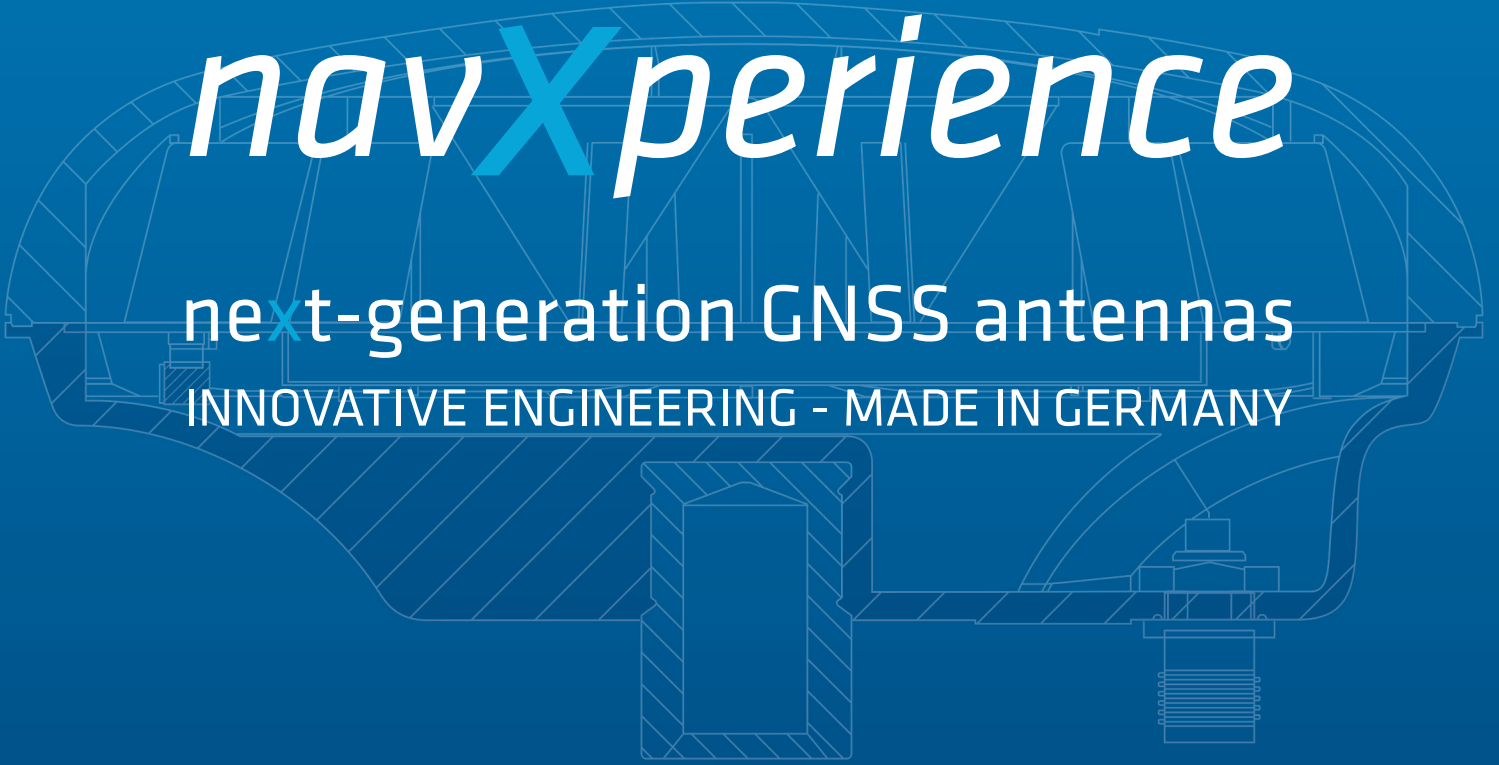# navXperience

next-generation GNSS antennas
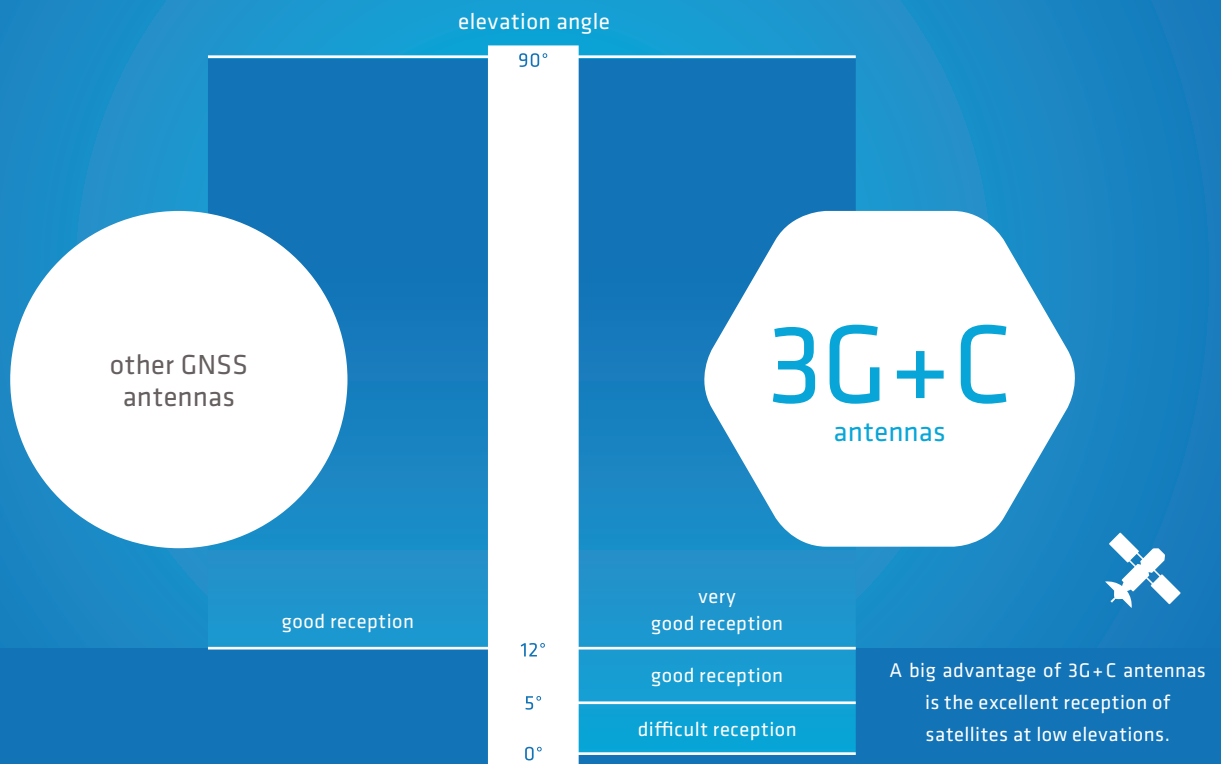### INNOVATIVE ENGINEERING - MADE IN GERMANY

control | maritime | defense | mobile | reference

3G+C SERIES

The 3G+C products in comparison

elevation angle

90°

other GNSS
antennas

3G+C

antennas

good reception

very
good reception

12°

good reception

5°

difficult reception

0°

A big advantage of 3G+C antennas
