

# Lightning Protection

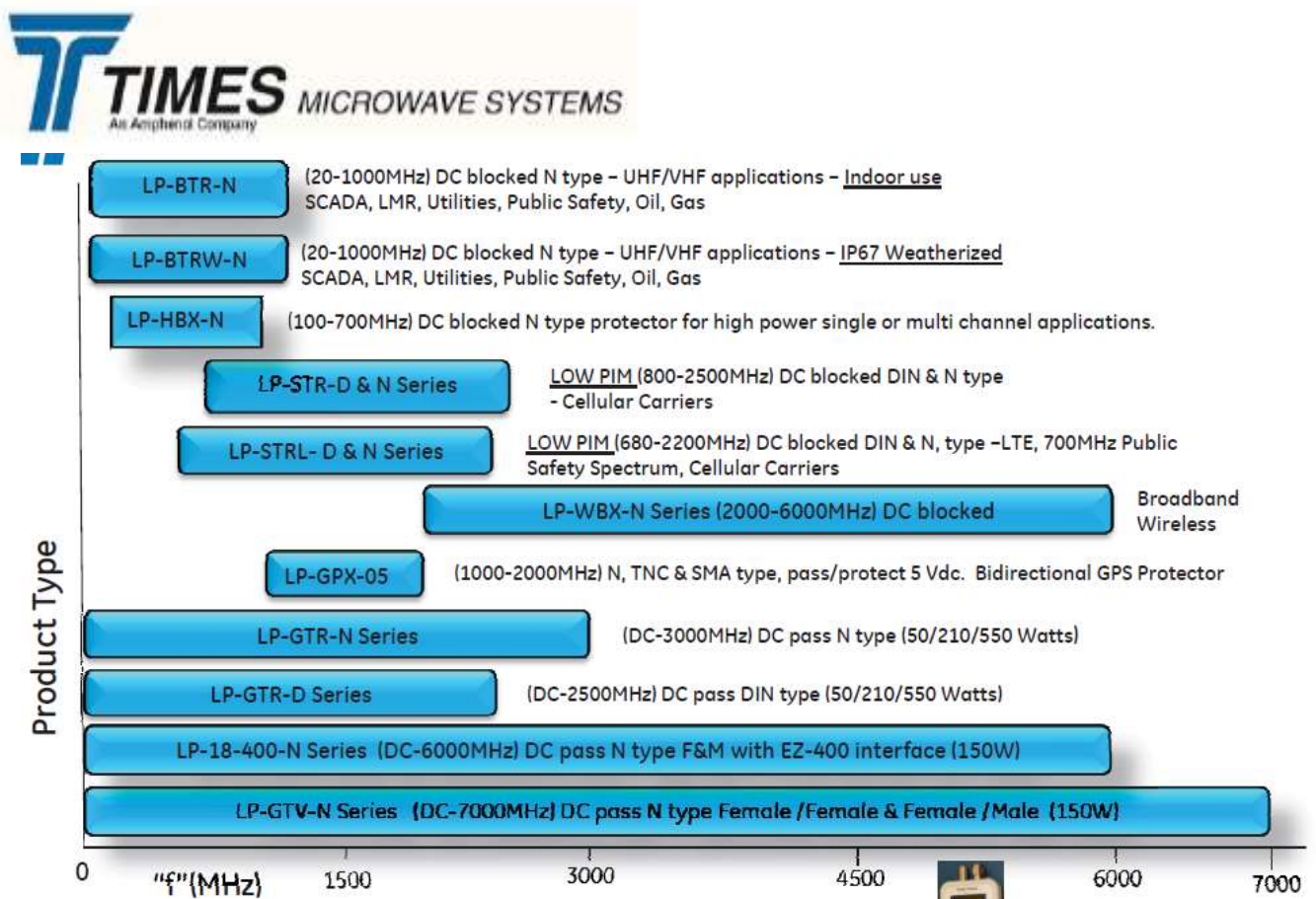
for Wireless Networks

*Lightning Protection  
Product Guide*

# Lighting Protection

Times Microwave Systems is an established and trusted brand within the wireless communications, Military and Aerospace industry.

Times Microwave Systems has introduced its new, innovative Times-Protect™ line of surge and lightning protection products. These unique surge protection devices address applications throughout the entire useful RF frequency range from DC with capability up to and including 6 GHz.



# LP-BTR-N N Series Lightning & Surge Protection

LP-BTR-N is Times Microwaves high performance surge arrester series addresses applications in the 20MHz-1000MHz spectrum. Our unique DC blocking technology employed in this design provides optimum isolation of the antenna port from the protected equipment port for maximum surge protection. LP-BTR-N surge protectors have exceptional RF performance and are constructed from the highest quality materials for unsurpassed durability and longevity. These units meet and surpass all applicable industry standards.



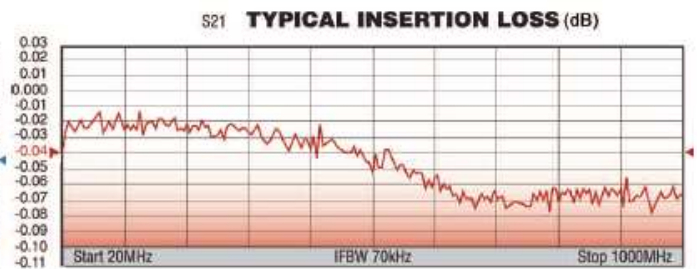
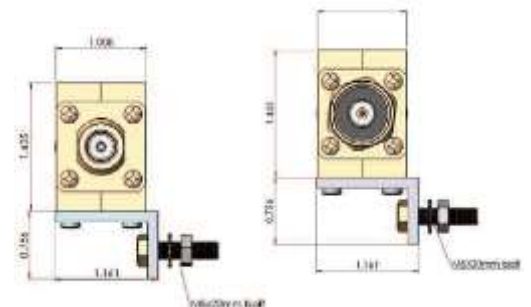
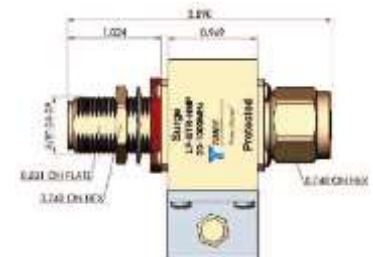
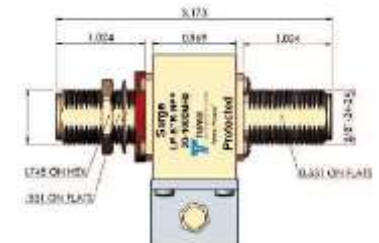
## Specifications

Part Number LP-BTR-NFF  
Connector N Female on both sides, DC Blocked

Part Number LP-BTR-NMP  
Connector N Male on protected, DC Blocked

Part Number LP-BTR-NMS  
Connector N Male on Surge, DC Blocked

Frequency 20-1000 MHz  
Impedance 50 Ohms  
VSWR/Return Loss <1.1:1 / <-26dB  
Insertion Loss < 0.1dB  
Impulse Discharge 10kA multiple (8x20us wave-form)  
Turn-on Voltage 600 VDC +/- 20%  
Turn-on Time 2.5ns for 2kV/ns  
Power Handling at Frequency  
375W (20-220MHz)  
125W (220-700MHz)  
50W (700-1000MHz)  
Protection Circuit DC blocked  
Temp Range -40 to +85 Degrees C  
Torque 7-10 lb-in Recommended coupling nut  
Body/Washer/Nut Brass, White Bronze Plated



# LP-BTRW-N N Series

## Lightning & Surge Protection

The Times Protect™ LP-BTRW-N high performance surge arrester series addresses applications in the 20MHz-1000MHz spectrum. Our unique DC blocking technology employed in this design provides optimum isolation of the antenna port from the protected equipment port for maximum surge protection. LP-BTRW-N surge protectors have exceptional RF performance and are constructed from the highest quality materials for unsurpassed durability and longevity. These units meet and surpass all applicable industry standards.



