GPS-TMG-50N, 50 dB Internal Amplifier

The GPS-TMG-50N timing reference antennas are specifically designed for long-lasting, trouble-free deployments in congested cell-site applications.

The proprietary quadrifiliar helix design, coupled with multi-stage filtering provides superior out-of-band rejection and lower elevation pattern performance than traditional patch antennas.

Their unique radome shape sheds water and ice, while eliminating problems associated with bird perching. The antenna can be purchased by itself, or with pipe mounting hardware. Custom models or site kit options are also available.

GPS-TMG-50N

Antenna Element Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization	Connector
1575.42 +/- 10 MHz (GPS L1)	3.5 dBic	50 ohms	≤ 1.5:1	Right hand circular	N, female (one - bottom fed)

Mechanical Specifications

Antenna Dimensions	Shipping Dimensions	Antenna Weight	Shipping Weight	Radome Color
3.7" H x 3.1" D (94 H x 78 mm)	7.5" L x 4.4" W x 3.8" D (190 x 112 x 96 mm)	.36 lbs (.16 kg)	1.9 lbs (0.9 kg)	Off-white

Environmental Specifications

Temperature Range	Humidity
-40°C to +85°C	Up to 95%

Mounting

All mounting options fit pipes of 1"-1.45" (25 mm-37 mm) maximum diameter.

Model	Options
GPS-TMG-50N	Does not include mounting hardware.
GPS-TMG-50NCS	Includes economy collar mount (GPS-TMG-MRNMNT)
GPS-TMG-50NMS	Includes universal mounting hardware consisting of collar (GPS-TMG-MNT) and pipe clamp (GPS-TMG-LMNT).

PCTEL

Low Noise Amplifier Specifications

Frequency Band (MHz): 1575.42 ±10 MHz 3 dB bandwidth
Amplifier Gain: 50 dB ± 3 dB
Nominal Impedance: 50 ohms
Output VSWR: < 2.0:1
Noise Figure: ≤ 2.0 dB @ 25°C 2.5 dB maximum over temperature range
DC Voltage: 5 V Nominal, 3.5-28 V operating
DC Current: 37 mA typical. 45 mA max @ 5V
Filtering: 3 filters with pre-selector
Out-of-Band Rejection: -60 dB @ ±50 MHz off center
ESD and Transit Voltage Protection: input/output

GPS-TMG-40N

GPS-TMG-40N, 40 dB Internal Amplifier

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

The proprietary quadrifiliar helix design, coupled with multi-stage filtering provides superior out-of-band rejection and lower elevation pattern performance than traditional patch antennas.

Their unique radome shape sheds water and ice, while eliminating problems associated with bird perching. The antenna may be purchased by itself or with pipe mounting hardware. 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.

This antenna also features ESD, reverse polarity protection and transit voltage suppression.

Low Noise Amplifier Specifications

Frequency Band (MHz): 1575.42 +/- 12 MHz
Amplifier Gain: 40 dB +/- 4 dB
Nominal Impedance: 50 ohms
Output VSWR: < 2.0:1
Maximum Noise Figure: < 2.5 dB @ +25°C
DC Voltage: 3.3-9.0 V (regulated)
DC Current: ≤ 40 mA
Filtering: 3 stage filtering including pre-selector
Bandwidth: ≥ 60 dB @ +/- 50 MHz off center frequency

Antenna Element Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization	Connector
1575.42 +/- 10 MHz	3.5 dBic	50 ohms	≤ 1.5:1	Right hand circular	N, female (one - bottom fed)

Mechanical Specifications

Antenna Dimensions	Shipping Dimensions	Antenna Weight	Shipping Weight	Radome Color
5.0” H x 3.2” D (126 H x 81 mm)	7.5” L x 4.4” W x 3.8” D (190 x 112 x 96 mm)	0.6 lbs (0.3 kg)	1.9 lbs (0.9 kg)	White

Environmental Specifications

Temperature Range	Humidity
- 40°C to + 85°C	95%

Mounting

All mounting options fit pipes of 1”-1.45” (25 mm-37 mm) maximum diameter.

