TIMES-7™

INTELLIGENT TRACKING | SMART TECHNOLOGY

A5020 SERIES

Product Guide

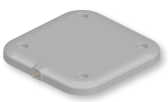
Performance and durability in an aesthetically superior form

A5020CP

A5020NF

A5020MR

A5020LX



A5020CX

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RAIN™ ALLIANCE

ABOUT TIMES-7

At Times-7, our customers come first. This is why we're always innovating to bring you the best products and solutions for your applications.

Established in 2006, we design and manufacture antennas that are recognized globally for their exceptional quality, durability, SlimLine™ design and performance.

Our operations across sales, engineering, and production are housed under one roof in Petone, New Zealand, enabling seamless collaboration and quick turnaround times.

Our products are used in various industries, such as warehousing, logistics, retail, healthcare, and aviation.

We provide exceptional customer service, responsive support, and technical expertise that ensure the success of RFID deployments.

We service customers across the globe through our well-established distribution network. We operate in over 55 countries through our extensive channel partner network. Our channel partners generate crucial proximity to the markets, providing us with insights into local industry trends, as well as ensuring Times-7 antennas are easily accessible wherever you are.

Garry Lewis
CEO

OUR PORTFOLIO

We offer one of the broadest portfolios of off-the shelf fixed RAIN RFID antennas on the market

Our antennas cover:

- ✓ A wide variety of RF characteristics
- ✓ Range of sizes
- ✓ Leading temperature performance
- ✓ Range of IP ratings

Need something a bit outside the box? We offer Custom Antenna Solutions

If your deployment requires a specification that is not met by our standard portfolio, Times-7 can design and manufacture a customized antenna solution to meet your needs. This includes:

- ✓ Customized RF or mechanical specifications
- ✓ IP ratings
- ✓ Custom sizing
- ✓ Custom enclosures
- ✓ Different connector types

Times-7 is a member of the RAIN Alliance, a global alliance promoting the universal adoption of UHF RFID technology in a way similar to other wireless technology organizations including NFC Forum, WiFi Alliance and Bluetooth SIG. RAIN uses the GS1 UHF Gen2 protocol which ISO/IEC has standardized as 18000-63.

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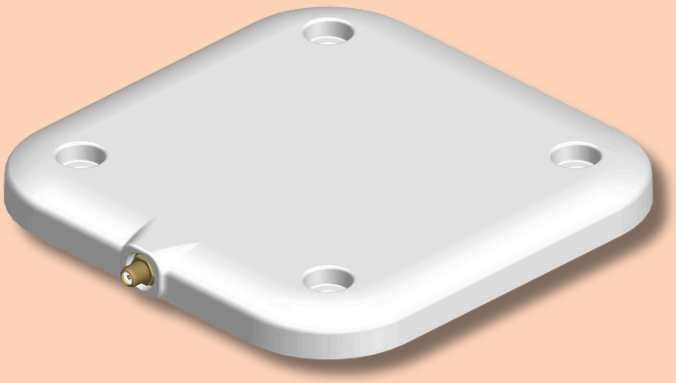
INTRODUCTION: A5020 SERIES

A5020 DESIGN CRITERIA

The A5020 Antenna Series is one of our flagship products. It is known for its robust yet compact design, making it an essential solution for a wide range of applications. The series has recently been expanded with the addition of new products.

In designing the A5020 Antenna Series, we have stayed true to our responsive, reliable, and innovative values. We have listened intently and designed a reliable antenna based on your feedback. You told us you valued:

1. A slim antenna that can be used inside or out.
2. IP68-IP69K rated antennas to ensure performance in wet and dirty locations.
3. A robust antenna that can withstand the rigour of industrial environments.
4. An easy to mount antenna using standard VESA mounts.
5. A good looking antenna that blends into the background.



KEY BENEFITS

- Compact size for non-obstructive operation.
- Flexible and easy mounting options.
- High ingress protection for dirty and wet environments.
- Suitable for different environmental conditions.
- Easy to store and transport.