IP67 Rated

**The LP-BTRW product family is available with N connector configurations and fully weatherized to the IP67 standard for outdoor use.**

### Specifications

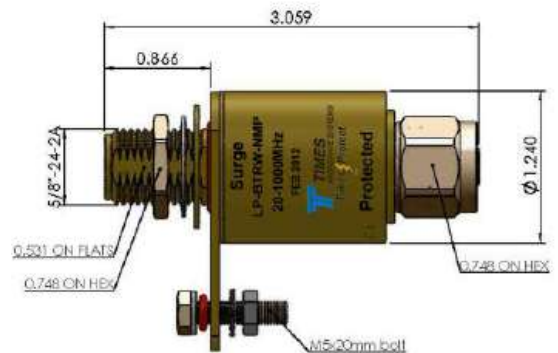
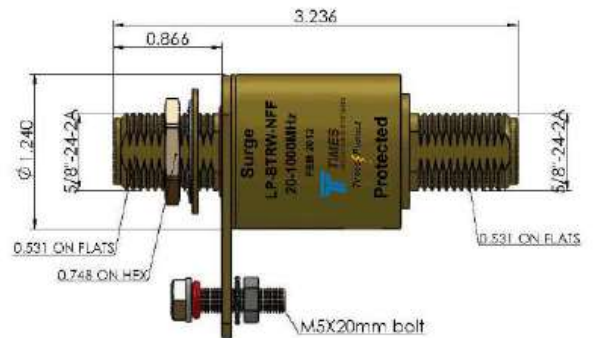
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Connector N Female on both sides

Part Number LP-BTRW-NMP  
Connector N Male on protected

Part Number LP-BTRW-NMS  
Connector N Male on Surge

Frequency 20-1000 MHz  
Impedance 50 Ohms  
VSWR/Return Loss <1.1:1 / <-26dB  
Insertion Loss < 0.1dB  
Impulse Discharge 10kA multiple (8x20us wave-form)  
Turn-on Voltage 600 VDC +/- 20%  
Turn-on Time 2.5ns for 2kV/ns  
Power Handling at Frequency  
375W (20-220MHz)  
125W (220-700MHz)  
50W (700-1000MHz)

Protection Circuit DC blocked  
Energy Throughput < 200uJ (4kV/2kA 1.2x50/8x20µs wave-form)  
Temp Range -40 to +85 Degrees C  
Torque 7-10 lb-in Recommended coupling nut  
Body/Washer/Nut Brass, White Bronze Plated  
Weather Proof IP67 Weatherized



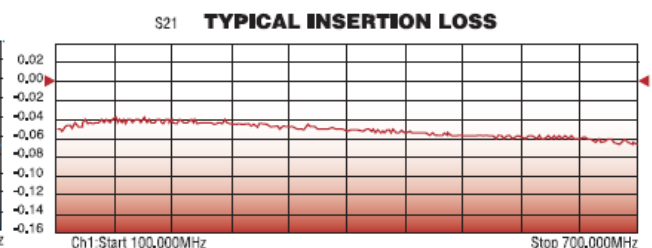
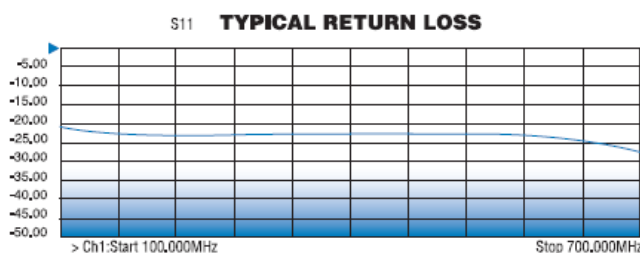
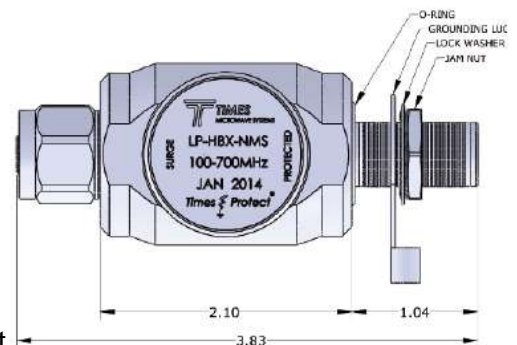
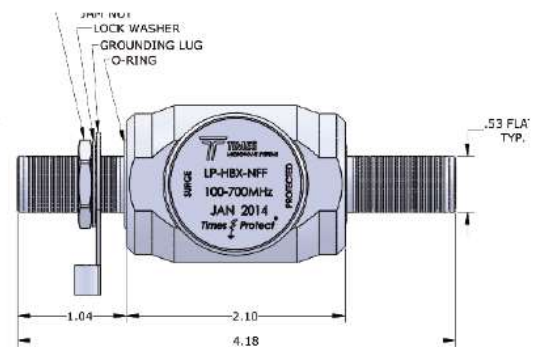
# LP-HBX-N N Series Lightning & Surge Protection

The Times Protect® LP-HBX-N series high performance surge arrester series addresses applications in the 100MHz-700MHz spectrum. Our unique DC blocking technology employed in this design provides optimum isolation of the antenna port from the protected equipment port for maximum surge protection. LPHBX-N N series surge protectors have exceptional RF performance and are constructed from the highest quality materials for unsurpassed durability and longevity. These units meet and surpass all applicable industry standards. The LP-HBX-N series product family is available with N connector configurations to satisfy various installation requirements.



## Specifications

Part Number	LP-HBX-NFF
Connector	N Female on both sides.
Part Number	LP-HBX-NFP
Connector	N Female to N Male on Protected
Part Number	LP-HBX-NFS
Connector	N Female to N Male on Surge
Frequency	100 to 700 MHz
Impedance	50 Ohms
VSWR/Return Loss	<1.15:1 / <-23dB
Insertion Loss	< 0.1dB
Power Handling	750 Watts
Max Surge Current	20kA multiple (8x20us wave-form)
Residual Pulse Volt	< 5V (6kV/3kA 8x20us wave-form)
Protection Circuit	DC blocked
Energy Throughput	< 1.4uJ (6kV/3kA (1.2x50/8x20us wave-form)
Temp Range	-40 to +85 Degrees C
Torque	7-10 lb-in Recommended coupling nut
Body/Washer/Nut	Brass, White Bronze Plated
Weight	0.2 Kg



