



GPS ANTENNA CONVERTER UNIT

The GPS antenna combines a planar antenna and a frequency converter, which translates the high-frequency phase-modulated spread spectrum signal of the GPS system to an intermediate frequency. This way a standard cable (e.g. AWG22) can be used for the connection with the GPS clock and a distance of up to 120 meters between receiver and antenna is possible without additional amplifier.

Key Features

- 12-channel simultaneous operation
- Ultra-low power consumption: less than 1W
- Dual sensitivity modes with automatic switching
- Holder for Wall Mounting (included)

Interface Characteristics

- **Cable:**
 - 1 Pair 22 AWG Shielded Cable, 10 meters
- **Power consumption:** less than 1 W
- **Passive current loop system**
- **DCF 77 transmission format**
- **Acquisition:** less than 4 minutes.

Performance Specifications (GPS system)

- **General:** L1 (1575.42 MHz) frequency, C/A code, 12-channel, continuous tracking receiver
- **Update rate:** 1 Hz
- **Accuracy:**
 - Horizontal: <5 meters (50%), <8 meters (90%)
 - Altitude: <10 meters (50%), <16 meters (90%)
 - Velocity: 0.06 m/sec
 - PPS (static): ± 50 nanoseconds
- **Acquisition:**
 - Reacquisition: <2 sec. (90%)
 - Hot Start: <10 sec (50%), <13 sec (90%)
 - Warm Start: <38 sec (50%), <42 sec (90%)
 - Cold Start: <50 sec (50%), <84 sec (90%)
 - Cold start requires no initialization.
- **Operational limits:**
 - Altitude: 18,000 m
 - Velocity: 515 m/s
 - Either limit may be exceeded, but not both

Environmental Specifications

- **Operating Temperature:** -40° C to $+85^{\circ}$ C
- **Storage Temperature:** -55° C to $+105^{\circ}$ C
- **Vibration:**
 - $0.008 \text{ g}^2/\text{Hz}$ 5 Hz to 20 Hz
 - $0.05 \text{ g}^2/\text{Hz}$ 20 Hz to 100 Hz
 - -3 dB/octave 100 Hz to 900 Hz
- **IP code :** 54

NB: the unit is remotely powered by the connected GPS receiver (via the antenna cable) and can be used only with GPS equipment from GORGY TIMING.

A standard cable of 10 meters is included. Please specify your order, if you need a different cable length.

GNSS elements

(Global Navigation Satellite System)

ANTENNA BULLET



KEY FEATURES

- Weatherproof housing
- Filtering for harsh RF jamming environments
- Proven extra rugged, reliable
- RoHS-Compliant (Pb-free)

ENVIRONMENTAL SPECIFICATIONS

- **Operating Temp:** -40 °C to +85 °C
- **Storage Temp:** -40 °C to +100 °C
- **Vibration:** 10–200 Hz Log sweep
3 g (Sweep time 30 minutes) 3 axes
- **Shock:** 50 g vertical, 30 g all axes
- **Humidity Soak:** Mil-STD-810E
- **Corrosion:** 5% Salt spray

FASTENING KIT INCLUDING

- 1 hollow pipe 20cm length
- 1 square
- 2 bails 28mm
- 2 bails 62mm
- 2 sleeper-screws
- 2 raw plugs 10



PHYSICAL CHARACTERISTIC

- **Dimensions:** 3.05" D × 2.61" H (77.5 mm × 66.2 mm)
- **Weight:** 6.0 oz (170 grams)
- **Enclosure:** Off-white plastic
- **Connector:** F-type & TNC (5 V DC)
TNC (3.3 V DC only)
- **Mounting:** 1"-14" thread or 3/4" pipe thread