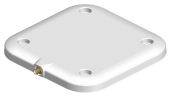
WHY USE AN A5020 ANTENNA?

Our A5020 range of antennas offers versatility and high performance. They meet the criteria needed for diverse applications and environments, including outdoor, industrial, and customer-facing scenarios.

Our A5020 antennas blend beautifully into any customer environment. They are also rugged, with high IP ratings that can be used in extreme weather conditions.

The slim and compact design allows these antennas to fit into small spaces. The flush and VESA mounting options make installation and mounting simple.

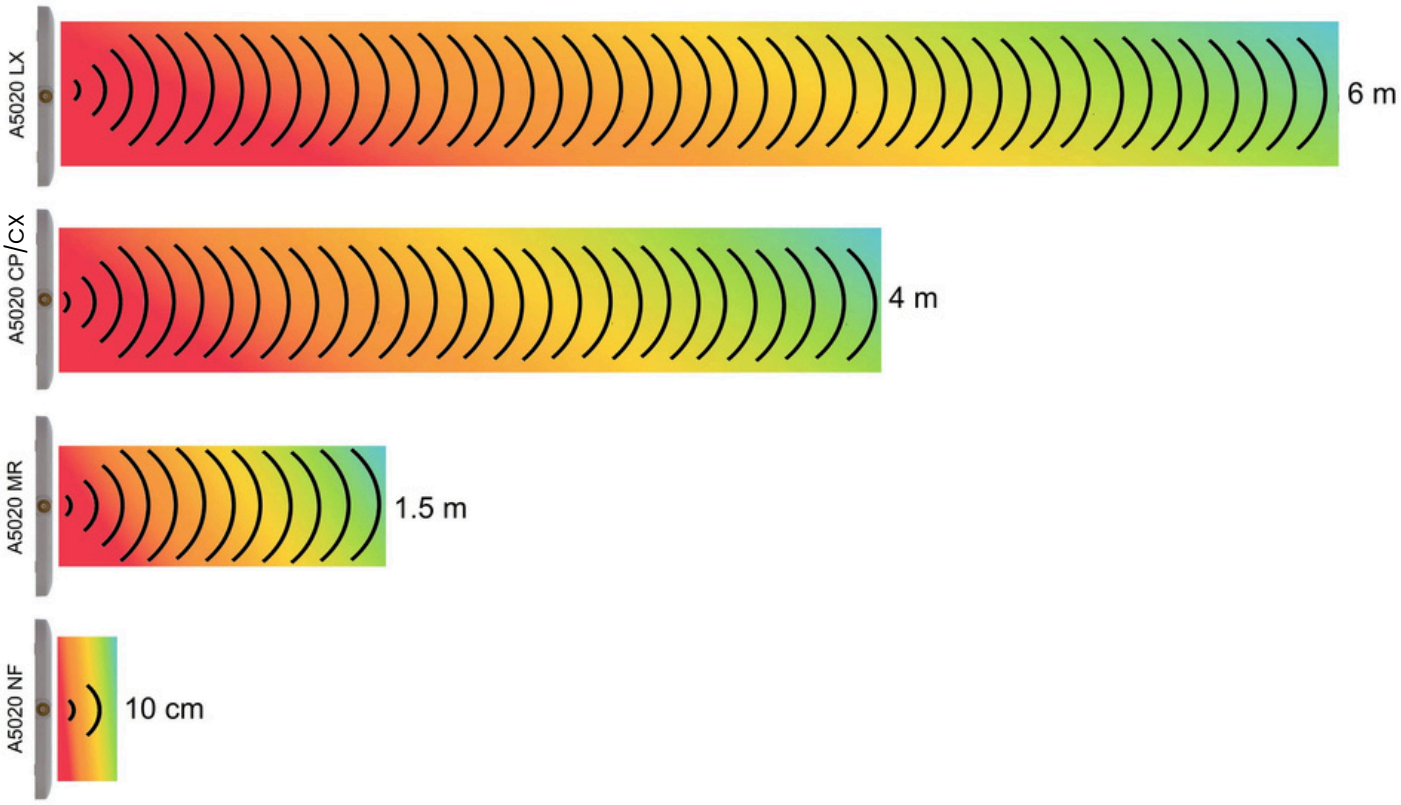
QUICK GUIDE

A5020 SERIES	A5020CP	A5020NF	A5020MR	A5020LX	A5020CX
					
Common Design Features					
Supports Flush and VESA mounting	✓	✓	✓	✓	✓
SMA female / side connector	✓	✓	✓	✓	✓
A5020 flush screws	✓	✓	✓	✓	✓
UV resistant and fire-retardant	✓	✓	✓	✓	✓
Anti-static protection	✓	✓	✓	✓	✓
Environmental & Operating Features					
IP Rating	IP68	IP68	IP68	IP69K	IP69K
Operating temperature Storage temperature	-30° to +65°C -22 to +149°F	-40° to +65°C -40° to +149°F	-30° to +65°C -22 to +149°F	-90° to +65°C -130 to +149°F	-30° to +65°C -22 to +149°F
Electrical Specifications & Performance					
Nominal impedance 50 Ω	✓	✓	✓	✓	✓
Maximum power input 3W	✓	✓	✓	✓	✓
Polarization	Right hand circular	Not applicable	Right hand circular	Vertical linear	Right hand circular
Far-Field beamwidth	105° in both planes	Not applicable	115° in XZ 105° in YZ	100° in XZ 105° in YZ	105° in both planes
Gain	5 dBiC typical	Equivalent to -30 dBiC	-3 dBiC tyical	5 dBiC typical	5 dBiC typical
Colour and Physical Dimensions					
Colour	White	White	White	Grey	Grey
Dimensions (L x D x H) 150 x 150 x 14mm 5.93 x 5.88 x 0.57"	✓	✓	✓	✓	✓