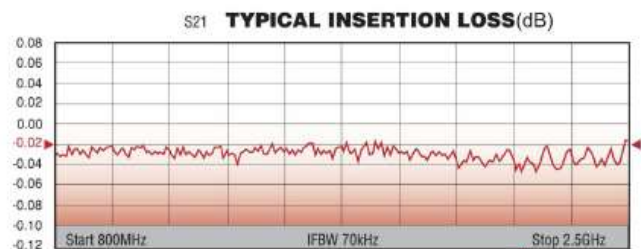
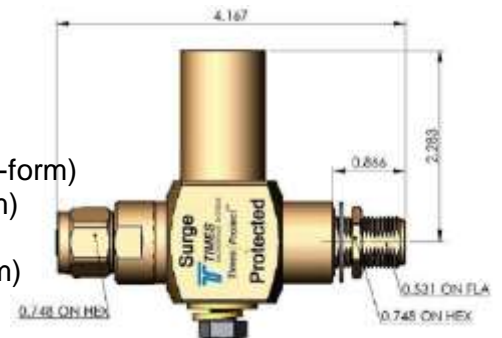
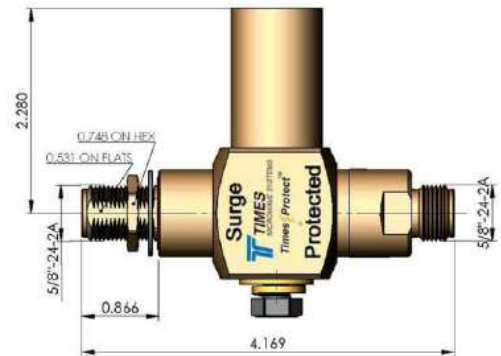
# LP-STR-N N Series Lightning & Surge Protection

The Times Protect™ LP-STR-N high performance series is an exceptional DC blocked design for superior surge performance, capable of withstanding multiple lightning strikes. The operating band width of 800MHz-2500MHz makes the LP-STR-N series suitable for a broad range of applications. With its excellent passive intermodulation performance, outstanding RF performance over the entire operating band and excellent power handling capability, the LP-STR-N product family is unequalled. Its fully weatherized housing meeting IP67 standard allows for outdoor as well as indoor installation.



## Specifications

Part Number	LP-STR-NFF
Connector	N Female on both sides.
Part Number	LP-STR-NFP
Connector	N Female to N Male on Protected
Part Number	LP-STR-NFS
Connector	N Female to N Male on Surge
Frequency	800 to 2500 MHz
Impedance	50 Ohms
VSWR/Return Loss	<1.13:1 / <-24Db (800-840MHz) <1.1:1 / <-26dB (840-2500MHz)
Insertion Loss	< 0.1dB
PIM	< -160dBc
Power Handling	500 Watts
Max Surge Current	50kA multiple (8x20us wave-form)
Residual Pulse Volt	< 100V (50kA V/2kA 1.2x50/8x20us wave-form)
Residual Pulse Volt	< 1 V (4kV/2kA (1.2x50/8x20us wave-form)
Protection Circuit	DC blocked
Energy Throughput	< 1uJ (4kV/2kA (1.2x50/8x20us wave-form)
Temp Range	-40 to +85 Degrees C
Torque	7-10 lb-in Recommended coupling nut
Body/Washer/Nut	Brass, White Bronze Plated
Weight	0.53 Kg



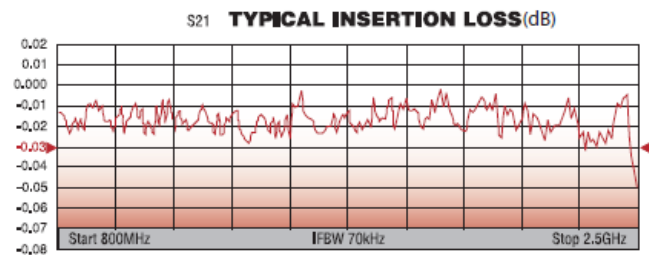
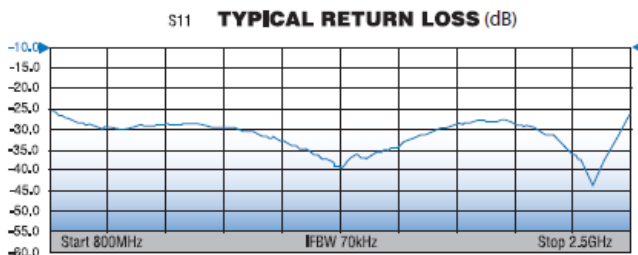
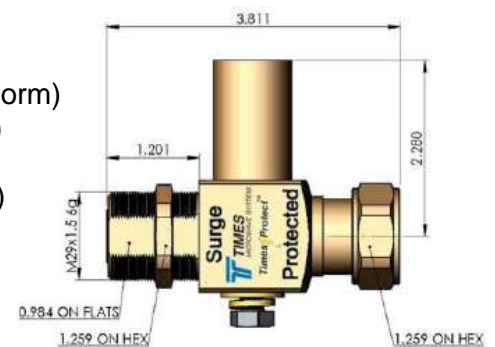
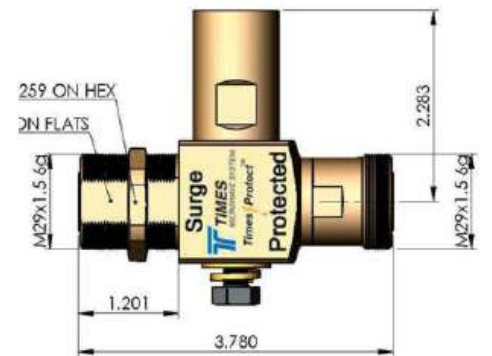
# LP-STR-D 7/16 DIN Series Lightning & Surge Protection

The Times Protect™ LP-STR-D high performance series is an exceptional DC blocked design for outstanding surge performance. The operating bandwidth of 800MHz-2500MHz makes the LP-STR-D series suitable for a broad range of applications. With its excellent passive Intermodulation performance, outstanding RF performance over the entire operating band and superior power handling capability, the LP-STR-D product family is unequalled. Its fully weatherized housing meeting IP67 standard allows for outdoor as well as indoor installation.



## Specifications

Part Number	LP-STR-DFF
Connector	7/16 Female on both sides.
Part Number	LP-STR-DMP
Connector	7/16 Female to 7/16 Male on Protected
Part Number	LP-STR-DMS
Connector	7/16 Female to 7/16 Male on Surge
Frequency	800 to 2500 MHz
Impedance	50 Ohms
VSWR/Return Loss	<1.13:1 / <-24Db (800-840MHz) <1.1:1 / <-26dB (840-2000MHz)
Insertion Loss	< 0.1dB
PIM	< -160dBc 100% PIM Tested
Power Handling	700 Watts
Max Surge Current	50kA multiple (8x20us wave-form)
Residual Pulse Volt	< 100V (50kA V/2kA 1.2x50/8x20us wave-form)
Residual Pulse Volt	< 1 V (4kV/2kA (1.2x50/8x20us wave-form)
Protection Circuit	DC blocked
Energy Throughput	< 1uJ (4kV/2kA (1.2x50/8x20us wave-form)
Temp Range	-40 to +85 Degrees C
Torque	7-10 lb-in Recommended coupling nut
Body/Washer/Nut	Brass, White Bronze Plated
Weight	0.60 Kg



# LP-STRL-N N Series Lightning & Surge Protection

The Times Protect™ LP-STRL-N high performance series is an exceptional DC blocked design for outstanding surge performance, capable of withstanding multiple lightning strikes. The operating band width of 680MHz-2200MHz makes the LPSTRL- N series suitable for a broad range of applications. This design covers the 700MHz Band for Public Safety Services as well as LTE (Long Term Evolution) applications. With its excellent passive intermodulation performance, outstanding RF performance over the entire operating band and superior power handling capability, the LP-STRL-N product family is unequalled. Its fully weatherized housing meeting IP67 standard allows for outdoor as well as indoor installation.



## Specifications

Part Number LP-STRL-NFF  
Connector N Female on both sides.

