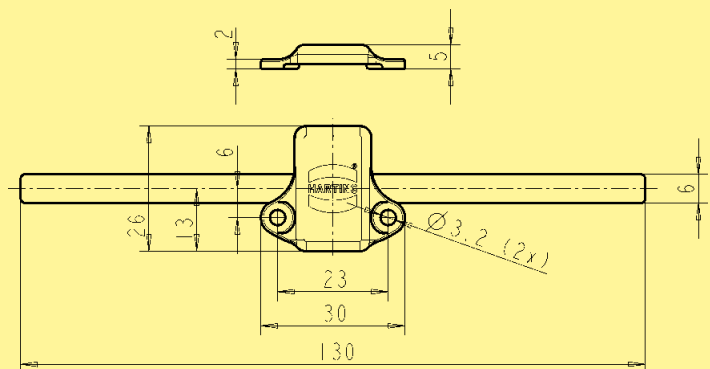
Frequency range	860 MHz ... 960 MHz
Protocol	EPC C1Gen2
Chip	Alien Higgs 3
Memory	512 bit
Lesereichweite (Freiraum, 2 W ERP)	≥ 4.0 m
Abmessungen (B x H x T)	30 x 26 x 5 mm
Degrees of protection	IP 64 / IP 67 / IP 69K
Temperature range	
Operational range (read)	-50 °C ... +85 °C
Operational range (write)	-50 °C ... +85 °C
Storage	-65 °C ... +130 °C
Mounting	M3 screws or rivets with washers
Slot dimensions	140 x 6 mm
Colour	Black
Merkmale	<ul style="list-style-type: none"> <li>• Slot tag for integration in metallic objects like barrels, pallets or extruded profiles (slot dimensions 140 x 6 mm)</li> <li>• Extremely high mechanical protection</li> <li>• EPC C1 Gen2 compatible</li> <li>• Extended memory</li> </ul>

Identification	Part number	Drawing	Dimensions in mm
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Passive UHF Transponder  
Ha-VIS RFID  
SL 89 (MT)-G2AH3

Package with 10 units  
Package with 50 units

20 92 641 0601  
20 92 641 0602





Passive UHF Transponder  
Ha-VIS RFID CT 89 (NT)-G2UCXM

## Technical characteristics

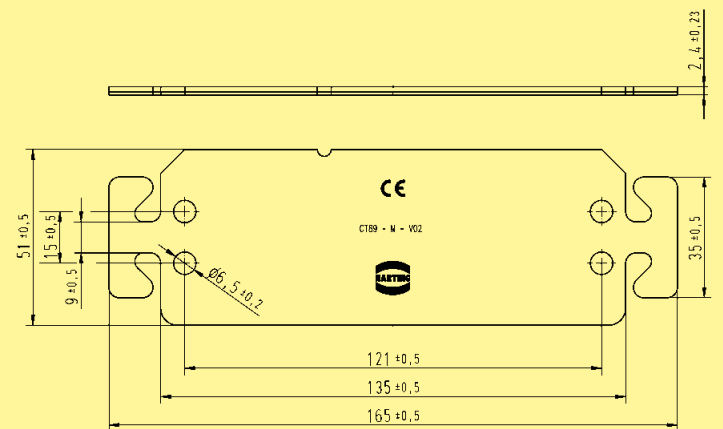
Frequency range	860 MHz ... 960 MHz
Protocol	EPC C1Gen2
Chip	NXP UCODE G2XM
Memory	512 bit
Lesereichweite (Freiraum, 2 W ERP)	≥ 5.0 m
Abmessungen (B x H x T)	165 x 51 x 2 mm
Degrees of protection	IP 64 / IP 67 / IP 69K
Temperature range	
Operational range (read)	-40 °C ... +85 °C
Operational range (write)	-40 °C ... +85 °C
Storage	-50 °C ... +85 °C
Mounting	M4 screws or rivets with washers
Colour	Black
Merkmale	<ul style="list-style-type: none"> <li>• Identification of reinforced concrete parts for the building industry</li> <li>• Integration in concrete floors for location of storage areas</li> <li>• High read range also in wet materials</li> <li>• Robust housing</li> <li>• EPC C1 Gen2 compatible</li> <li>• Extended memory</li> </ul>

Identification	Part number	Drawing	Dimensions in mm
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Passive UHF Transponder  
Ha-VIS RFID  
CT 89 (NT)-G2UCXM