is the excellent reception of
satellites at low elevations.

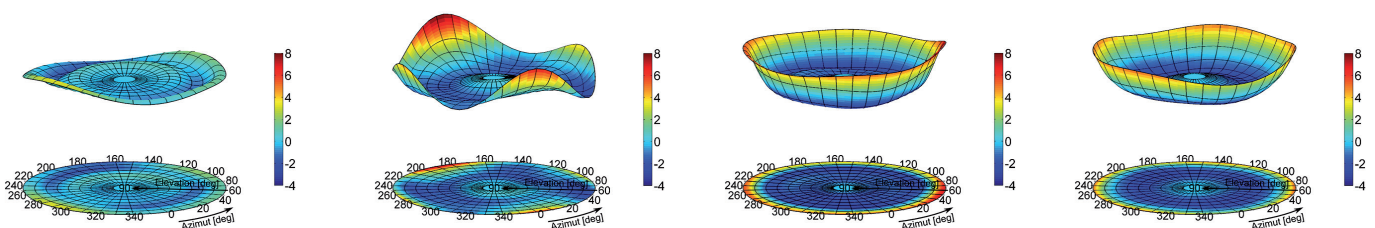## Enables precise positioning for all GNSS applications

One of the antenna's numerous advantages is excellent reception of satellites at low elevations, i.e. weak GNSS signals. This is an outstanding property, because the reception characteristics for these satellites are generally poor due to a longer path through the atmosphere.