Part Number LP-STRL-NFP  
Connector N Female to N Male on Protected

Part Number LP-STRL-NFS  
Connector N Female to N Male on Surge

Frequency 680 to 2200 MHz

Impedance 50 Ohms

VSWR/Return Loss <1.13:1 / <-24dB (680-700MHz)

<1.1:1 / <-26dB (700-2200MHz)

Insertion Loss < 0.1dB

PIM < -160dBc

Power Handling 500 Watts

Max Surge Current 50kA multiple (8x20us wave-form)

Residual Pulse Volt < 100V (50kA V/2kA 1.2x50/8x20us wave-form)

Residual Pulse Volt < 1 V (4kV/2kA (1.2x50/8x20us wave-form)

Protection Circuit DC blocked

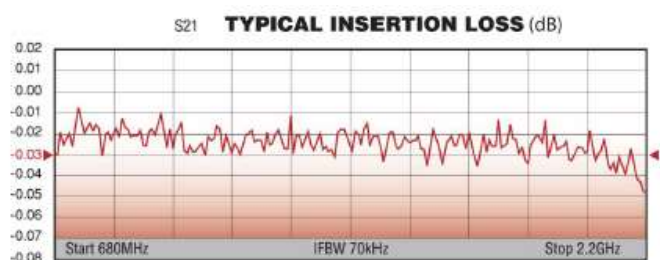
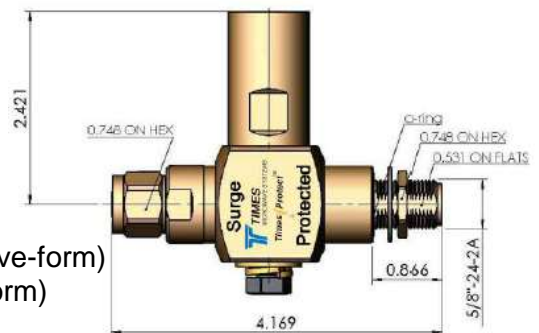
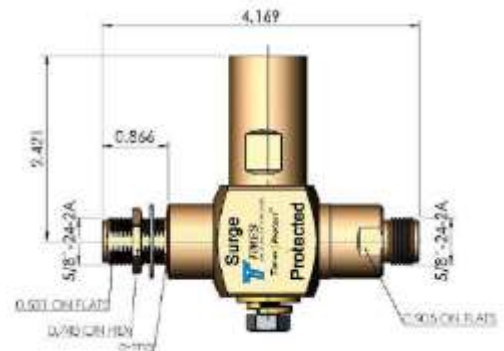
Energy Throughput < 1uJ (4kV/2kA (1.2x50/8x20us wave-form)

Temp Range -40 to +85 Degrees C

Torque 7-10 lb-in Recommended coupling nut

Body/Washer/Nut Brass, White Bronze Plated

Weight 0.53 Kg





# LP-STRL-D 7/16 DIN Series

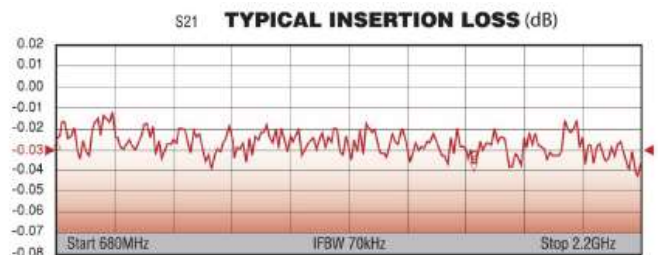
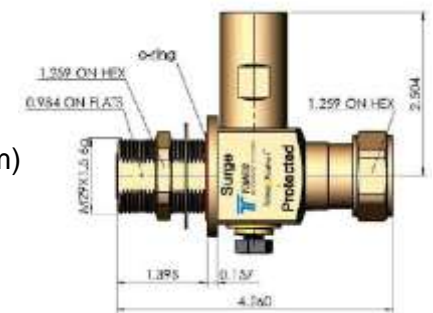
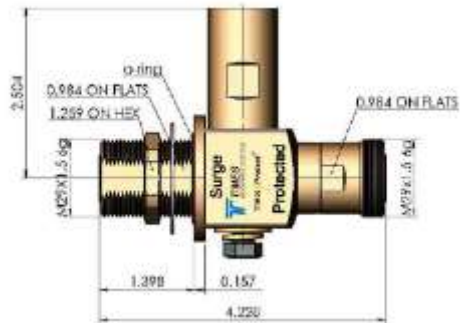
## Lightning & Surge Protection

The Times Protect™ high performance series is an exceptional DC blocked design for outstanding surge performance, capable of withstanding multiple lightning strikes. The operating band width of 680MHz-2200MHz makes the LP-STRL-D series suitable for a broad range of applications. This design covers the 700MHz Band for Public Safety Services as well as LTE (Long Term Evolution) applications. With it's excellent passive intermodulation performance, outstanding RF performance over the entire operating band and superior power handling capability, the LP-STRL-D product family is unequalled. Its fully weatherized housing meeting IP67 standard allows for outdoor as well as indoor installation.



### Specifications

Part Number	LP-STRL-DFF
Connector	7/16 Female on both sides.
Part Number	LP-STRL-DFP
Connector	7/16 Female to 7/16 Male on Protected
Part Number	LP-STRL-DFS
Connector	7/16 Female to 7/16 Male on Surge
Frequency	680 to 2200 MHz
Impedance	50 Ohms
VSWR/Return Loss	<1.13:1 / <-24Db (680-700MHz) <1.1:1 / <-26dB (700-2200MHz)
Insertion Loss	< 0.1dB
PIM	< -160dBc
Power Handling	700 Watts
Max Surge Current	50kA multiple (8x20us wave-form)
Residual Pulse Volt	< 100V (50kA V/2kA 1.2x50/8x20us wave-form)
Residual Pulse Volt	< 1 V (4kV/2kA (1.2x50/8x20us wave-form)
Protection Circuit	DC blocked
Energy Throughput	< 1uJ (4kV/2kA (1.2x50/8x20us wave-form)
Temp Range	-40 to +85 Degrees C
Torque	220-300 lb-in Recommended coupling nut
Body/Washer/Nut	Brass, White Bronze Plated
Weight	0.60 Kg

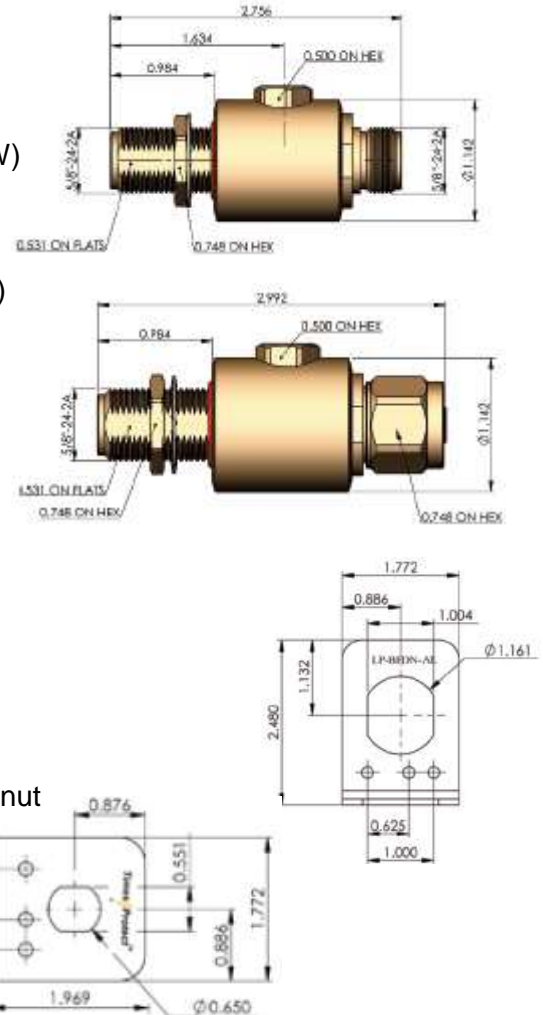


# LP-GTR-N N Series Lightning & Surge Protection

The Times-Protect® LP-GTR-N series is an exceptional broadband DC pass design for lightning protection applications requiring DC power to be supplied to the electronics. Offering outstanding surge performance, the LP-GTR-N series is the perfect protection solution for distributed antenna systems, tower mounted amplifiers, GPS systems and other applications requiring DC pass circuitry. These devices exhibit outstanding RF performance with high surge current handling characteristics and cover a broad range of power handling requirements from 50 to 550 watts. Its fully weatherized housing meeting IP67 standard allows for outdoor as well as indoor installation. The N connector designs cover the entire frequency spectrum from DC through 3000MHz.