Package with 10 units  
Package with 50 units

20 92 641 0301  
20 92 641 0302





Passive UHF Transponder  
Ha-VIS RFID CF 89 (NT)-G2UCXM

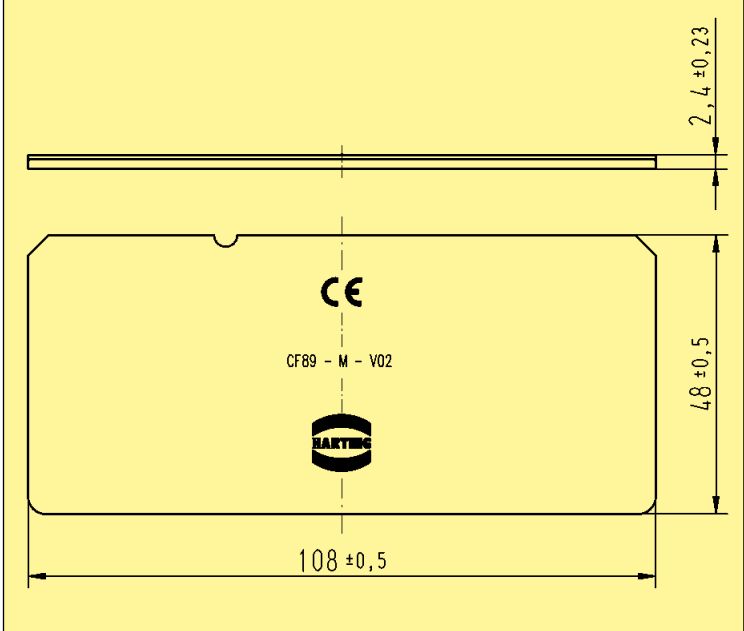
## Technical characteristics

Frequency range	860 MHz ... 960 MHz
Protocol	EPC C1Gen2
Chip	NXP UCODE G2XM
Memory	512 bit
Lesereichweite (Freiraum, 2 W ERP)	≥ 5.0 m
Abmessungen (B x H x T)	108 x 48 x 2 mm
Degrees of protection	IP 64 / IP 67 / IP 69K
Temperature range	
Operational range (read)	-40 °C ... +85 °C
Operational range (write)	-40 °C ... +85 °C
Storage	-50 °C ... +85 °C
Mounting	M4 screws or rivets with washers
Colour	Black
Merkmale	<ul style="list-style-type: none"> <li>• Identification of reinforced concrete parts for the building industry</li> <li>• Integration in concrete floors for location of storage areas</li> <li>• High read range also in wet materials</li> <li>• Robust housing</li> <li>• EPC C1 Gen2 compatible</li> <li>• Extended memory</li> </ul>

Identification	Part number	Drawing	Dimensions in mm
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Passive UHF Transponder Ha-VIS RFID CF 89 (NT)-G2UCXM	Package with 10 units Package with 50 units
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20 92 641 0401 20 92 641 0402
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Passive UHF Transponder  
Ha-VIS RFID CS 89 (NT)-G2UCXM

## Technical characteristics

Frequency range	860 MHz ... 960 MHz
Protocol	EPC C1Gen2
Chip	NXP UCODE G2XM
Memory	512 bit
Lesereichweite (Freiraum, 2 W ERP)	≥ 5.0 m
Abmessungen (B x H x T)	108 x 27 x 2 mm
Degrees of protection	IP 64 / IP 67 / IP 69K
Temperature range	
Operational range (read)	-40 °C ... +85 °C
Operational range (write)	-40 °C ... +85 °C
Storage	-50 °C ... +85 °C
Mounting	M4 screws or rivets with washers
Colour	Black
Merkmale	<ul style="list-style-type: none"> <li>• Identification of reinforced concrete parts for the building industry</li> <li>• Integration in concrete floors for location of storage areas</li> <li>• High read range also in wet materials</li> <li>• Robust housing</li> <li>• EPC C1 Gen2 compatible</li> <li>• Extended memory</li> </ul>

Identification	Part number	Drawing	Dimensions in mm
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Passive UHF Transponder Ha-VIS RFID CS 89 (NT)-G2UCXM  Package with 10 units Package with 50 units	20 92 641 0501 20 92 641 0502		
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Notes

RFID  
Transponder

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## RFID Reader Ha-VIS RFID RF-R500

### General description

The Ha-VIS® RFID RF-R500 is a high performance UHF RFID long range reader. It supports up to 4 antennas simultaneously reducing costs and easing integration of RFID technology. Due to its robust aluminium housing and up to IP 64, it is ideally suited for industrial applications.

The reader was designed for very high reading sensitivity combined with impressive reading and data processing speed. The reader brings wireless RFID communication into industrial environments.

The reader can directly control lamps, sirens or gates via the integrated GPIOs.