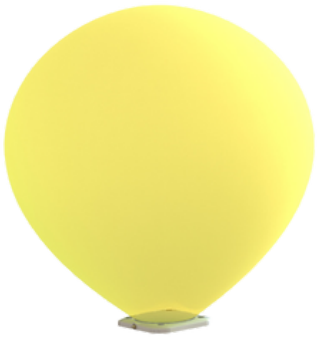
SELECTION GUIDE

The antenna selection guide will help to break down which type of beam shape is right for your application. Once you have selected the correct beam shape you can easily determine which A5020 antenna is the right fit for you.

ANTENNA READ RANGE



A5020 RADIATION PATTERN



- The A5020 family has a consistent beam shape that retains its relative symmetry across the reader power range.
- Using innovative design improves the overall antenna performance, reliability, accuracy and ensures the beam shape remains true at all power levels.

APPLICATIONS

The antennas in the A5020 family are all versatile and can be used in customer-facing and indoor /outdoor applications. However, each member of the family has been designed with specific applications in mind. The following are examples of where you may choose a specific A5020 variant.






A5020CP

Circularly Polarized Antenna

Retail
The A5020CP is a rugged antenna meaning it is ideal for asset tracking and encoding RFID tags. This antenna has a typical read range distance of 4m allowing manufacturers, wholesalers and retailers, for example, to track their inventory throughout the supply chain, from the warehouse shelves all the way to the sales floor.

Multi-purpose
The A5020CP stands out as a resilient RFID antenna, perfectly suited for the demanding needs of asset tracking and tag encoding. With its remarkable 4m typical read range, this technology proves invaluable to manufacturers, wholesalers, and retailers by facilitating effortless inventory tracking throughout the entire supply chain, from meticulously organized warehouse shelves to the bustling sales floor.