## Specifications

Part Number	LP-GTR-NFF	(90Vdc/50W)
N Female	LP-GTR-NFF-23	(230Vdcc/210W)
Both conn		
N Male to N Female	LP-GTR-NFM LP-GTR-NFM-23	(90Vdc/50W) (230Vdc/210W)
Frequency	DC to 3000 MHz	
Impedance	50 Ohms	
VSWR/Return Loss	<1.10:1 <-26dB (DC to 2800MHz) <1.13:1 <-24dB (2800 to 3000MHz)	
Insertion Loss	<0.1dB (DC to 1000MHz) <0.2dB (1000 to 3000MHz)	
Max Surge Current	20kA multiple (8x20us wave-form) <u>NFF/NFM</u> <u>NFF-23/NFM-23</u>	
Impulse Spark over Turn-on	500V(1kV/us)	700V(1kV/us)
Average Power	50 Watts	210 Watts
Protection Circuit	DC Pass	
Temp Range	-40 to +85 Degrees C	
Torque	7 to 10 lb-in Recommended coupling nut	
Body/Washer/Nut	Brass, White Bronze Plated	
Mounting Bracket	See drawing below	



# LP-GTR-D 7/16 DIN Series Lightning & Surge Protection

The Times-Protect™ LP-GTR-D series is an exceptional broadband DC pass design for lightning protection applications requiring DC power to be supplied to the electronics. Offering outstanding surge performance the LP-GTR-D series is the perfect protection solution for distributed antenna systems, tower mounted amplifiers, GPS systems and other applications requiring DC pass circuitry. These devices exhibit outstanding RF performance with high surge current handling characteristics and cover a broad range of power handling requirements from 50 to 550 watts. Its fully weatherized housing meeting IP67 standard allows for outdoor as well as indoor installation. The 716 DIN connector types can be used from DC through 2500MHz.



## Specifications

Part Number	LP-GTR-DFF	(90Vdc/50W)
7/16 Female	LP-GTR-DFF-23	(230Vdc/210W)
Both conn	LP-GTR-DFF-35	(350Vdc/500W)
7/16 Male to	LP-GTR-DFM	(90Vdc/50W)
7/16 Female	LP-GTR-DFM-23	(230Vdc/210W)
Bidirectional	LP-GTR-DFM-23	(350Vdc/500W)
Frequency	DC to 2500 MHz	
Impedance	50 Ohms	
VSWR/Return Loss	<1.08:1 <-26dB (DC to 1000MHz)	
	<1.1:1 <-24dB (1000 to 2500MHz)	
Insertion Loss	<0.1dB (DC to 1000MHz)	
	<0.2dB (1000 to 2500MHz)	
Max Surge Current	20kA multiple (8x20us wave-form)	
	<u>DFF/DFM</u>	<u>DFF-23/DFM-23</u>
Impulse Spark over	500V(1kV/us)	700V(1kV/us)
Turn-on	90Vdc	230Vdc
Average Power	50 Watts	210 Watts
Protection Circuit	DC Pass	
Temp Range	-40 to +85 Degrees C	
Torque	220 to 300 lb-in Recommended coupling nut	
Body/Washer/Nut	Brass, White Bronze Plated	
Mounting Bracket	See drawing below	



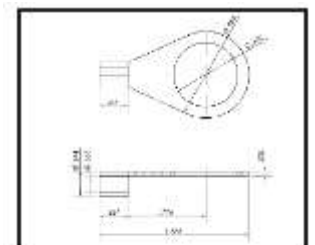
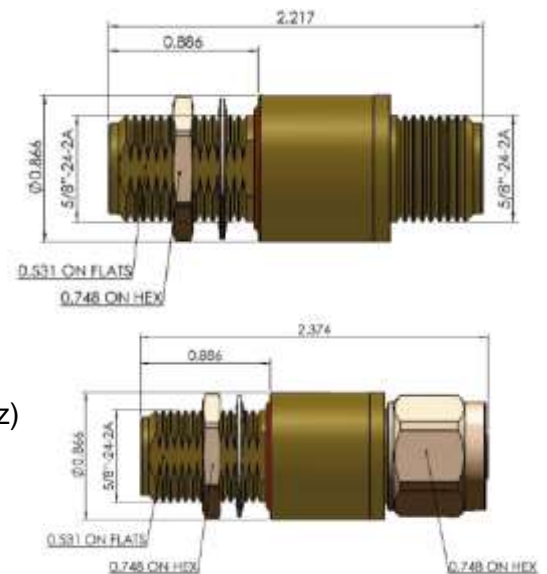
# LP-GTV-N N Series DC-7000MHz Lightning & Surge Protection

The LP-GTV-N series is an exceptional broadband DC pass design for lightning protection applications requiring DC power to be supplied to the electronics. These devices exhibit outstanding RF performance with high surge current handling characteristics and cover a broad range of applications requiring up to 150W of RF power handling. Its fully weatherized housing meeting IP67 standard allows for outdoor as well as indoor installation. The N connector designs cover the entire frequency spectrum from DC through 7000MHz.

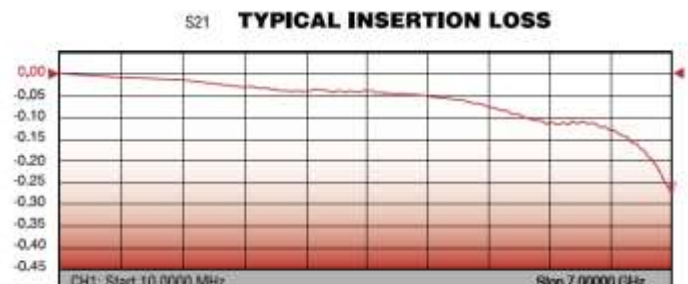


## Specifications

Part Number	LP-GTV-NFF
Connector	N Female on both sides.
Part Number	LP-GTV-NFM
Connector	N Female to N Male
Frequency	DC-7000 MHz
Impedance	50 Ohms
VSWR/Return Loss	<1.2:1 / <-20dB (DC-6700MHz) <1.3:1 / <-17dB (6700Mhz to 7000MHz)
Insertion Loss	< 0.2dB DC-6700MHz, Max < 0.3dB
Power Handling	150 Watts
Max Surge Current	10kA multiple (8x20us wave-form)
Impulse Spark over Turn On	700V (1kV/us) 180 VDC
Protection Circuit	DC Pass Bidirectional
Energy Throughput	< 1uJ (4kV/2kA (1.2x50/8x20us wave-form))
Temp Range	-40 to +85 Degrees C
Torque	7-10 lb-in Recommended coupling nut
Body/Washer/Nut	Brass, White Bronze Plated
Weight	0.40 Kg



• Grounding Ring



# LP-GPX-05-S SMA Series L1, L2 & L3 GPS Lightning & Surge Protection

The LP-GPX-05-S high performance series is an exceptional DC pass design for protection of GPS receivers requiring up to 5Vdc power to be supplied on the centre pin. While the RF path is DC blocked, the biased DC voltage protection circuit uses Solid State protection technology to provide unsurpassed surge performance. The LP-GPX-05-S series offers outstanding Insertion Loss and Return Loss characteristics over the 1000-2000MHz band, making it suitable for protection of commercial and military GPS, as well as other applications in this band. Unlike competitive protectors, the white bronze plated construction of the LP-GPX-05-S series eliminates potential galvanic corrosion issues and provides long life in hostile environments. The fully weatherized housing is sealed to IP65 allowing for outdoor as well as indoor installation.