### Features

- Up to 4 antenna
- Up to 4 W transmitting power
- Impressive bulk reading
- Power over Ethernet (PoE)
- Up to IP 64 with an optional protection cap (otherwise IP 53)
- 5 hardware interfaces: Ethernet, RS 232, RS 485, USB, and a USB port for external memory

### Advantages

- High receiver sensitivity for enlarged and homogeneous tag detection range
- Metal housing
- Integrated antenna multiplexer
- Simple installation
- Versatile hardware and software configuration

### Application fields

- Smart infrastructure
- Logistics
- Asset management
- Machinery

## Technical characteristics

<b>Transponder protocol</b>	EPC Gen2 (ISO 18000-6-c)
<b>UHF RFID antenna interface</b>	
Antenna connection	4x SMA connector (50 Ohm); Reader internally multiplexed
Frequency area	860 MHz ... 960 MHz (depending on specific reader)
Radio license	Europe EN 302 208
Supply voltage on antenna outputs	24 V DC / 200 mA (Ha-VIS RFID RF-R500-p only)
<b>Interfaces</b>	<ul style="list-style-type: none"> <li>• Ethernet (TCP/IP) 10/100 Mbit/s; Full Spec. 802.3</li> <li>• RS 232 / RS 485</li> <li>• USB / USB-Port for WLAN dongle or external memory</li> </ul>
Inputs	5 Optocoupler (max. 24 V DC / 20 mA)
Outputs	<ul style="list-style-type: none"> <li>• 2 Optocoupler (24 V DC / 30 mA)</li> <li>• 3 Relays (24 V DC / 1 A)</li> </ul>
<b>LED Diagnosis</b>	
8 LEDs (from left to right)	<ul style="list-style-type: none"> <li>• Run</li> <li>• Host communication</li> <li>• Warning</li> <li>• Input / output</li> <li>• Antenna 1</li> <li>• Antenna 2</li> <li>• Antenna 3</li> <li>• Antenna 4</li> </ul>
<b>Performance</b>	
Max. Operating Distance	Up to 16 m, depending on kind of transponder & environmental conditions
<b>Protocol Modi</b>	
	<ul style="list-style-type: none"> <li>• HARTING Host Mode</li> <li>• Scan Mode</li> <li>• Notification Mode</li> <li>• Buffered Read Mode</li> </ul>
<b>Power Supply</b>	
Current consumption	max. 2 A
<b>Design features</b>	
Material of housing	Aluminium, powder coated
Dimensions (W x H x D)	260 x 157 x 68 mm
Weight	2000 g
Degree of protection acc. to DIN 60 529	IP 64 (with protection cap) / IP 53 (without protection cap)
Installation on DIN rail	DIN rail mounting kit (optional accessories)

## Technical characteristics

### Environmental conditions

Operating temperature	-25 °C ... +50 °C
Storage temperature	-25 °C ... +85 °C
Relative humidity	5 % ... 95 % (non-condensing)
Vibration	EN 60 068-2-6 10 Hz ... 150 Hz: 0.075 mm / 1 g
Shock	EN 60 068-2-27 Acceleration: 30 g

### Norms & Safety

Radio license	<ul style="list-style-type: none"> <li>• EN 302 208</li> <li>• FCC 47 FCR Part 15</li> <li>• IC RSS-GEN, RSS-210</li> </ul>
EMC	EN 301 489
Low voltage	EN 60 950
Human Exposure	EN 50 364
RoHS compliant	

### RF diagnosis

- RF Channel monitoring
- Antenna SWR control
- Internal overheating control

### Operating system

Linux (Kernel 3.x.x)  
64 MB RAM, 256 MB Flash

### Others

- Anticollision function
- Real time clock
- RSSI

### Software

Demo- and configuration software	Ha-VIS RFID config
Minimal hardware requirements	<ul style="list-style-type: none"> <li>• Personal computer IBM PC Pentium III 1000 MHz or faster recommended</li> <li>• Windows XP® (32 Bit) with 256 MB RAM or Windows® 7 (32 / 64 Bit)</li> <li>• Hard disk with minimum free 30 MB memory space</li> <li>• Windows® compatible mouse</li> <li>• Windows® compatible super VGA graphic card (800 x 600) (1024x768 recommended)</li> </ul>