A5020NF

Nearfield Antenna

Direct Contact Reads
The A5020NF antenna is best used when you only want to read things that come in direct contact with the antenna. To record a high-value precision instrument or tool usage, it would need to be scanned before the lock can be released. Only an antenna with a proximity reader and no far-field reading ability is suitable for these needs.

Tap 'n Go and touch applications
The A5020NF antenna impresses with an extremely close read range of 10cm / 4" from the antenna's surface, suitable for purchase and payment applications. Although the A5020NF cannot read credit/debit cards equipped with HF RFID, it is widely used to scan proprietary UHF badges to purchase goods. For example, employees can scan their badges to pay for food bought from their cafeteria. Another great example of access control badges.

A5020MR

Mid Range

Kiosk / Self Check Out / POS
The A5020 MR antenna's lower gain RF radiation can be confined to a smaller zone while operating at low power. The antenna is best suited for kiosks and POS applications where a confined read zone is a key requirement. The antenna is aesthetically appealing and fits into every environment.

Cabinetry and Shelves
The A5020 MR has a lower gain than the A5020 CP antenna, yet it can read across a cabinet shelf without extending its reads beyond the intended zone.

A5020LX

Linear Extreme

Deep Freezer (-90°C)
The A5020LX can operate at low-temperature extremes. High-value pharmaceutical assets can be tracked in fridges and freezers using the A5020LX antenna. The slim design maximizes the usable space inside of a refrigerator. The antenna can handle general-purpose cleaning agents and is water-resistant. The grey colored A5020LX antenna is suitable for hospitals, medical laboratories, research industries and pharmaceutical laboratories.

Food, Meat and Chemical Manufacturing Processes
The A5020LX is IP69K rated, so it can survive high-pressure water cleaning, which is often done in food processing industries. The antenna cover is also resistant to general-purpose chemicals.

A5020CX

Circular Extreme

Clean Rooms
The Times-7 A5020CX antenna is ideal for cleanroom environments, combining compact design, durability, and high-performance RFID capabilities. Its IP69K rating ensures resistance to high-pressure cleaning, meeting stringent hygiene standards. With a 150 x 150mm footprint, circularly polarized radiation, and a 4m read range, it delivers reliable RFID performance for cleanroom asset tracking and inventory management.

Waste Management
The A5020CX is IP69K rated, meaning it is suitable for permanent outdoor installations, which may require cleaning through pressure washing. The 'all-plastic- housing prevents the antenna from corroding. The antenna can also be cleaned with cleaning agents. The ~100° beamwidth of the antenna makes applications reading tagged assets being put into RFID enabled wastebins easy. The physical size of the antenna is small, and thus installation in waste management trucks is hassle-free.

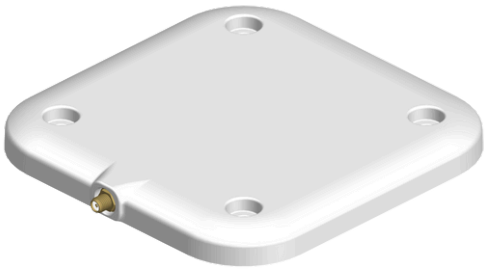
ANTENNA SPECIFICATIONS

A5020CP

Circularly Polarized Antenna

The A5020CP Circularly Polarized Antenna is a versatile solution with a compact design and advanced performance, making it a top choice across industries like logistics, healthcare, and retail.

The antenna's uniform radiating pattern minimizes stray reads, simplifying RFID read point design and ensuring consistent, accurate tracking. Built for durability, the IP68-rated A5020CP is engineered to withstand harsh outdoor environments. Its sleek SlimLine™ design is both functional and visually appealing, making it equally suitable for indoor, customer-facing environments.