The 3G+C antenna enables weak signal tracking of GNSS satellites to the horizon (0° elevation) with sufficient quality, while other high-precision antennas typically lose track at 7° elevation or are providing such poor signal quality that the GNSS receiver cannot use it.

This unique attribute of the 3G+C antenna results in improved productivity for the user, because it will enable more satellites being tracked and faster positioning with better signal quality (C/No).

In applications experiencing roll and pitch motion, such as machine control or on-board of ships, low elevation satellite tracking with good signal quality allows the GNSS receiver to determine its position more accurately and with less noise.
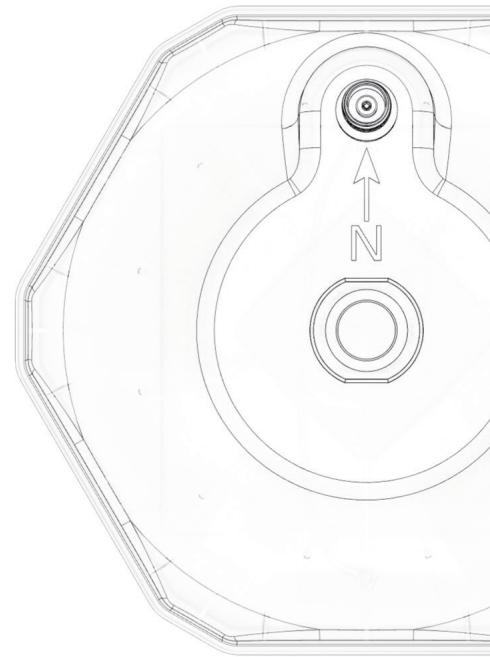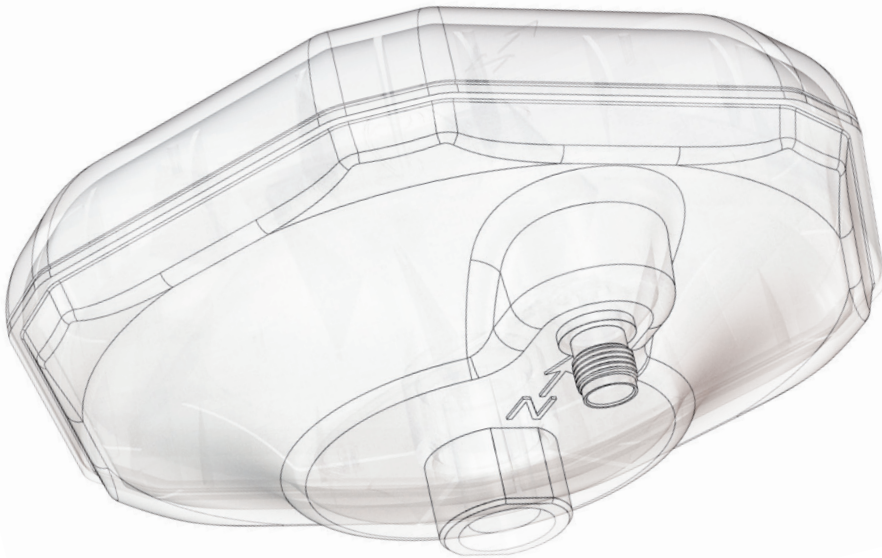
phase center variation

navXperience

Leica AR-10

Topcon PG-A1

Trimble Zephyr II

Measurements of the antenna calibration from the webpage: https://www.ngs.noaa.gov/ANTCAL

The world's only antenna where the housing is laser-welded.

## Neither air, dust or water can penetrate inside the antenna

The production of the 3G+C series meets the highest quality standards with respect to processes and materials used. The housing material is designed to be extremely durable, UV resistant and color true. Even after years of use it will appear like new. The upper and lower housing are laser-welded which is unique among all GNSS antenna manufacturers. Neither air, dust, or water can penetrate its interior, even at pressure differences of 2.5 bar (36 psi).

before

after

This is also true for the standard TNC connector, because it is integral to the case and was specifcally designed for this housing. Thus, the 3G+C series complies with IP69k and all tests of MIL-STD 810g.