# Ha-VIS RFID RF-R500 Reader



UHF RFID Long Range Reader  
Ha-VIS RFID RF-500-c-EU

RFID  
Reader

## Technical characteristics

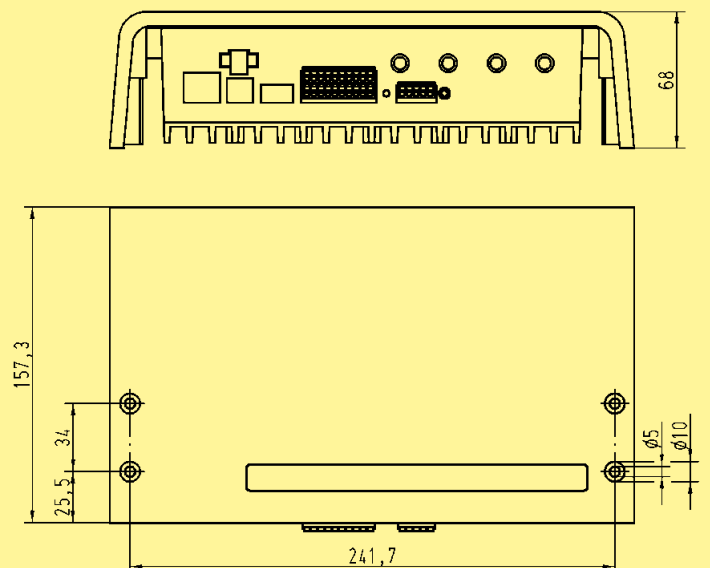
Antenna connection	4x SMA connector (50 Ohm); reader internally multiplexed
Transmitting Power	max. 2 W
Frequency area	865 MHz ... 870 MHz
Radio license	EN 302 208
Inputs	5 optocoupler (max. 24 V DC / 20 mA)
Outputs	<ul style="list-style-type: none"> <li>• 2 optocoupler (24 V DC / 30 mA)</li> <li>• 3 relays (24 V DC / 1 A)</li> </ul>
Bulk-Read capability	< 150 transponders/sec
Max. Operating Distance	< 10 m, depending on kind of transponder & environmental conditions
Power supply	+24 V DC ( $\pm 5\%$ )
Current consumption	max. 2 A
Dimensions (W x H x D)	260 x 157 x 68 mm
Weight	2000 g
Degree of protection acc. to DIN 60 529	IP 64 (with protection cap) / IP 53 (without protection cap)
Operating temperature	-25 °C ... +50 °C

Identification	Part number	Drawing	Dimensions in mm
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UHF RFID long range Reader  
Ha-VIS RFID RF-500-c-EU  
2 W transmission power

EU version

20 91 104 1103





RFID Reader

UHF RFID Long Range Reader  
Ha-VIS RFID RF-500-p-EU

## Technical characteristics

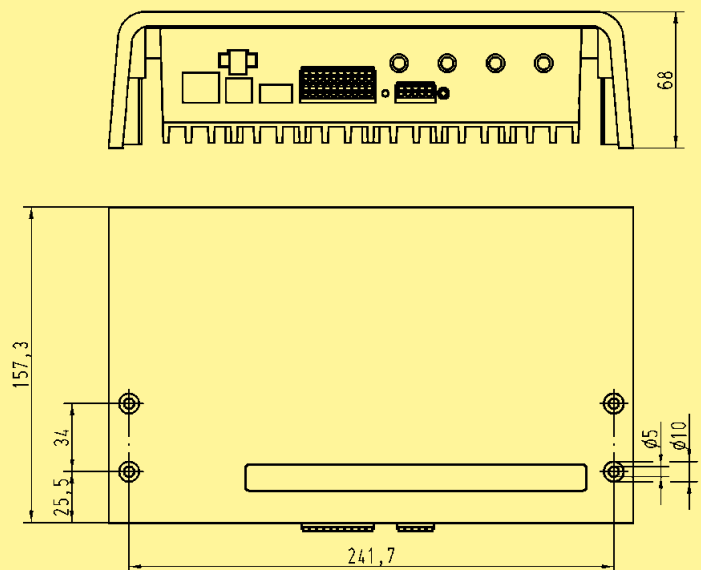
Antenna connection	4x SMA connector (50 Ohm); reader internally multiplexed
Transmitting Power	max. 4 W / max. 1 W in PoE mode
Frequency area	865 MHz ... 870 MHz
Radio license	EN 302 208
Supply voltage on antenna outputs	24 V DC / 200 mA
Inputs	5 optocoupler (max. 24 V DC / 20 mA)
Outputs	<ul style="list-style-type: none"> <li>• 2 optocoupler (24 V DC / 30 mA)</li> <li>• 3 relays (24 V DC / 1 A)</li> </ul>
Bulk-Read capability	> 150 transponders/sec
Max. Operating Distance	Up to 16 m, depending on kind of transponder & environmental conditions
Power supply	+24 V DC ( $\pm 5\%$ ) / Power over Ethernet (PoE)
Current consumption	max. 2 A
Dimensions (W x H x D)	260 x 157 x 70 mm
Weight	2000 g
Degree of protection acc. to DIN 60 529	IP 64 (with protection cap) / IP 53 (without protection cap)
Operating temperature	-25 °C ... +50 °C