Multi-purpose
IP68

Ordering information

Antenna Product Code	Band	Part Number (White)
A5020CP	902-928 MHz / FCC	75493
A5020CP	865-868 MHz / ETSI	75494

Specifications

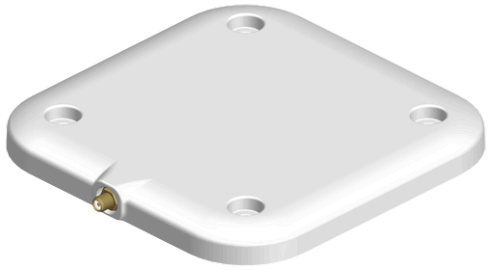
Dimensions:	150 x 150 x 14mm 5.93 x 5.88 x 0.57"	Far-Field Gain:	5.5 dBiC typical
Weight:	Net: 0.23kg / 0.51lb. Gross: 0.28kg / 0.62lb.	*Far-Field 3dB Beamwidth:	105° in both planes, typical
Radome Material and Color:	Flame retardant and UV-resistant grey ABS	VSWR:	1.4 typical
Environmental Rating:	IP68	Front-To-Back Ratio:	-10dB typical
Operating and Storage Temperature:	-30° to +65°C / -22° to +149°F	Axial Ratio:	2dB typical
Mounting:	Flush or 100 x 100mm VESA mount using the four mounting holes	Nominal Impedance:	50Ω
Connector Type:	SMA female (Jack) side connector	Anti-Static Protection:	Yes, DC Grounded
Frequency Range:	865-868 MHz (ETSI) / 902-928MHz (FCC)	Antenna Detection:	10KΩ resistance
Polarization:	RHCP (Right hand circular polarized)	Maximum Input Power:	3W

A5020NF

Nearfield Antenna

The A5020 NearField antenna impresses with an extremely close read range of up to 10cm / 4" from the antenna's surface suitable for tap or touch applications.

Its pleasing aesthetics and timeless design blends beautifully with most interiors and allows both flush and VESA mounting.



True Nearfield
IP68

Ordering information

Antenna Product Code	Band	Part Number (White)
A5020NF	865-928 MHz / WB	72057

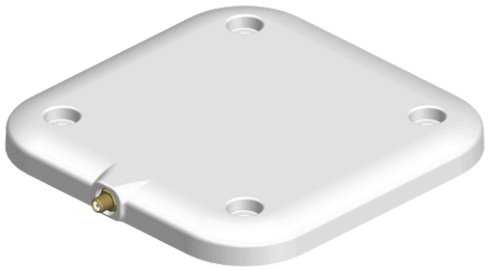
Specifications

Dimensions:	150 x 150 x 14mm 5.93 x 5.88 x 0.57"	Frequency Range:	865-928 MHz / Wide Band
Weight:	Net: 0.18 kg / 0.40 lbs, Gross: 0.23kg /0.51 lbs	VSWR:	< 1.8 typical
Radome Material and Color:	Flame retardant and UV-resistant grey ABS	Front-To-Back Ratio:	-10dB typical
Environmental Rating:	IP68	Axial Ratio:	2dB typical
Operating and Storage Temperature:	-40° to +65°C -40° to +149°F	Nominal Impedance:	50Ω
Mounting:	Flush or 100 x 100mm VESA mount using the four mounting holes	Anti-Static Protection:	Yes, DC Grounded
		Antenna Detection:	10KΩ resistance
Connector Type:	SMA female (Jack) side connector	Maximum Input Power:	3W

A5020MR

Mid-Range Antenna

The A5020MR is designed to operate in complex, busy environments where stray reads risk productivity and accuracy. This antenna is specifically tuned to read just beyond the near-field zone, ensuring items in the mid-range proximity of up to 1.5m are accurately tracked while ignoring those further away.