TECHNICAL/PERFORMANCES SPECIFICATIONS

- **Prime Power :** +5 V DC (±10%)
- **Power consumption:** 30 mA maximum
- **Gain:** 35 dB ± 3 dB
- **Output impedance :** 50Ω
- **Frequency:** 1575.42 MHz ± 1.023 MHz
- **Polarization:** Right-hand circular polarization (RHCP)
- **VSWR:** 2.0 maximum
- **Axial ratio:** 90°: 4.0 dB maximum;
10°: 6 dB
- **Noise:** 3.3 dB maximum (25 °C ±5 °C)
- **Pass-band width:** 50 MHz
- **Out of Band rejection:** fo=1575.42 MHz
fo ±20 MHz : 7 dB min
fo ±30 MHz : 12 dB min
fo ±50 MHz : 20 dB min
fo ±100 MHz : 30 dB min
- **Blocking 1 dB**
Compression Point:
 - 100 mHz TO 1.500 GHz >+15dBm
 - 1.5 GHz TO 1.57542 LINEAR DECREASE FROM +15 dBm TO -40 dBm OVER FREQUENCY RANGE
 - 1.57542 GHz TO 1.65 GHz LINEAR INCREASE FROM -40dBm TO +15 dBm OVER FREQUENCY RANGE
 - 1.65 GHz TO 3 GHz >+15 dBm
- **Azimuth coverage:** 360° (omni-directional)
- **Elevation coverage:** 0° to 90° elevation (hemispherical)

ANTENNA HARDMOUNT



Hardmount Antenna provides a permanent-mount antenna. Housed in a compact, low-profile package, the Hardmount Antenna is well-suited to mobile positioning applications.

The Hardmount Antenna is a miniature patch antenna with a 25 dB preamplifier. The antenna is designed for installation on vehicles with a 0.75 inch mounting hole. The antenna comes complete with gasket and mounting nut. May be installed on flat surfaces up to 0.1 inch thick.

Hardmount Antenna Technical Data

- **Weight:** 6.4 oz. (180g)
- **Dimensions:** 2.48 inch dia. x 1.6 inch ht. (63mm dia. x 40.5 mm ht.)
- **Connector:** TNC
- **Mounting:** 0.75 inch threaded mount
- **Operating Temp:** -40°C to + 85°C
- **Storage Temp:** -40°C to + 100°C
- **Prime Power:** 4.75 V (+.5 V)
- **Humidity:** 20% to 95% R.H.
- **Waterproof:** Submersible to 1 meter
- **Frequency:** L1 (1575) MHz
- **Power Consumption:** 40mA max
- **Impedance:** 50 OHMS
- **Polarization:** RHCP
- **VSWR:** 2.0 max
- **Vibration:** 10~200 Hz. Log. sweep 3
- **Axial Ratio:** 90° : 3.0 dB min. 20° : 6.0 dB min
- **Gain:** 28.0 dB min
- **Noise:** 2.0 dB max (+23°C) 2.5 dB max. (+80°C)

FASTENING KIT IS INCLUDING

- 1 square



ANTENNA Multi-constellation



The GNSS1-TMG-40N global GNSS timing reference antennas are specifically designed for long-lasting, trouble-free deployments in congested cell-site applications. The low noise, high gain amplifier is well suited to address attenuation issues associated with applications requiring longer cable runs.

Their unique radome shape sheds water and ice, while eliminating problems associated with bird perching. PCTEL offers an array of compatible mounting configurations. Custom models or site kits options are also available. This antenna is made of materials that fully comply with provisions stipulated by EU directives RoHS 2002/95/EC. The antenna also features ESD, reverse polarity protection and transivoltage suppression.

Hardmount Antenna Technical Data

- **Weight:** 0.3 kg
- **Dimensions:** 190 x 112 x 96 mm
- **Connector:** N, female
- **Mounting:** collar mount
- **Operating Temp:** -40°C to + 85°C
- **Prime Power:** 3,3-9V
- **Humidity:** 95% R.H.
- **Waterproof:** IP67
- **Polarization:** Right hand circular
- **Random Vibration :** MIL-STD-810E, Method 514.4, Procedure I-3.3. Transportation Vibration.