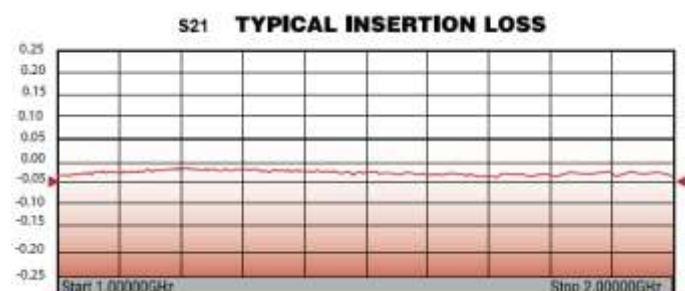
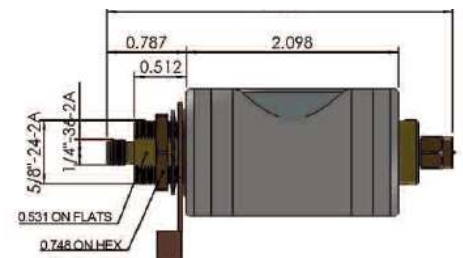
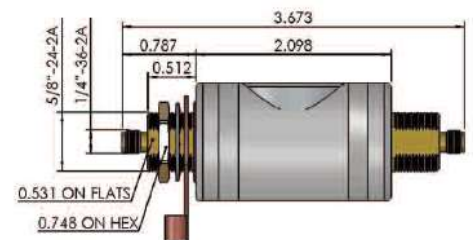


## Specifications

Part Number LP-GPX-05-SFF  
Connector SMA Female on both sides bidirectional

Part Number LP-GPX-05-SFM  
Connector SMA Male to SMA Female bidirectional

Frequency 1000 to 2000 MHz  
Impedance 50 Ohms  
VSWR/Return Loss <1.2:1 / <-20dB  
Insertion Loss < 0.1dB  
Max Surge Current 10kA multiple  
(1.2x50/8x20us wave-form)  
Average Power 50 Watt  
Turn-on 6 VDC  
Residual Pulse Volt < 12V (6kV/3kA 1.2x50/8x20us wave-form)  
Protection Circuit DC blocked RF Path/Solid State DC Path  
Energy Throughput < 110uJ  
Temp Range -40 to +85 Degrees C  
Torque 3-5 lb-in Recommended coupling nut  
Body/Washer/Nut Aluminum/Brass, White Bronze Plated



# LP-GPX-05 N Series L1, L2 & L3 GPS Lightning & Surge Protection

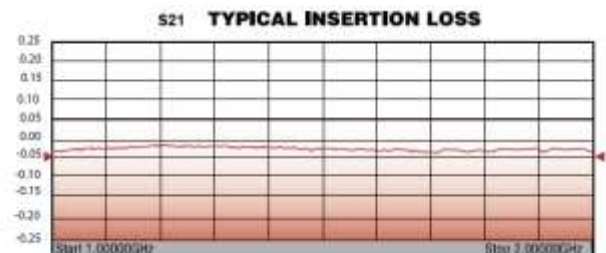
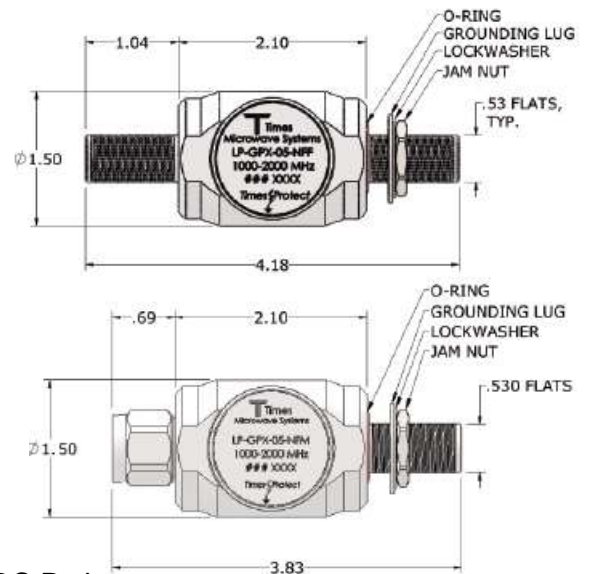
Times Microwaves LP-GPX-05-N high performance series is an exceptional DC pass design for protection of GPS receivers requiring up to 5Vdc power to be supplied on the center pin.

While the RF path is DC blocked, the biased DC voltage protection circuit uses Solid State Protection Technology to provide unsurpassed surge performance. The LP-GPX-05-N series offers outstanding insertion loss and return Loss characteristics over the 1000-2000 MHz band, making it suitable for protection of commercial and military GPS, as well as other applications in this band.



## Specifications

Part Number	LP-GPX-05-NFF
Connector	N Female on both sides.
Part Number	LP-GPX-05-NFM
Connector	N Male to N Female
Frequency	1000 to 2000 MHz
Impedance	50 Ohms
VSWR/Return Loss	<1.2:1 / <-20dB
Insertion Loss	< 0.1dB
Max Surge Current	10kA multiple (1.2x50/8x20us wave-form)
Turn-on	6 VDC
Residual Pulse Volt	< 12V (6kV/3kA 1.2x50/8x20us wave-form)
Protection Circuit	DC blocked RF Path/Solid State DC Path
Energy Throughput	< 110uJ
Temp Range	-40 to +85 Degrees C
Torque	7-10 lb-in Recommended coupling nut
Body/Washer/Nut	Brass, White Bronze Plated