Mid-range
IP68

Ordering information

Antenna Product Code	Band	Part Number (White)
A5020MR	902-928 MHz / FCC	72388
A5020MR	865-868 MHz / ETSI	72389

Specifications

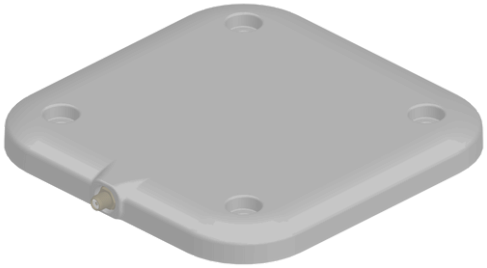
Dimensions:	150 x 150 x 14mm 5.93 x 5.88 x 0.57"	Far-Field Gain:	-3dBiC typical
Weight:	Net: 0.20kg / 0.44lbs. Gross: 0.25kg / 0.55lbs	*Far-Field 3dB Beamwidth:	115° in XZ and 105° in YZ plane
Radome Material and Color:	Flame retardant and UV resistant white ABS	VSWR:	1.8 typical
Environmental Rating:	IP68	Front-To-Back Ratio:	-8dB
Operating and Storage Temperature:	-30° to +65°C / -22° to +149°F	Axial Ratio:	2.5dB typical
Mounting:	Flush or 100 x 100mm VESA mount using the four mounting holes	Nominal Impedance:	50Ω
Connector Type:	SMA female (Jack) side connector	Anti-Static Protection:	Yes, DC Grounded
Frequency Range:	865-868 MHz (ETSI) / 902-928MHz (FCC)	Antenna Detection:	10KΩ resistance
Polarization:	RHCP (Right hand circular polarized)	Maximum Input Power:	3W

A5020LX

Linear Extreme Antenna

The A5020LX is designed to operate in environments where temperature, dirt, and water levels are extreme. Being IP69k rated, it can withstand high-pressure water cleaning, making it ideal for situations where hygiene is critical, and equipment is subject to regular cleaning. It has also been designed for the medical industry's need to store vaccines, organs, and tissue at temperatures as low as -90°C (194°F).

Being IP69k rated, the A5020LX can be used for permanent outdoor applications. As well as being durable, its pleasing design blends with most interiors and makes the A5020LX suitable for customer-facing environments.



Operating Temperature
-90° to +65°C
IP69K

Ordering information

Antenna Product Code	Band	Part Number (White)
A5020LX	902-928 MHz / FCC	72386
A5020LX	865-868 MHz / ETSI	72387

Specifications

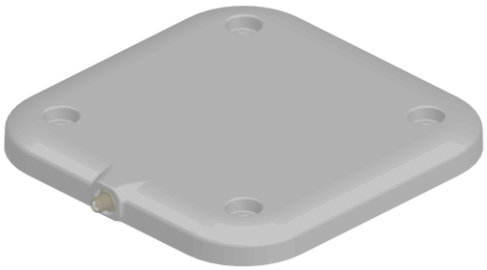
Dimensions:	150 x 150 x 14mm 5.93 x 5.88 x 0.57"	Far-Field Gain:	5dBi typical
Weight:	Net: 0.23kg / 0.51lb. Gross: 0.28kg / 0.62lb.	*Far-Field 3dB Beamwidth:	100° in XZ and 105° in YZ plane
Radome Material and Color:	Flame retardant and UV resistant grey ABS	VSWR:	2.5 typical
Environmental Rating:	IP69K	Front-To-Back Ratio:	-12dB
Operating and Storage Temperature:	-90° to +65°C / -130° to +149°F	Axial Ratio:	Not Applicable
Mounting:	Flush or 100 x 100mm VESA mount using the four mounting holes	Nominal Impedance:	50Ω
Connector Type:	SMA female (Jack) side connector	Anti-Static Protection:	Yes, DC Grounded
Frequency Range:	865-868 MHz (ETSI) / 902-928MHz (FCC)	Antenna Detection:	0Ω resistance
Polarization:	Vertically Polarized (along the Y axis)	Maximum Input Power:	3W

A5020CX

Circular Extreme Antenna

The A5020CX combines the high-performance circularly polarized RFID capabilities of the A5020CP with the ultra-rugged durability of the A5020LX.