Identification	Part number	Drawing	Dimensions in mm
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UHF RFID long range Reader  
Ha-VIS RFID RF-500-p-EU  
4 W transmission power  
with PoE

EU version

20 91 104 1101







UHF RFID Long Range Reader  
Ha-VIS RFID RF-500-c-US

RFID  
Reader

## Technical characteristics

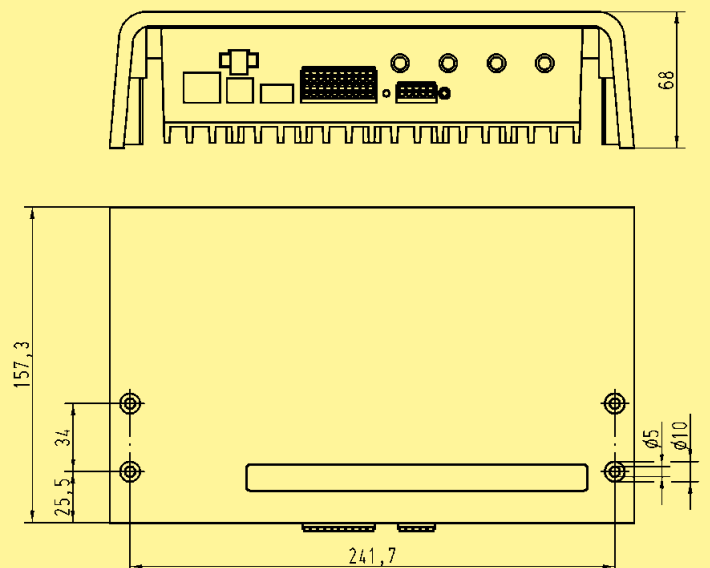
Antenna connection	4x SMA connector (50 Ohm); reader internally multiplexed
Transmitting Power	max. 2 W
Frequency area	902 MHz ... 928 MHz
Radio license	FCC 47 CFR Part 15; IC RSS-GEN; IC RSS -210
Inputs	5 optocoupler (max. 24 V DC / 20 mA)
Outputs	<ul style="list-style-type: none"> <li>• 2 optocoupler (24 V DC / 30 mA)</li> <li>• 3 relays (24 V DC / 1 A)</li> </ul>
Bulk-Read capability	< 150 transponders/sec
Max. Operating Distance	Up to 10 m, depending on kind of transponder & environmental conditions
Power supply	+24 V DC ( $\pm 5\%$ )
Current consumption	max. 2 A
Dimensions (W x H x D)	260 x 157 x 68 mm
Weight	2000 g
Degree of protection acc. to DIN 60 529	IP 64 (with protection cap) / IP 53 (without protection cap)
Operating temperature	-25 °C ... +50 °C

Identification	Part number	Drawing	Dimensions in mm
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UHF RFID long range Reader  
Ha-VIS RFID RF-500-c-US  
2 W transmission power