Model	Options
GPS-TMG-40N	Does not include mounting hardware.
GPS-TMG-40NMS	Includes universal mounting hardware consisting of collar (GPS-TMG-MNT) and pipe clamp (GPS-TMG-LMNT).
GPS-TMG-40NCS	Includes economy collar mount (GPS-TMG-MRNMNT).

GPS-TMG-SP-40N, 40 dB Internal Amplifier with Integrated Lightning Protection

The GPS-TMG-SP-40N 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.

The proprietary quadrifiliar helix design, coupled with multistage filtering provides superior out-of-band rejection and lower elevation pattern performance than traditional patch antennas.

Their unique radome shape sheds water and ice, while eliminating problems associated with bird perching. The antenna may be purchased by itself or with pipe mounting hardware. Custom models or site kits options are also available.

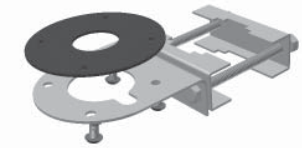
This antenna is made of materials that fully comply with provisions stipulated by EU directives RoHS 2002/95/EC.

The antenna provides integrated lightning protection capability.

The antenna also features ESD, reverse polarity protection and transit voltage suppression.

GPS-TMG-SP-40N

GPS-TMG-MHD mount, can be used on a pipe in vertical or horizontal mounting configuration as shown



GPS-TMG-LMNT

Antenna Element Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization	Connector
1575.42 +/- 10 MHz	3.5 dBic	50 ohms	<1.5:1	Right hand circular	N, female (one - bottom fed)

Mechanical Specifications

Antenna Dimensions	Shipping Dimensions	Antenna Weight	Radome Color
7.25" H x 3.2" D (184 x 81 mm)	7.5" L x 4.4" W x 3.8" D (190 x 112 x 96 mm)	0.75 lbs (0.34 kg)	White

Environmental Specifications

Temperature Range	Humidity
-40°C to +85°C	95%

Mounting

All mounting options fit pipes of 1"-1.45" (25 mm-37 mm) maximum diameter.

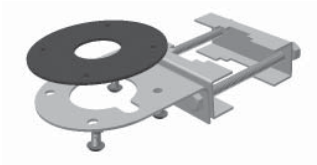
Model	Options
GPS-TMG-SP-40N	Does not include mounting hardware.
GPS-TMG-SP-40NLM	Includes standard mounting hardware consisting of pipe clamp (GPS-TMG-LMNT).
GPS-TMG-SPS-40NCB	Includes heavy duty mount (GPS-TMG-MHD).

Low Noise Amplifier Specifications

Frequency Band: 1575.42 +/-12 MHz
Amplifier Gain: 40 dB +/- 4 dB
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
DC Current: < 40 mA
Filtering: 3 stage filtering including pre-selector
Out of Band Rejection: ≥ -60 dB @ +/- 50 MHz off center frequency
Lightening Protection: 90 V, 10 kA, 8/20 µS

GPSL1GL-TMG-SP-40N

GPS-TMG-MHD



GPS-TMG-LMNT

PCTEL

Low Noise Amplifier Specifications

Frequency Band: 1590 ± 30 MHz
LNA Gain: 40 dB ± 4 dB @ GPSL1 GALILEO E1 38 dB± 4 dB @ GLONASS L1
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
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
Lightening Protection: 90 V, 20 kA, 8/20 µS

40 dB GPS L1/GLONASSL1/GALILEO E1 Timing Antenna with Integrated Lightning Protection

The **GPSL1GL-TMG-40N** 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.

The proprietary quadrifiliar helix design, coupled with multistage filtering provides superior out-of-band rejection and lower elevation pattern performance than traditional patch antennas.

Their unique radome shape sheds water and ice, while eliminating problems associated with bird perching. The antenna may be purchased by itself or with pipe mounting hardware. 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 provides integrated lightning protection capability.