Designed for harsh environments, the A5020CX boasts an IP69K rating, making it resistant to high-pressure water cleaning and suitable for extreme conditions such as outdoor installations, food processing, and industrial asset tracking.
Its robust construction ensures longevity and reliability, while its sleek design seamlessly integrates into both industrial and customer-facing environments.



Circularly Polarized & IP69K

Ordering information

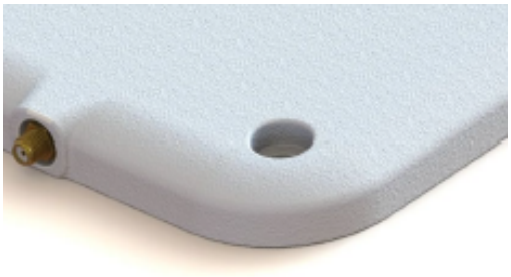
Antenna Product Code	Band	Part Number (White)
A5020CX	902-928 MHz / FCC	75493
A5020CX	865-868 MHz / ETSI	75494

Specifications

Dimensions:	150 x 150 x 14mm 5.93 x 5.88 x 0.57"	Far-Field Gain:	5.5 dBiC typical
Weight:	Net: 0.23kg / 0.51lb. Gross: 0.28kg / 0.62lb.	*Far-Field 3dB Beamwidth:	105° in both planes, typical
Radome Material and Color:	Flame retardant and UV-resistant grey ABS	VSWR:	1.4 typical
Environmental Rating:	IP69K	Front-To-Back Ratio:	-10dB typical
Operating and Storage Temperature:	-30° to +65°C / -22° to +149°F	Axial Ratio:	2dB typical
Mounting:	Flush or 100 x 100mm VESA mount using the four mounting holes	Nominal Impedance:	50Ω
Connector Type:	SMA female (Jack) side connector	Anti-Static Protection:	Yes, DC Grounded
Frequency Range:	865-868 MHz (ETSI) / 902-928MHz (FCC)	Antenna Detection:	10KΩ resistance
Polarization:	RHCP (Right hand circular polarized)	Maximum Input Power:	3W

MOUNTING

Information



The recessed corner mounting holes of the A5020 support 100 x 100mm VESA spaced mounting brackets, as shown in the picture.

The innovative slim design of the A5020, equipped with an SMA connector, allows for totally flush mounting using the corner holes.

If drilling through the surface of the antenna is not an option, each antenna is provided with a self-adhesive rubber feet kit. These can be attached over the integrated mounting holes to stop the antenna from slipping.

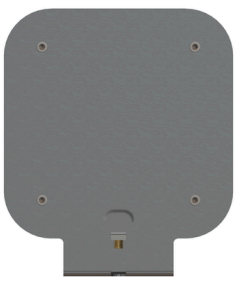
Caution

- Ensure that only finger tightness is used for the SMA connector.
- The use of tools to tighten the connector will apply excessive force and will damage the connector.
- Avoid any load or bending force from the cable on the connector.

Connector Protection Plate

Due to the slim design of the A5020 CX, LX, CP, MR and NF the antennas are equipped with SMA connectors. To provide the connector with extra protection, Times-7 provides Connector Protection Backplates to protect the connector from hits, especially when mounted on a bracket in free space. The backplate can be used with right-angled or straight cables.

Front view



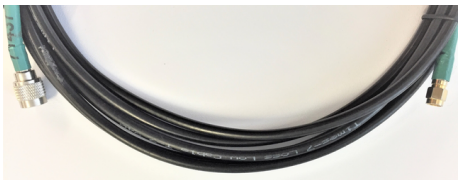
Back view

CABLING

When purchasing one of our antennas, you will need a coaxial cable to connect our antennas to a reader; just like with every other component of your RFID application, the better the quality of the selected cable, the better the performance.