US version

20 91 104 1104



# Ha-VIS RFID RF-R500 Reader



RFID Reader

RFID Reader  
Ha-VIS RFID RF-500-p-US

## Technical characteristics

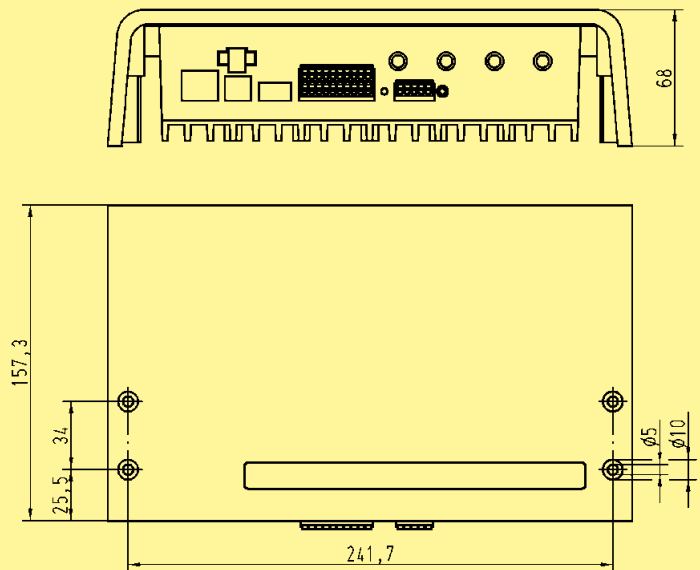
Antenna connection	4x SMA connector (50 Ohm); reader internally multiplexed
Transmitting Power	max. 4 W / max. 1 W in PoE modi
Frequency area	902 MHz ... 928 MHz
Radio license	FCC 47 CFR Part 15; IC RSS-GEN; IC RSS -210
Supply voltage on antenna outputs	24 V DC / 200 mA
Inputs	5 optocoupler (max. 24 V DC / 20 mA)
Outputs	<ul style="list-style-type: none"> <li>• 2 optocoupler (24 V DC / 30 mA)</li> <li>• 3 relays (24 V DC / 1 A)</li> </ul>
Bulk-Read capability	> 150 transponders/sec
Max. Operating Distance	Up to 16 m, depending on kind of transponder & environmental conditions
Power supply	+24 V DC ( $\pm 5\%$ ) / Power over Ethernet (PoE)
Current consumption	max. 2 A
Dimensions (W x H x D)	260 x 157 x 70 mm
Weight	2000 g
Degree of protection acc. to DIN 60 529	IP 64 (with protection cap) / IP 53 (without protection cap)
Operating temperature	-25 °C ... +50 °C

Identification	Part number	Drawing	Dimensions in mm
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UHF RFID long range Reader  
Ha-VIS RFID RF-500-p-US  
4 W transmission power  
with PoE

US version

20 91 104 1102



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<b>Ruggedized UHF Wide range antennas</b>	
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Ha-VIS RF-ANT-WR80-30-US	C-3 8
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UHF Wide range antenna  
Ha-VIS RF-ANT-WR30

RFID  
Antennas

General description	Features
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	<ul style="list-style-type: none"> <li>UHF RFID wide range antenna</li> <li>Reading range up to 16 m (depending upon tag properties, environment and requirements)</li> <li>Compact construction</li> <li>Optimized for portal applications</li> <li>Suitable for industrial environments</li> <li>High IP 65 protection class</li> <li>Suitable for outdoor usage</li> </ul>
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Advantages	Application fields
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	<ul style="list-style-type: none"> <li>Smart infrastructure</li> <li>Gate applications</li> <li>Asset management</li> <li>Machinery</li> </ul>
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## Technical characteristics

Polarization	circular
Axial ratio	typ. 1 dB
VSWR	< 1.2:1
Impedance	50 Ohm
Front-to-back ratio	>18 dB
Far field half-power beam width	69°
Connection	TNC socket
Protection class	IP 65
Weight	approx. 1.7 kg
Dimensions (WxDxH)	270 x 270 x 45 mm
Material	
Antenna cover	tough, weather-resistant polymer blend colour RAL 7045
Chassis	Aluminium
Seals	thermoplastic elastomer
Installation	four M5 drill holes 100 x 100 mm
Temperature range	
storage	-40 °C ... +85 °C
ambient	-20 °C ... +55 °C



UHF Wide range antenna  
Ha-VIS RF-ANT-WR30-EU

Technical characteristics

Frequency range	865 MHz ... 870 MHz
Antenna gain	8.5 dBic @ 866 MHz
Max. radiated power	(ETSI EN 302 208) 2 W ERP

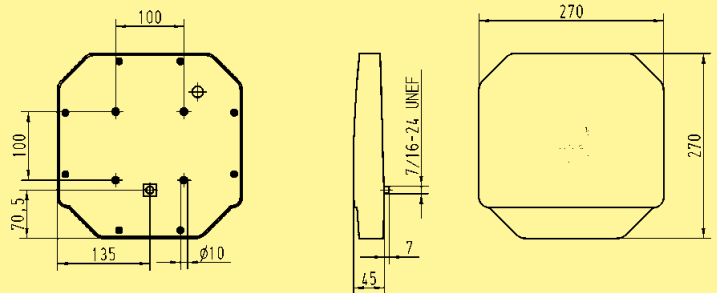
RFID  
Antennas

Identification	Part number	Drawing	Dimensions in mm
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UHF Wide range antenna  
Ha-VIS RF-ANT-WR30-EU

EU version

20 93 201 0102





Ruggedized UHF Wide range antenna  
Ha-VIS RF-ANT-WR80-30

General description

Features

- UHD RFID wide range antenna
- Reading range up to 16 m (depending upon tag properties, environment and requirements)
- Compact design for ruggedized environmental applications
- Optimized for portal applications
- Different half power beam widths in azimuth and elevation plane
- Suitable for industrial environments
- High IP 65 protection class
- Suitable for outdoor usage