The antenna also features ESD, reverse polarity protection and transit voltage suppression.

Antenna Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization	Connector
1575.42 ± 10 MHz 1602-1615 MHz	≥ 3.5 dBic ≥ 3 dBic*	50 ohms	<1.5:1	Right hand circular	N, female (one - bottom fed)

Mechanical Specifications

Antenna Dimensions	Shipping Dimensions	Antenna Weight	Radome Color
7.25" H x 3.2" D (184 x 81 mm)	7.5" L x 4.4" W x 3.8" D (190 x 112 x 96 mm)	0.75 lbs (0.34 kg)	White

Environmental Specifications

Temperature Range	Humidity
-40°C to +85°C	95%

Mounting

All mounting options fit pipes of 1"-1.45" (25 mm-37 mm) maximum diameter.

Model	Options
GPSL1GL-TMG-40N	Does not include mounting hardware.
GPSL1GL-TMG-SP-40NLM	Includes standard mounting hardware consisting of pipe clamp (GPS-TMG-LMNT).
GPSL1GL-TMG-SPS-40NCB	Includes heavy duty mount (GPS-TMG-MHD).

GPS-TMG-26N, 26 dB Internal Amplifier

The GPS-TMG-26 timing reference antennas feature a 26 dB amplifier specifically designed to support long-lasting, trouble-free deployments in congested cell-site applications.

The proprietary quadrifiliar helix design, coupled with multi-stage filtering provides superior out-of-band rejection and lower elevation pattern performance than traditional patch antennas.

Their unique radome shape sheds water and ice, while eliminating problems associated with bird perching. The antenna may be purchased by itself or with pipe mounting hardware. 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.

GPS-TMG-26N

Antenna Element Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization	Connector
1575.42 +/- 10 MHz	3.5 dBic	50 ohms	≤1.5:1	Right hand circular	N, female (one - bottom fed)

Mechanical Specifications

Antenna Dimensions	Shipping Dimensions	Antenna Weight	Shipping Weight	Radome Color
5.0” H x 3.2” D (126 H x 81 mm)	7.5” L x 4.4” W x 3.8” D (190 L x 112 x 96 mm)	0.6 lbs (0.3 kg)	1.9 lbs (0.9 kg)	White

Environmental Specifications

Temperature Range	Humidity
- 40˚C to + 85˚C	95%

Mounting

All mounting options fit pipes of 1”-1.45” (25 mm-37 mm) maximum diameter.

Model	Options
GPS-TMG-26N	Does not include mounting hardware.
GPS-TMG-26NMS	Includes universal mounting hardware consisting of collar (GPS-TMG-MNT) and pipe clamp (GPS-TMG-LMNT).
GPS-TMG-26NCS	Includes economy collar mount (GPS-TMG-MRNMNT).

PCTEL

Low Noise Amplifier Specifications

Frequency Band (MHz): 1575.42 +/- 10 MHz
Amplifier Gain: 26 dB +/- 3 dB
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 (regulated)
DC Current: ≤ 35 mA
Filtering: 3 stage filtering including pre-selector
Bandwidth: ≥ 60 dB @ +/- 50 MHz off center frequency

GPS-TMG-20N

GPS-TMG-MRNMNT

GPS-TMG-20N, 20 dB Internal Amplifier

The GPS-TMG-20 timing reference antennas are specifically designed for long-lasting, trouble-free deployments in congested cell-site applications. Their 20 dB high gain amplifier is well suited to address attenuation issues associated with applications requiring longer cable runs.

The proprietary quadrifiliar helix design, coupled with multistage filtering provides superior out-of-band rejection and lower elevation pattern performance than traditional patch antennas.

Their unique radome shape sheds water and ice, while eliminating problems associated with bird perching. The antenna may be purchased by itself or with pipe mounting hardware. 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.

This antenna also features ESD, reverse polarity protection and transit voltage suppression.