Frequency Band:	1590 +/-35 MHz
Amplifier Gain:	40dB +/- 4dB @ GPS L1/GALILEO E1 38dB +/- 4dB @ GLONASS L1/BEIDOU B1
Nominal Impedance:	50 ohms
Output VSWR:	<2.0:1
Maximum Noise Figure:	< 2.5 dB @ +25° C including pre-selector
DC Voltage:	3.3-9.0 V (operating) ≤28.0 V (survivability)
DC Current:	< 40 mA
Filtering:	3 stage filtering including pre-selector
Out of Band Rejection:	≥ -60 dB @ f ≤ 1530 MHz ≥ -60 dB @ f ≥ 1660 MHz

FASTENING KIT IS INCLUDING



PATCH ANTENNA



The Miniature GPS Antenna is a water-resistant, low-profile antenna. It has a magnetic mounting for quick, convenient placement on or inside vehicles, making it ideal for mobile asset management and embedded board products.

MAIN FEATURES

- **Mounting:** Magnetic Mount - waterproof IP67
- **Impedance:** 50 ohms
- **Frequency:** 1575.42MHz
- **Input voltage:** 3V or 5V (20mA at 3V)
- **Polarization:** RHCP
- **VSWR:** 2.0 max
- **Gain:** 27dB at 5V
- **Cable:** RG174
- **Connector:** SMA
- **Dimension (L x W x H):** 37.4mm x 34mm x 12.95mm
- GPS ANTENNA Patch is provided with 5 or 10 meters cable

Lightning Surge Arrestor



Both connector ports of this unit are equally protected. This provides protection no matter which way it is installed. Either port can face the antenna and either port can face the equipment.

Mechanical characteristics

Components

- Centre contact
- Outer contact
- Other metal parts
- Crimp ferrule
- Insulator
- Gasket

Materials

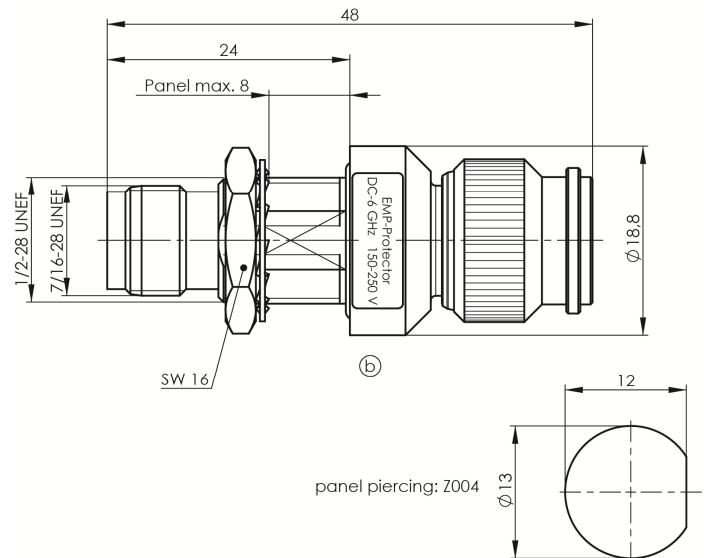
- Copper alloy
- Brass
- PTFE
- MVQ, NBR

Environmental Specifications

- Operating temp.: -40°C / +85°C
- Protection class: IP 67 (IEC 60529)

Electrical characteristics

- Impedance: 50 Ω
- Frequency: DC...6 GHz
- Return loss: > 20 dB
- Breakdown voltage: 150...250 V DC (100 V/s)
- Impulse discharge current:
 - 8/20 μs, 5 kA 10 times / 10 mal
 - 8/20 μs, 10 kA 1 time / 1 mal
- Max. power: 25 W
- Residual pulse energy: typ. 400 μJ (4kV, 1.2/50 μs; 2kV, 8/20 μs)