# LP-GPX-05-T TNC Series L1, L2 & L3 GPS Lightning & Surge Protection



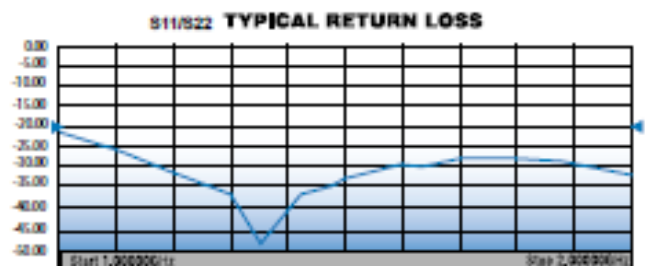
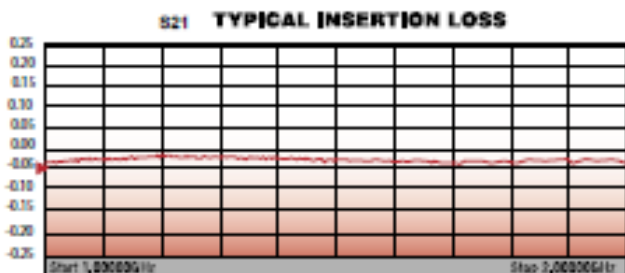
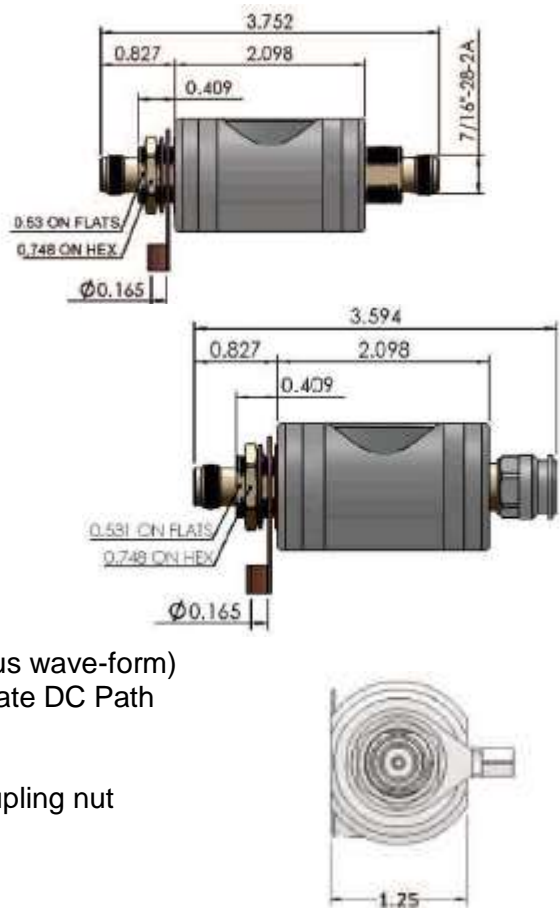
Times Microwaves LP-GPX-05-T high performance series is an exceptional DC pass design for protection of GPS receivers requiring up to 5Vdc power to be supplied on the center pin.

While the RF path is DC blocked, the biased DC voltage protection circuit uses Solid State Protection Technology to provide unsurpassed surge performance. The LP-GPX-05-T series offers outstanding insertion loss and return Loss characteristics over the 1000-2000 MHz band, making it suitable for protection of commercial and military GPS, as well as other applications in this band.



## Specifications

Part Number	LP-GPX-05-TFF
Connector	TNC Female on both sides.
Part Number	LP-GPX-05-TFM
Connector	TNC Male to TNC Female
Frequency	1000 to 2000 MHz
Impedance	50 Ohms
VSWR/Return Loss	<1.2:1 / <-20dB
Insertion Loss	< 0.1dB
Max Surge Current	10kA multiple (1.2x50/8x20us wave-form)
Average Power	50 Watt
Turn-on	6 VAC
Residual Pulse Volt	< 12V (6kV/3kA 1.2x50/8x20us wave-form)
Protection Circuit	DC blocked RF Path/Solid State DC Path
Energy Throughput	< 110uJ
Temp Range	-40 to +85 Degrees C
Torque	7-10 lb-in Recommended coupling nut
Body/Washer/Nut	Brass, White Bronze Plated



# LP-WBX N Series 2-6GHz Broadband Lightning & Surge Protection



The LP-WBX-N high performance series uses a filter circuit to provide exceptional lightning protection over the 2000-6000MHz frequency band. Covering both the unlicensed WiFi bands and several licensed operating bands.

Unlike competitive protectors, the white bronze plated construction of the LP-WBX-N series eliminates potential galvanic corrosion issues and provides long life in hostile environments. The fully weatherized housing is sealed to IP65 allowing for outdoor as well as indoor installation.



## Specifications

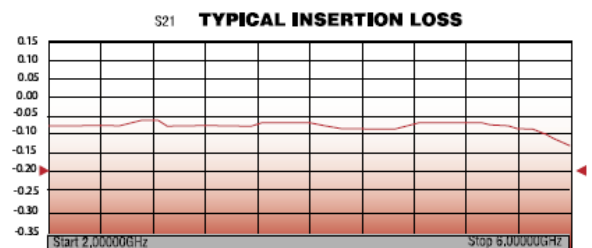
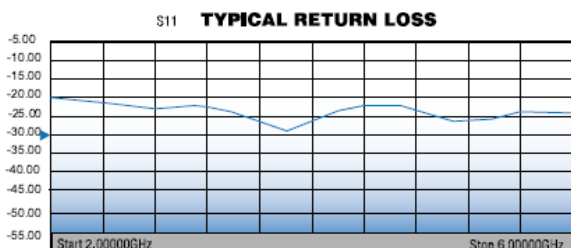
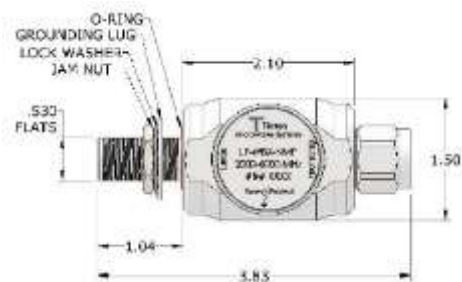
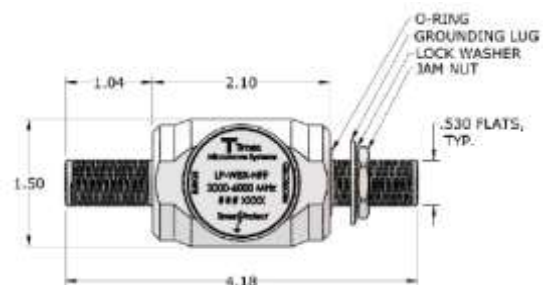
Part Number LP-WBX-NFF  
Connector N Female on both sides.

Part Number LP-WBX-NMP  
Connector N Male on Protected side

Part Number LP-WBX-NMS  
Connector N Male on Surge side

Frequency 2000 to 6000 MHz  
Impedance 50 Ohms  
VSWR/Return Loss <1.2:1 / <-20dB  
Insertion Loss < 0.2dB  
Max Surge Current 20kA max/10kA multiple (8x20us wave-form)

Average Power 50 Watt  
Residual Pulse Volt < 3V (6kV/3kA 1.2x50/8x20us wave-form)  
Protection Circuit DC blocked  
Energy Throughput < 150uJ  
Temp Range -40 to +85 Degrees C  
Torque 7-10 lb-in Recommended coupling nut  
Body/Washer/Nut Brass, White Bronze Plated