Antenna Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization
1575.42 +/- 10 MHz	3.5 dBic	50 ohms	< 1.5:1	Right hand circular

Connector	Input/Output
N, female (one - bottom fed)	• ESD protected • Reverse polarity protection • Transient voltage suppression on output

Mechanical Specifications

Antenna Dimensions	Shipping Dimensions	Antenna Weight	Shipping Weight	Radome Color
5” H x 3.2” D (126 H x 81 mm)	7.5” L x 4.4” W x 3.8” D (190 x 112 x 96 mm)	0.6 lbs (0.3 kg)	1.9 lbs (0.9 kg)	White

Environmental Specifications

Temperature Range	Humidity
- 40°C to + 85°C	95%

Mounting

All mounting options fit pipes of 1”-1.45” (25 mm-37 mm) maximum diameter.

Model	Options
GPS-TMG-20N	Does not include mounting hardware.
GPS-TMG-20NMS	Includes universal mounting hardware consisting of collar (GPS-TMG-MNT) and pipe clamp (GPS-TMG-LMNT).
GPS-TMG-20NCS	Includes economy collar mount (GPS-TMG-MRNMNT).

Low Noise Amplifier Specifications

Frequency Band: 1575.42 center frequency 3 dB bandwidth +/- 10 MHz
Amplifier Gain: 20 dB +/- 3 dB
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 (regulated)
DC Current: 20 mA, 30 mA max @ 5V
Polarization: Right hand circular
Filtering: 3 stage filters including pre-selector
Out of band rejection: -60 dB @ 1575.42 +/- 50 MHz

12700 Series, Airborne Antennas

The 12700 series antennas are robust, rigorously tested and environmentally sealed units suitable for a wide variety of GPS applications, including vehicle tracking, marine and airborne navigation.

These antennas have been tested to DO-160 environmental test requirements and are designed to meet Arinc 743 and FAA TSO-C129 specifications.

They feature a sealed o-ring that protects them against severe environmental conditions for reliable, long-lasting performance. Their radome is constructed of high grade polymer resin for UV and abrasion resistance. They will resist all de-icing fluids, jet fuels, and standard cleaning solvents.

12700 Series

Antenna Element Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization	Grounding Protection	RF Input
1575.42 +/-10 MHz (GPS L1)	+4.5 dBiC nominal at zenith	50 ohms	< 1.5:1	Right hand circular	DC grounded	TNC female

Mechanical Specifications

Antenna Dimensions	Antenna Weight	Radome Color
3.4” H x 2.2” W	3.6 oz. nominal	White

Environmental Specifications

Temperature Range	Humidity
-40˚C to +85˚C	95%

Mounting

Model	Options
1270FW	Surface mount four hole pattern
1271FW	Surface mount four hole pattern
1273FW	Surface mount four hole pattern

PCTEL

Low Noise Amplifier Specifications

Frequency Band (MHz): 1575.42 +/-10 MHz (GPS L1)
Amplifier Gain: 26 dB (Part #1270FW) Passive (Part #1271FW) 35 dB (Part #1273FW)
Nominal Impedance: 50 ohms
Output VSWR: < 2.0:1
Noise Figure: 2.5 dB nominal
DC Voltage: 4.5 to 9 VDC
DC Current: ≤ 40 mA
Polarization: Right hand circular
Filtering: Dual filter

12100 Series

12100 Series, Airborne Puck Antennas

The 12100 series antennas are robust, rigorously tested and environmentally sealed units suitable for a wide variety of GPS applications. They are ideal for vehicle tracking, marine or airborne navigation installations requiring maximum security and durability.

These antennas have been tested to DO-160 environmental test requirements and are designed to meet Arinc 743 specifications. They feature dual o-ring seals that protect them against severe environmental conditions for reliable, long-lasting performance. Their radome is constructed of high grade polymer resin for UV and abrasion resistance. They will resist all de-icing fluids, jet fuels, and standard cleaning solvents.

The antennas in this series are hard mounted through a unique single hole feed structure and include gaskets to prevent air and water leaks. They are available in passive form (no amplifier) or in a variety of active amplified gain configurations.