Advantages

Application fields

- Smart infrastructure
- Gate applications
- Asset management

## Technical characteristics

Polarization	circular
Axial ratio	< 2 dB
VSWR	< 1.2:1
Impedance	50 Ohm
Front-to-back ratio	>20 dB
Half-power beam width	30° vertical 70° horizontal
Connection	N (female)
Protection class	IP 65
Weight	approx. 3.7 kg
Dimensions (WxDxH)	557 x 262 x 59 mm
Material	
Antenna cover	fiberglass radome (UV resistance), gray
Chassis	stainless steel
Plate patch	brass tin-plated
Gasket	thermoplastic elastomer
Installation	four M5 drill holes 100 x 100 mm
Temperature range	
storage	-40 °C ... +85 °C
ambient	-20 °C ... +65 °C





Ruggedized UHF Wide range antenna  
Ha-VIS RF-ANT-WR30-EU

Technical characteristics

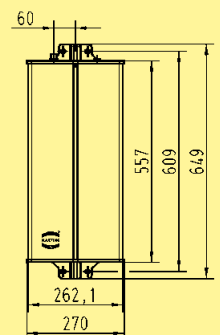
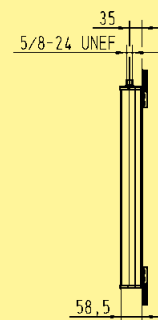
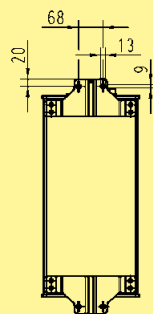
Frequency range	865 MHz ... 870 MHz
Antenna gain	11.0 dBic
Max. radiated power	(ETSI EN 302 208) 2 W ERP

Identification	Part number	Drawing	Dimensions in mm
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Ruggedized UHF Wide range antenna  
Ha-VIS RF-ANT-WR80-30-EU

EU version

20 93 201 0203





Ruggedized UHF Wide range antenna  
Ha-VIS RF-ANT-WR30-US

Technical characteristics

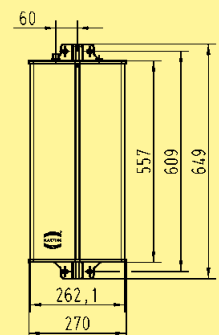
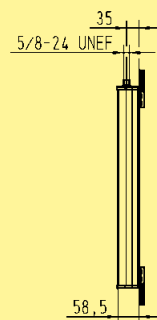
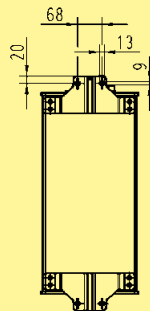
Frequency range	902 MHz ... 928 MHz
Antenna gain	10.5 dBic
Max. input power (FCC 15.247)	700 mW (28.5 dBm) conducted for a max. radiated power of 4 W EIRP

Identification	Part number	Drawing	Dimensions in mm
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Ruggedized UHF Wide range antenna  
Ha-VIS RF-ANT-WR80-30-US

US version

20 93 201 0204



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**Accessories**

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## Antenna cables



### Ha-VIS Coax, SMA-TNC, RG58

Low cost coax cable, left side TNC connector, right side SMA connector

IP 20 <input type="checkbox"/>	IP 65 / IP 67 <input type="checkbox"/>	IP 65 / IP 67 to IP 20 <input type="checkbox"/>	Cat. 5 <input type="checkbox"/>	Cat. 6 <input type="checkbox"/>
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Connector types	left side TNC connector, right side SMA connector
Sheath material	PE, Black
Outer diameter	4.95 mm
Cable weight	35 kg/km
Minimum bend radius (single bend)	25 mm
Operating temperature range	-20 °C ... +70 °C
Impedance	50 Ohm
Attenuation	63 dB/100 m @ 800MHz (depending on application and environmental conditions)
Standard lengths	3 m
Colour	Black

Cables + Accessories

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS Coax, SMA-TNC, RG58  Length 3.0 m	Black  20 93 204 0101		
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## Antenna cables



