

Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz NMO Mount/N Type Connectors



Antennas Technical Data Sheet

PE51AK1002

Features

- Duplexer (VHF/UHF 108-174MHz/450-520MHz/746-870MHz) with integral N-Type (m) Connectors (3 ea.)
- Low Loss PE51GPS1000 NMO Combination mount with integrated GPS antenna (1 ea.)
- RG-58/U NMO mount (1 ea.)
- PE51MP1011 multiband antenna (1 ea.)
- PE51MP1000 tunable VHF/UHF antenna (1 ea.)
- RG-58/U Feed Cable (1 ea.)

Applications

- Service Vehicles
- Public Safety
- Public Transportation
- Mining & Construction

Description

Combined with a GPS antenna, this Tri-band duplexed mobile antenna kit is ideally suited for multipoint mobile applications including service vehicles, public transportation, public safety, mining and construction vehicles, as well as numerous other commercial and industrial applications where mobility and wide coverage is desired. The antenna kit features a Tri-band duplexer, a pair of mobile antenna, and a GPS antenna. This gives users the flexibility to operate radio transceivers in any VHF and UHF band with optimum performance. The kit allows the user to upgrade/switch to any NMO-type antenna.

Configuration

Design	Duplexer
Application Band	VHF/UHF
Band Type	Tri
Cable Length	204 in [518.16 cm]
Connector Type	NMO Mount
Interface 2	N

Duplexer Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range (VHF)	100		180	MHz
Frequency Range (UHF)	380		870	MHz
Input VSWR (All Ports)			1.6:1	
Impedance		50		Ohms
Isolation (VHF↔UHF-870)	50			dB

Electrical Specification Notes:
Electrical specifications data applies to Duplexer

Duplexer Specifications by Band

Description	Band 1	Band 2	Band 3	Band 4	Band 5	Units
Range	100-180	380-520	746-870			MHz
Insertion Loss	0.2	0.3	0.5			dB
Maximum Input Power	150	100	75			Watts

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz NMO Mount/N Type Connectors PE51AK1002](#)

Tri Band Duplexed Antenna Kit with GPS
108-174 450-520 746-870 MHz NMO Mount/N Type Connectors



Antennas Technical Data Sheet

PE51AK1002

GPS Electrical Specifications

Description	Min	Typ	Max	Max
Frequency Bandwidth (L1)		1575.42±3		MHz
Gain @ 5VDC		30		dBi
VSWR (In/Out)			2:1	
Impedance		50		Ω
Operational Voltage	3		5	V
Current Drain	6		20	mA
Filter Type		SAW		
Attenuation wrt L1 (L1±50 MHz)	35			dB
Attenuation wrt L1 (L1±100 MHz)	45			dB
Input Power		10		W

GPS Passive Element Specifications

Description	Min	Typ	Max	Max
Center Frequency		1575.42		MHz
Antenna VSWR			1.5:1	
Impedance		50		Ω
Polarization		RHCP		

NMO Combination Mount Electrical Specifications

Description	Min	Typ	Max	Max
Frequency Band	30		1000	MHz
VSWR			1.5:1	
Impedance		50		Ω
Cable Type		RG58/U		
Insertion Loss			2.5	dB
Power Rating			150	W

NMO Combination Mount Mechanical Specifications

Height	0.88 in [22.4 mm]
Width	2.2 in [55.9 mm]
Length	4.5 in [114.3 mm]
Mounting Application	Bulkhead, ¼ in. Thru-Hole
Cable Length NMO	17 ft. [5.1 m]
Cable Type	RG174/U
GPS Connector	SMA Plug
Color	Black
GPS Radiator	Ceramic, Silver
Operating Temperature	-40°C to 85°C
Corrosion	Salt Fog
Humidity	95%
Vibration	AAR & MIL-STD-810E

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz NMO Mount/N Type Connectors PE51AK1002](#)

Tri Band Duplexed Antenna Kit with GPS
108-174 450-520 746-870 MHz NMO Mount/N Type Connectors