That's why we offer a range of high-quality, low loss cables at attractive prices. All of our standard cables are equipped with SMA to RPTNC connectors. We can also customize cables to your specific requirements for length and connectors on request.

How to choose the correct cable?



Cable Selection Checklist:

1. Cable loss: How much power loss is acceptable before it significantly impacts the read performance?

2. Minimum bend radius of the cable: How flexible must the cable be?

3. Cable thickness: Ensure that the cable or cable connector is not thicker than the antenna when flush mounting an A5020 antenna.

Cable Selection

Cable Type	Cable Length	Approx. Losses (dB)	Min. Bend Radius
T-7 195	2m	0.65	25mm
T-7 240	2m	0.39	30mm
	4m	0.78	
	6m	1.17	
	8m	1.56	
T-7 400	2m	0.26	51mm
	4m	0.51	
	6m	0.77	
	8m	1.03	

ORDERING INFORMATION

Antenna Product Code	Band	Part Number (Grey)
A5020CP	902-928 MHz / FCC	60010
A5020CP	865-868 MHz / ETSI	60011
A5020NF	865-928 MHz / WB	72057
A5020MR	902-928 MHz / FCC	72388
A5020MR	865-868 MHz / ETSI	72389
A5020LX	902-928 MHz / FCC	72386
A5020LX	865-868 MHz / ETSI	72387
A5020CX	902-928 MHz / FCC	75493
A5020CX	865-868 MHz / ETSI	75494
Cable Accessories & Product Code	**Cable Type**	**Part No.**
Cable 2 m, SMA to RPTNC	T7 195 /240 / 400	71436 / 71782 / 72042
Cable 4 m, SMA to RPTNC	T7 240 / 400	71782 / 72043
Cable 6 m, SMA to RPTNC	T7 240 / 400	71904 / 72044
Cable 8 m, SMA to RPTNC	T7 240 / 400	71788 / 72045
Low Temperature & Water Resistant Cable Accessories & Product Code	**Cable Type**	**Part No.**
Cable 2 m, RT SMA to RPTNC	T7 RG-142 type	72395
Cable 4 m, RT SMA to RPTNC	T7 RG-142 type	72396
Cable 6 m, RT SMA to RPTNC	T7 RG-142 type	72397
Cable 8 m, RT SMA to RPTNC	T7 RG-142 type	72398
Other Accessories	**Compatibility**	**Part No.**
Connector Protector Back Plate	A5020 CX/ LX/ CP/ MR/ NF	72394

View the Times-7 Cable Accessory datasheet **here**.

For additional information such as RoHS, CE, REACH, CAD models, please contact us at **sales@times-7.com**.

ENVIRONMENTAL TESTS

Test	Standard	Duration	Temp	Notes
IPX Dust	AS60529 - 2004	8 Hrs	-	Severity: Vacuum, up tp -2KPa
IPX8 Immersion	AS60529 - 2004	30 Min	-	Severity: 1.5 Depth
Basic Vibration	IEC60068 - 2-64	1 Hrs per axis - 3 axis	-	Severity: Vehicle vibration 10-500 MHz 1.04g rms
Shock Test	MiL-STD-810G	5 pulses per direction 6 directions	-	Severity: Half sine 10g, 11ms
Thermal Shock	IEC60068 - 2 - 14	5 Cycles - 2 Hrs precondition	-65 ° to +65 °	-
Salt Fog	ASTMB117	24 Hrs	+35 °	-
Extra IP Tests For The A5020 LX & A5020CX				
IPX Dust	IEC 60529	8 Hrs	-	-
IPX 9K High pressure steam jet cleaning	IEC 60529	30 seconds at each angle, 0°, 30°, 60° and 90°	-	8000 - 1000 kPa pressure at 80°C temperature
Extra Temperature Tests For The A5020 LX				
Thermal storage and operation	-	2000 + Hrs	-90 °C	Including monthly temperature cycling

For more information about any of the products in this guide please contact our sales team at sales@times-7.com

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