### Ha-VIS Coax, SMA-TNC, LL240 flex

Low loss coax cable, left side TNC connector, right side SMA connector

IP 20 <input type="checkbox"/>	IP 65 / IP 67 <input type="checkbox"/>	IP 65 / IP 67 to IP 20 <input type="checkbox"/>	Cat. 5 <input type="checkbox"/>	Cat. 6 <input type="checkbox"/>
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Connector types	left side TNC connector, right side SMA connector
Sheath material	PE, Black
Outer diameter	5.4 ± 0.2 mm
Cable weight	39 kg/km
Minimum bend radius (single bend)	35 mm
Operating temperature range	-40 °C ... +80 °C
Impedance	50 Ohm
Screening effectiveness	> 75 dB (30 ... 1000 MHz)
Attenuation	28 dB/100 m @ 800MHz (depending on application and environmental conditions)
Standard lengths	3 m / 10 m
Colour	Black

Cables + Accessories

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS Coax, SMA-TNC, LL240flex  Length 3.0 m Length 10.0 m	Black  20 93 204 0102 20 93 204 0103		
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## Antenna cables



### Ha-VIS Coax, SMA-N, LL240 flex

Low loss coax cable, left side N connector, right side SMA connector

IP 20 <input type="checkbox"/>	IP 65 / IP 67 <input type="checkbox"/>	IP 65 / IP 67 to IP 20 <input type="checkbox"/>	Cat. 5 <input type="checkbox"/>	Cat. 6 <input type="checkbox"/>
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Connector types	left side N connector, right side SMA connector
Sheath material	PE, Black
Outer diameter	5.4 ± 0.2 mm
Cable weight	39 kg/km
Minimum bend radius (single bend)	35 mm
Operating temperature range	-40 °C ... +80 °C
Impedance	50 Ohm
Screening effectiveness	> 75 dB (30 ... 1000 MHz)
Attenuation	28 dB/100 m @ 800MHz (depending on application and environmental conditions)
Standard lengths	3 m / 10 m
Colour	Black

Cables + Accessories

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS Coax, SMA-N, LL240flex  Length 3.0 m Length 10.0 m	Black		
	20 93 204 0104 20 93 204 0105		

## Antenna cables



### Ha-VIS Coax, TNC-N, RG213

Low loss ruggedized coax cable, left side N connector, right side TNC connector


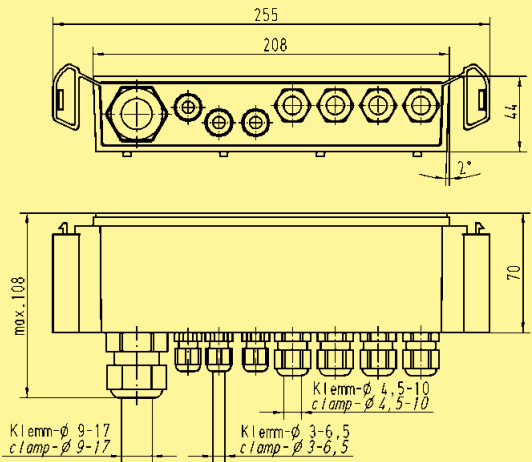
IP 20 <input type="checkbox"/>	IP 65 / IP 67 <input type="checkbox"/>	IP 65 / IP 67 to IP 20 <input type="checkbox"/>	Cat. 5 <input type="checkbox"/>	Cat. 6 <input type="checkbox"/>
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Connector types	left side N connector, right side TNC connector
Sheath material	PVC, Black
Outer diameter	10.3 ± 0.2 mm
Cable weight	161.7 kg/km
Minimum bend radius (single bend)	35 mm
Operating temperature range	-55 °C ... +85 °C
Impedance	50 Ohm
Screening effectiveness	> 55 dB (100 ... 900 MHz)
Attenuation	22 dB/100 m @ 800MHz (depending on application and environmental conditions)
Standard lengths	3 m / 10 m
Colour	Black
Optional accessory	SMA-TNC adapter, necessary to connect to Ha-VIS RF-R500

Cables + Accessories

Identification	Part number	Drawing	Dimensions in mm
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Ha-VIS Coax, TNC-N, RG213  Length 3.0 m Length 10.0 m	Black  20 93 204 0106 20 93 204 0107		
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Identification	Part number	Drawing	Dimensions in mm
<p><b>DIN rail Mounting kit</b></p> <p>Mounting kit for Ha-VIS RF-R500 for easy mounting on a DIN rail</p> <p>Inclusive necessary screws</p> 	<p>20 93 102 0201</p>		
<p><b>Protection cap for Ha-VIS RF-R500</b></p> <p>Protection cap for increased degree of protection from IP 53 to IP 64</p> <p>Easy assembly</p> <p>PG openings for different cable diameters</p>	<p>20 93 901 0101</p>		
<p><b>Adapter SMA-TNC</b></p> <p>necessary adapter to connect Ha-VIS coax RG213 cords to the Ha-VIS RF-R500</p>	<p>20 93 204 0301</p>	