Low Noise Amplifier Specifications

Frequency Band (MHz): 1575.42 +/-10 MHz (GPS L1)
Amplifier Gain: 26 dB (Part #1210FW) 40 dB (Part #1213FW)
Nominal Impedance: 50 ohms
Output VSWR: 2.0:1 maximum
Maximum Noise Figure: 2.5 dB maximum
DC Voltage: 5 to 9 VDC through connector
DC Current: 25 mA typical ≤ 40 mA
Filtering: Dual ceramic filters

Antenna Element Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization	Grounding Protection	RF Input
1575.42 +/-10 MHz (GPS L1)	+4.5 dBiC nominal at zenith	50 ohms	< 1.9:1	Right hand circular	DC grounded	TNC female

Mechanical Specifications

Antenna Dimensions	Antenna Weight	Radome Color	NATO Stock Number
2.7” OD x 0.75” D	3 oz. nominal	White	5820 99 147 2772 (for 1213FW only)

Environmental Specifications

Temperature Range	Humidity
-40˚C to +85˚C	95%

Mounting

Model	Options
1210FW	Through hole 5/8-18UNC-2A thread
1213FW	Through hole 5/8-18UNC-2A thread

Precision Performance WAAS Antenna

Specifically designed to meet the demanding standards necessary for worldwide WAAS aviation operations, model 2225NW features both advanced spiral technology and a self-complementary element structure.

The antenna's low multipath error design has the lowest phase error of all antenna element designs. The spiral minimizes manufacturing errors and its self-complementary currents act to center antenna phase. The large cavity design (1/5 lambda) allows for similar, choke slot-like (radiation pattern), roll off at the horizon and a superior front-to-back ratio.

2225NW

Antenna Element Electrical Specifications

Frequency Band	Antenna Gain	Nominal Impedance	VSWR	Polarization
1575.42 MHz (L1 band)	>-3 dBic @ El=90° (zenith); ≥ -9.0 dBic @ El=5° (L1)	50 ohms	< 2.0:1 @ +/-10 MHz	Right hand circular
1227.60 MHz (L2 band)	>-3 dBic @ El=90° (zenith); ≥ -5.0 dBic @ El=5° (L2)	50 ohms	< 2.0:1 @ +/-10 MHz	Right hand circular
1176.45 MHz (L5 band)	>-3 dBic @ El=90° (zenith); ≥ -9.0 dBic @ El=5° (L5)	50 ohms	< 2.0:1 @ +/-10 MHz	Right hand circular

Elevation Boresight	Elevation HPBW	Azimuth HPBW	Axial Ratio
90° above horizon	66° (L1 band) 90° (L2 band) 103° (L5 band)	Omnidirectional	8 dB (max) elevation from 5° to 45° 4 dB (max) elevation above 45°

Mechanical Specifications

Antenna Dimensions	Antenna Weight	Radome Color
24.5" H x 12.8" OD (61.27 x 32.5 cm)	30 lbs (13.6 kg)	White

Environmental Specifications

Temperature Range	Wind Operational
-58°F to 158°F	0-100 mph

Mounting

Model	Options
2225NW	Interface to PALCO mount

Low Noise Amplifier Specifications

Frequency Band (MHz): 1575.42 MHz (L1 band) 1227.60 MHz (L2 band) 1176.45 MHz (L5 band)
Amplifier Gain: 48 +/3 dB
VSWR: < 1.5:1 +/-10 MHz
Maximum Noise Figure: 2.0 dB
DC Voltage: 24 V
DC Current: ≤ 200 mA @ 24 V
Bandwidth: -1 dB +/-10 MHz (L1, L2, L5) -80 dB +/-50 MHz (L1, L2, L5)
Bandpass Ripple: 1.5 dB +/-10 MHz (L1, L2, L5)
Group Delay Ripple: 3 ns @ L1 +/-10 MHz 4 ns @ L2 +/-10 MHz 4 ns @ L5 +/-10 MHz
1 dB Compression Point: ≥ 10 dBm