Unsere präzisen GNSS Antennen
## 3G+C SERIE
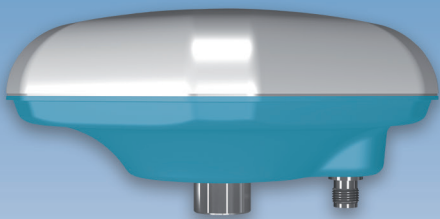
3G+C mobile

Typical applications for this mobile antenna are surveying, installations on vehicles and wherever only short cable lengths (typically under 10 m) are required.

Like all 3G+C series antennas, it receives all frequencies from all satellite navigation systems.

The 3G+C mobile is the standard antenna for all dynamic or mobile, high precision, GNSS applications.

Order number: navX-007
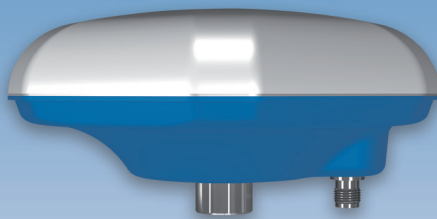
3G+C maritime

The 3G+C maritime is designed for use on all types of maritime vehicles. A gain of 42 dB enables the customer to use (low loss) RF cables with a length of up to 60 m, and still have excellent quality RF signals at the GNSS receiver. Neither storms, cold, heat or salt water will have an effect on this antenna.

Many years of testing under the most extreme conditions have proven that this antenna will work flawlessly for more than a decade.

Order number: navX-027
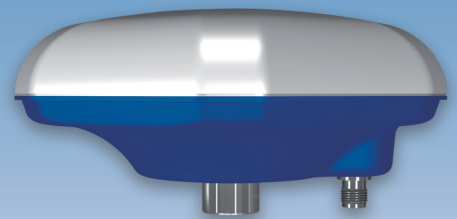
3G+C reference

The 3G+C reference is designed for use in network applications, i.e. to be installed at fixed sites for many years. Its gain of 48 dB enables using (low loss) RF cables with a length of up to 100 m without needing additional amplification.

When selecting the electronic components, we especially paid attention to durability, which allows us to provide a 5-year warranty when it is used as a reference station antenna.

Order number: navX-037

navXperience
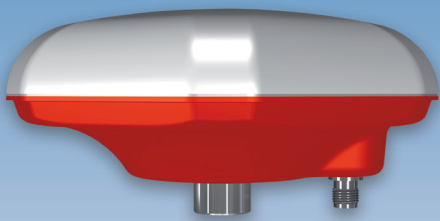
3G+C control

This antenna is designed and built for machine control applications. Due to its design, using all surface-mounted parts, it is virtually insensitive to vibration and strong acceleration.

The housing is 100% watertight and dust-proof. This antenna can be used in the toughest environments and on the heaviest machines.
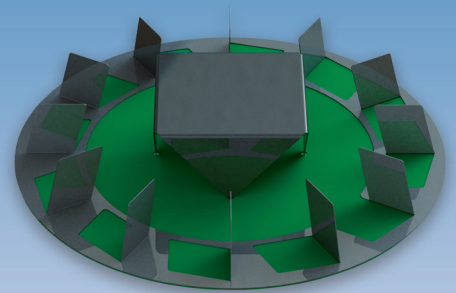
Order number: navX-047
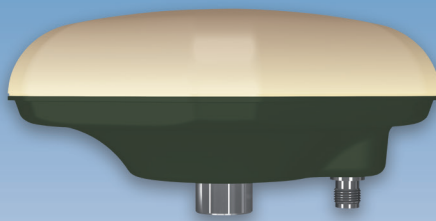
3G+C defense

The 3G+C defense is built for military applications. This antenna has successfully passed all pertinent requirements of MIL-STD 810g.

The use of expensive RF filters, with sharp roll-offs, as part of the LNA, makes this antenna less sensitive to jamming and interference.

Order number: navX-027

3G+C OEM mobile

We provide an OEM version of our 3G+C series, i.e. the antenna element without its housing.