Antennas Technical Data Sheet

PE51AK1002

PE51MP1000 Field Tunable Antenna Electrical Specifications

Description	Min	Typ	Max	Max
Frequency Band (Tunable Range)	108		520	MHz
VSWR (15 MHz Bandwidth @150MHz)			2.0:1	
VSWR (50 MHz Bandwidth @450MHz)			1.5:1	
VSWR (100 MHz Bandwidth @450MHz)			2.0:1	
Impedance		50		Ω
Gain		2		dBi
Power Rating		150		W
Polarization		Linear, Vertical		
E-Plane		50		Degrees
H-Plane		Omnidirectional		
Groundplane		Required		

PE51MP1000 Field Tunable Antenna Mechanical Specifications

Overall Length	(@108 MHz) 29 in [737 mm] (@150 MHz) 19.75 in [502 mm] (@450 MHz) 7.75 in [197 mm]
Whip Material, Finish	17-7 SS, Black Chrome
Spring Material	Black Molded Polymer Alloy
Base Material	Xenoy™ w/TPV over mold grip ring
Mounting Application	¾ inch Thru-Hole NMO Mount
Operating Temperature	-40°C to 85°C
Humidity	95%

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz NMO Mount/N Type Connectors PE51AK1002](#)

Tri Band Duplexed Antenna Kit with GPS
108-174 450-520 746-870 MHz NMO Mount/N Type Connectors



Antennas Technical Data Sheet

PE51AK1002

PE51MP1011 Field Tunable Antenna Electrical Specifications

Description	Min	Typ	Max	Max
Frequency Band 1	450		520	MHz
Frequency Band 2	746		960	MHz
Impedance		50		Ω
Gain (450-520 MHz)		2		dBi
Gain (746-960 MHz)		2		dBi
Power Rating		150		W
Polarization		Linear, Vertical		
E-Plane		50		Degrees
H-Plane		Omnidirectional		
Groundplane		Required		

PE51MP1000 Field Tunable Antenna Mechanical Specifications

Height	4.95 in [125.8 mm]
Diameter	1.6 in [40 mm]
Color	Black
Radiator Material and Finish	SS and Brass w/Black Chrome
Radome Material	Xenoy™
Flexible Housing	Elastomeric Polymer, Proprietary
Operating Temperature	-40°C to 85°C
Corrosion Resistance	Salt Fog and Automotive Fluids
Vibration	AAR & MIL-STD 810E

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz NMO Mount/N Type Connectors PE51AK1002](#)

Tri Band Duplexed Antenna Kit with GPS
108-174 450-520 746-870 MHz NMO Mount/N Type Connectors



Antennas Technical Data Sheet

PE51AK1002

Duplexer Mechanical Specifications

Size

Overall Length

3.27 in [83.06 mm]

Width

2.1 in [53.34 mm]

Height

1.1 in [27.94 mm]

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz NMO Mount/N Type Connectors PE51AK1002](#)

Tri Band Duplexed Antenna Kit with GPS
108-174 450-520 746-870 MHz NMO Mount/N Type Connectors



Antennas Technical Data Sheet

PE51AK1002

Installation Instructions

PE51AK1002

TRI-BAND DUPLEXED ANTENNA SYSTEM w/GPS
108-174 MHz / 450-520 MHz / 746-870 MHz

Congratulations on your selection of another quality antenna product from Pasternack. Pasternack is committed to continually provide the greatest antenna VALUE for your wireless applications.

IMPORTANT: PLEASE CAREFULLY READ ALL INSTRUCTIONS BEFORE BEGINNING THE INSTALLATION PROCESS.

Caution: Radio output power cannot exceed rated power for each band of the duplexer

- > **150W, max:** (100-180 MHz)
- > **100W, max:** (380-520 MHz)
- > **75W, max:** (746-870 MHz)

Parts (Figure 1): Verify all parts are included. Reference items in Figure 1:

1. (1 ea.) Multi-Band Duplexer
2. (1 ea.) PE51MP1000, Field Tunable, VHF ¼ Wave Antenna
3. (3 ea.) Type N Connectors, RG-58/U & 195 Type
4. (1 ea.) PE51GPS1000 NMO/GPS Combination Mount
5. (1 ea.) 195 Low Loss NMO Cable Mount
6. (1 ea.) RG-58/U Feed Cable, 17 ft. (5.1m) length
7. (1 ea.) PE51MP1011 Multi-Band UHF/700-800 MHz Antenna

Tools/Materials Required:

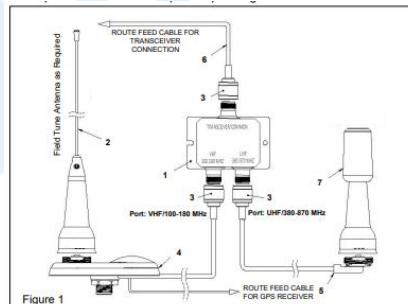
- Drill and Hole Punch, 3/8" (19.05mm) Diameter – NMO Cable Mount Installation
- #8 Self Tapping or Machine Screws (2 ea.) – Duplexer Installation
- Cable Stripping Tools for RG-58/U & 195 type cable – Connector Installations
- Coaxial Connector (sold separately) for attaching Feed Cable (RG-58/U) to radio transceiver

Pre-Installation Checklist and Tips:

- ✓ Locate a suitable mounting location for the Duplexer providing the shortest cable lengths for installing both antennas.
- ✓ **Important:** Duplexer intended for interior or environmentally protected installation only. Do not install with direct exposure to outdoor environment.
- ✓ Follow all instructions provided with each NMO Cable Mount and Field Tunable Antenna to be installed.
- ✓ **Best Performance Recommendations:**
 - > Minimize all cable lengths during installation to reduce unnecessary cable insertion loss.
 - > Feed the UHF of 700/800 MHz Antenna using the 195 Low Loss NMO Cable Mount.
 - > Separate antennas by largest distance possible to prevent VSWR mismatch or radiated obstruction. (**Note:** Duplexer provides >50 dB isolation between VHF and UHF/700-800 MHz antenna ports, maximizing cross-talk rejection.)

Installation:

1. Refer to figure 1 for antenna/duplexer system configuration.
2. Install Duplexer to a suitable mounting surface using #8 screws. Mounting Hole spacing: 2-15/16" (74.6mm).
3. Install NMO Cable mounts for each antenna according to the individual instructions.
4. Verify antenna cable routing. Cut excess cable. Strip ends of the NMO cable mounts according to the N Type Connector instructions provided with the connectors. Attach N Type connectors to the cables. Crimp and verify operation.
5. Repeat Step 4 for one end only of RG-58/U Feed Cable. Attach radio transceiver connector (sold separately) to the opposite end of the RG-58/U Feed Cable.
6. Install antennas according to the individual antenna instructions provided. Verify operation.
7. Install all remaining connections according to the system diagram in Figure 1.
8. Verify radio transceiver performance for all required operating bands or channels.



Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz NMO Mount/N Type Connectors PE51AK1002](#)

Tri Band Duplexed Antenna Kit with GPS
108-174 450-520 746-870 MHz NMO Mount/N Type Connectors



Antennas Technical Data Sheet

PE51AK1002

Environmental Specifications

Temperature

Operating Range

-40 to +85 deg C

Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

Notes:

Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz NMO Mount/N Type Connectors from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz NMO Mount/N Type Connectors PE51AK1002](#)