GPS Inline Amplifier

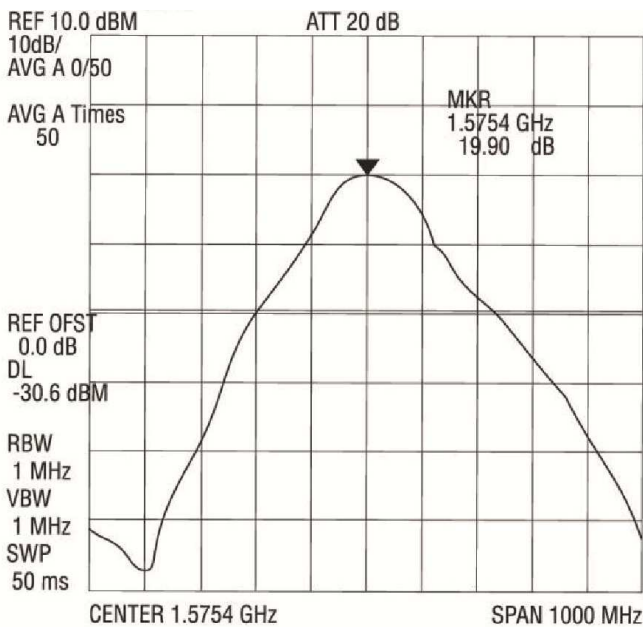


These inline amplifiers are capable of amplifying both L1 and L2 frequencies and will improve performance on receivers with cable lengths of over 15m (50ft). They're available with TNC connectors and no special wiring is required, making installation a breeze.

The amplifier is compatible with all dual frequency GPS receivers due to its wide operating voltage range, 3VDC to 28VDC, and low power consumption, 8mA. These amplifiers are made with gold plated brass with rugged and watertight packaging. Just plug the amplifier directly in line with your antenna cable. Power to the inline amplifier is already available from your GPS receiver. The inline amplifier uses the same power as the antenna so no extra wiring is required.

General Information

- Inline Amplifiers with TNC connectors are 100mm in length, 16mm in diameter.
- Power consumption 8mA.
- Typical Noise figure for L1 Inline Amplifiers is <3 dB.
- Input voltage for all models is from 3 to 28 VDC. Current draw is <10mA .
- Operating temperature is -55°C to 85°C
- Relative humidity 0-100% condensing



Typical Filtered Line Amp
Freq vs. Gain Plot



CABLES

The GPS cable is an essential and critical element of the time synchronization chain. Our low loss cable GPS reduces your installation costs (flexible cable, standard connector) while maintaining high performance.

Our cables can be associated with a line amplifier or a lightning protection.

Advantage

- Flexible cables
- Low loss (shell, strip + braid)
- Stability
- Standard connectors: TNC male - TNC male.

SERIE LMR				
		LMR240	LMR400	LMR600
Impedance characteristics	W	50	50	50
Using frequency	DC-GHz	3,5	3,5	3,5
External diameter	mm	6,1	10,3	14,99
	500 MHz	0,18	0,09	0,06
	1 GHz	0,26	0,13	0,08
	1,5 GHz	0,32	0,16	0,11
	2 GHz	0,37	0,19	0,12
	2,5 GHz	0,42	0,22	0,15
	3 GHz	0,46	0,24	0,16
	3,5 GHz	0,51	0,27	0,27
Insertion loss dB/meter				
Number of shieldings		2	2	2
Static flexion radius	mm	19,1	25,4	38,2
Dynamic flexion radius	mm	63,1	100	152,4
Average admissible power	wcw à 2 GHz	170	370	590
Capacity	pF/m	79,4	78,4	76,6
Propagation speed	%	84	85	87
Shielding efficiency	dB	90	90	90
Dielectric strength	Veff	1500	2500	4000
Use temperature	°C	-40/+85	-40/+85	-40/+85
Rated mass	g/m	50	100	200

GNSS elements

(Global Navigation Satellite System)

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ANTENNA TYPE + Biding kit									
GPS (Bullet) ■	G								
GPS (Hardmount – only for 25 and 50 meters cable) ■	Q								
GPS + GLONASS (Bullet) ■	L								
BEIDOU / GLONASS / GPS (Multi-constellation) ■	B								
GPS (Patch) ■	N								
None	0								
Number of cable									
1 ■	1								
2 ■	2								
Cable length number 1									
LMR 240 - 25 meters ■	02								
LMR 400 - 50 meters ■	05								
LMR 400 - 80 meters ■	08								
None	00								
Cable length number 2									
LMR 240 - 25 meters ■	02								
LMR 400 - 50 meters ■	05								
LMR 400 - 80 meters ■	08								
None	00								
OPTIONS									
Lightning Surge Arrestor (+ 10 meters cable) ■	P								
Inline Amplifier ■	A								
LMR 400 Non Halogen Fire retardant ■	C								