It includes an LNA (low-noise amplifier) with a gain of 29 dB. This antenna is offered to customers who want to build their own GNSS system.
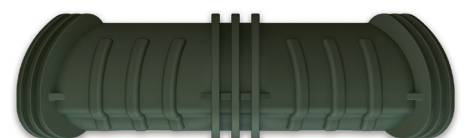
Order number: navX-003

The Bumper

With the bumper the antenna withstands a drop from a height of 10 m on concrete without sustaining damage.

Bumper black
Order number: navX-050

Bumper green
Order number: navX-051

Technical Data
3G+C SERIES

	defense & mobile	control & maritime	reference
Bandwidth	1150 - 1300 MHz 1525 - 1610 MHz	1525 - 1610 MHz 1150 - 1300 MHz	1150 - 1300 MHz 1525 - 1610 MHz
Galileo Frequences	all	all	all
GPS Frequences	all	all	all
GLONASS Frequences	all	all	all
BeiDou Frequences	all	all	all
L-Band Correction Data Signals	all	all	all
Active Gain	29 dB	42 dB	48 dB
Passive Gain	3,8 dbic	4,2 dbic	4,5 dbic
Polarisation	RHCP	RHCP	RHCP
VSWR (max)	1,5:1	1,5:1	1,5:1
VRV	> 13 dB	> 13 dB	> 13 dB
XPD	> 15 dB	> 15 dB	> 15 dB
10 dB Beamwidth	160° to 180°	170° to 180°	170° to 180°
Axial Ratio	3 dB (max)	3 dB (max)	3 dB (max)
LNA Noise factor	< 2 dB	< 2 dB	< 2 dB
Power	3,3 - 20 Volt	3,3 - 20 Volt	3,3 - 20 Volt
Current draw	< 50 mA	< 50 mA	< 50 mA
Operating temperature	-45° to 85° C	-45° to 85° C	-45° to 85° C
Connector type	TNC	TNC	TNC
Dimensions (mm)	Durchmesser: 172 Höhe: 72	Durchmesser: 172 Höhe: 72	Durchmesser: 172 Höhe: 121
Weight	380 g	380 g	385 g
100% Water- and Dustproof	IP69K	IP69K	IP69K
	MIL-STD 810g	MIL-STD 810g	MIL-STD 810g

navXperience
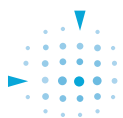
OSR
Open Source Receiver

Triple frequency GNSS Receiver
receives all GNSS frequencies

The front-end receives all GNSS signals as well as all L-band correction data signals. The first version of the receiver will be delivered with GPS / GLONASS L1 and L2.

navXweb Interface
for complete control

The state-of-the-art interface of navXweb allows the user, either via smartphone or PC, direct access to all receiver settings and functions. The modern HTML 5 user interface adapts to the screen size and allows the display of graphical Skyplots.

LINUX OS
enables end-user software developments

By integrating the open source Linux operating system, we enable end-users and developers to install their own software and existing applications on the GNSS board.

OSRP Open Source Receiver Protocol
provides open software interface

By OSRP allows end-users and developers access to all GNSS raw data, if required. At the same time, they can also integrate and synchronize other sensors via this protocol.

LifeTime Updates
guaranteed free lifetime updates

We offer free software updates through our website over the entire life of the product! This feature will keep your GNSS receiver always up to date.

UMP Coaxial

The newly developed UMP coaxial radial is much better suited to the environment of our antennas than the usual MCX or MMCX connector. The advantages include its lower height, better electrical connection, and its robustness, which makes it insensitive to vibrations and high acceleration forces.

This connection is designed for safety-critical applications and is already used in the German automobile industry.

Technical Data

Galileo Signal	All
GPS Signal	All
GLONASS Signal	All
BeiDou Signal	All
L-Band Correction Data Signals	All
Accuracy Standalone	Horizontal: 1,2 m
	Vertical: 1,9 m
Accuracy SBAS	Horizontal: 0,6 m
	Vertical: 0,8 m
Accuracy Velocity	Horizontal:0,04 km/h
	Vertical: 0,06 km/h
Accuracy Time Measurement	12 nsec
Maximal Data Update Rate	50 Hz
Dimensions	Length: 60 mm
	Width: 50 mm
	Height: 10 mm
Weight	50 g
Power	3,3 to 5,5 Volt
Current Draw	<2 Watt
Operation Temperature	-40° to 85°
Connector Type	UMP

navXperience

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