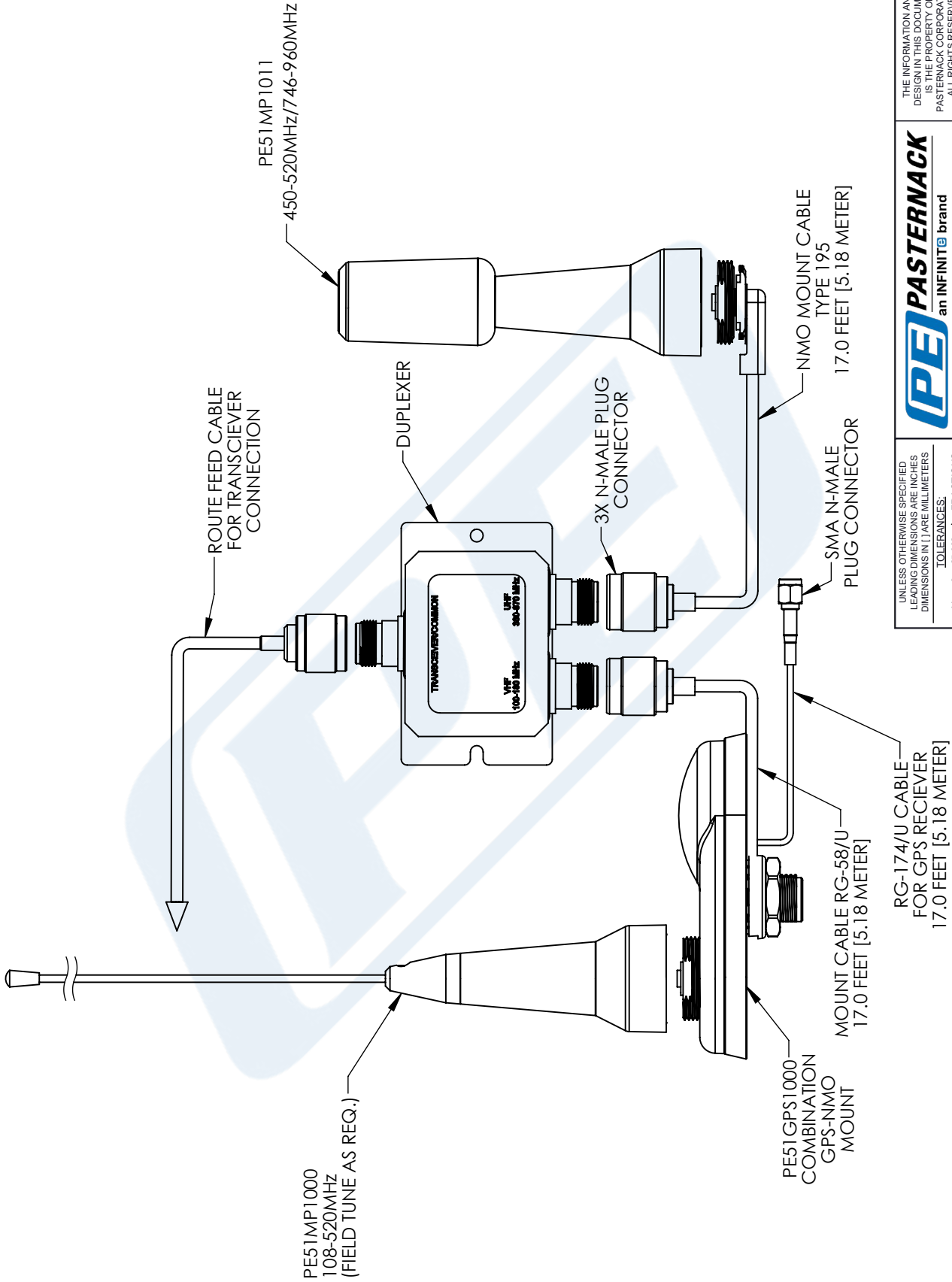
URL: <https://www.pasternack.com/tri-antenna-0-gain-nmo-mount-pe51ak1002-p.aspx>

The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Pasternack reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack does not assume any liability arising out of the use of any part or documentation.

PE51AK1002 CAD Drawing

Tri Band Duplexed Antenna Kit with GPS 108-174 450-520 746-870 MHz
NMO Mount/N Type Connectors

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	08/08/2019	MMILLER



UNLESS OTHERWISE SPECIFIED
LEADING DIMENSIONS ARE IN INCHES
DIMENSIONS IN [] ARE MILLIMETERS

TOLERANCES:	FRACTIONS	ANGLES ± 1°
X±± 2 [5.08]	XX±± 01 [0.25]	±1/32
XXX±± .005 [0.13]		

ALL DIMENSIONS SHOWN
ARE FOR REFERENCE ONLY.

THIRD-ANGLE PROJECTION

 an INFINITI® brand Pasternack Enterprises, Inc. P. O. Box 16759, Irvine, CA 92623. Phone: 1.949.261.1920 1.866.727.8376 Fax: 1.949.261.7451 www.pasternack.com e-mail: sales@pasternack.com		SHEET 1 OF 1 SCALE N/A
SIZE A CAGE 53919 DRAWN BY BPUCHASKI	PART NUMBER PE51AK1002	REV A

THESE COMMODITIES, TECHNOLOGY OR SOFTWARE WERE EXPORTED FROM THE UNITED STATES IN ACCORDANCE WITH THE EXPORT ADMINISTRATION REGULATIONS. DIVERSION CONTRARY TO U.S. LAW PROHIBITED.