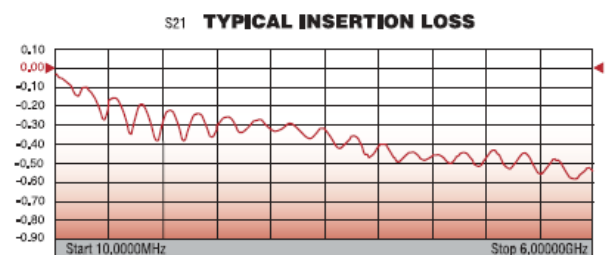
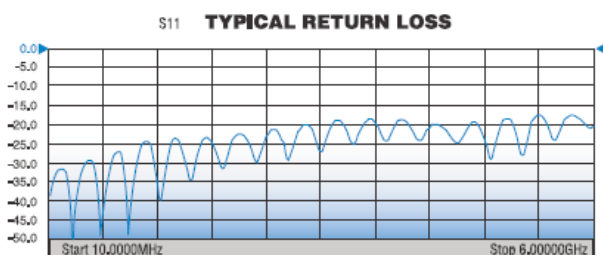
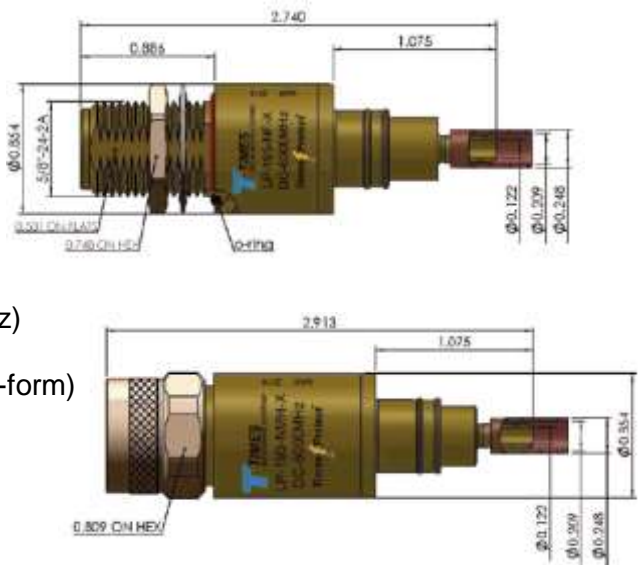
# LP-18-195-N Connector Protector

The Times Protect® LP-18-195-N series is an exceptional in-line broadband DC pass surge protection design incorporating lightning protection circuitry and the EZ-195-X series crimp style connector interface unit. This combination allowing the in-line surge protector to be attached directly to the LMR®-195 cable eliminates the cable connector needed when using conventional lightning protectors. The LP-18-195-N series protector's exhibit outstanding RF performance over the entire frequency spectrum from DC through 6000MHz and the elimination of the extra connector further reduces return loss, insertion loss and lowers cost. In addition, its fully weatherized housing meets the IP-67 standard for outdoor as well as indoor installation.



## Specifications

Part Number Connector	LP-18-195-NF-X N Female DC Pass
Part Number Connector	LP-18-195-NMH-X N Male DC Pass
Frequency	DC to 6000 MHz
Impedance	50 Ohms
VSWR/Return Loss	<1.3:1 < 18 dB(DC-6000MHz)
Insertion Loss	< 0.6 dB (DC-6000MHz)
Max Surge Current	10kA multiple (8x20us wave-form)
Average Power	150 Watt
Turn-on	180 VDC
Impulse Spark over	700V (1kV/us)
Protection Circuit	DC Pass
Temp Range	-40 to +85 Degrees C
Torque	7-10 lb-in Recommended coupling nut
Body/Washer/Nut	Brass, White Bronze Plated
Weight	95 grams



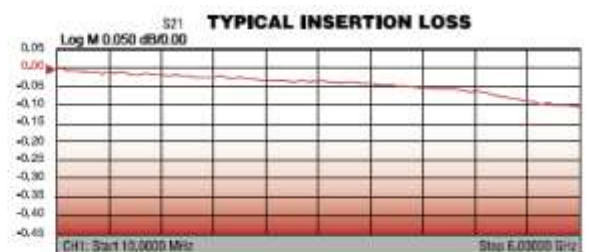
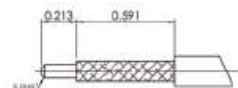
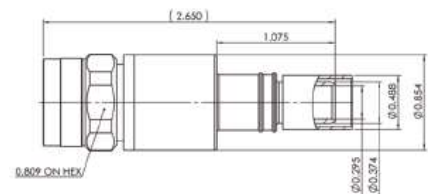
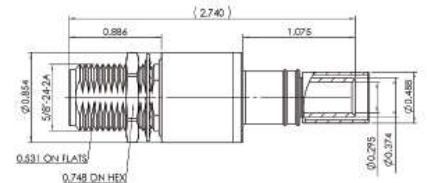
# LP-18-400-N Connector Protector

The Times Protect® LP-18-400-N series is an exceptional in-line broadband DC pass surge protection design incorporating lightning protection circuitry and the EZ-400-X series crimp style connector interface unit. This combination allowing the in-line surge protector to be attached directly to the LMR®-400 cables eliminates the cable connector needed when using conventional lightning protectors. The LP-18-400-N series protector's exhibit outstanding RF performance over the entire frequency spectrum from DC through 6000MHz and the elimination of the extra connector further reduces return loss, insertion loss and lowers cost. In addition, its fully weatherized housing meets the IP-67 standard for outdoor as well as indoor installation.



## Specifications

Part Number	LP-18-400-NF-X
Connector	N Female DC Pass
Part Number	LP-18-400-NM-X
Connector	N Male DC Pass
Frequency	DC to 6000 MHz
Impedance	50 Ohms
VSWR/Return Loss	<1.15:1 (DC-6000MHz)
Insertion Loss	< 0.15dB (DC-6000MHz)
Max Surge Current	10kA multiple (8x20us wave-form)
Average Power	150 Watt
Turn-on	180 VDC
Impulse Spark over	700V (1kV/us)
Protection Circuit	DC Pass
Temp Range	-40 to +85 Degrees C
Torque	7-10 lb-in Recommended coupling nut
Body/Washer/Nut	Brass, White Bronze Plated
Weight	96 grams



Note: IL and RL data without LMR®-400 cable

## LP-SPT Surge Protection Tester

After a severe thunderstorm with multiple tower strikes, how is a technician to know if the coaxial lightning protectors are still operating properly? There are some obvious visual indications of damage such as arcing/discoloration & melt/welding connectors, while the Return Loss/VSWR & Insertion Loss in the transmission line system could provide some indication of impending failure. But until now, there has been no simple field test to assure the protectors meet specifications.



The Times LP-SPT Surge Protection Tester is designed to test all coaxial cable RF Lightning Protection products offered by Times Microwave. Other LP products based on transient protection devices such as GDT, MOVs, TVS & SIDACs and mechanical filter designs can be tested. Additionally the LP-SPT is suitable for testing discrete transient devices as well.

The LP-PT consists of a battery operated high voltage DC power supply providing an output up to 1000 volts at approx 1-1.5mA. This output level provides enough voltage to cause breakdown of the transient device to occur without over-driving the device with excessive current; providing a reliable & valid method of measuring peak breakdown voltages of transient suppression devices. Although the test voltage is applied at a rise time rate of approx. 10kV/S, it is slow enough to facilitate valid testing of the device's rated "DC" breakdown voltage within the tolerance specified by the device manufactures while staying within the 1000 volts operating range.

The LP=SPT is a rugged, simple to use handheld test instrument. The LP-SP has a 3.5 digit LCD that displays device under test peak breakdown voltage to a resolution of one volt. Two type-N connectors (Male & Female) at the top of the LP-SPT provide direct connection of an RF LP device to the tester. An on-off switch and LDD backlit "TEST" button facilitate operation & testing.

Further detailed information is available from Times Microwave's website [www.timesmicrowave.com](http://www.timesmicrowave.com) or our site <http://www.rojone.com.au/category/h-components-passive/lightning-protection/>

# Smart Panel™

Times Microwave Systems introduces a revolutionary concept in shelter and base station entrance panels. Designed to eliminate traditional entrance panel shortcomings and improve surge protection of expensive Base station equipment, the Times-Protect™ Smart-Panel™ offers major advantages compared to traditional installation methods.

The Smart-Panel™ provides for single point grounding and eliminates costly and time consuming cable ground kits. The external copper master ground bar is also eliminated so there are no copper parts to steal outside the shelter. Inside the shelter the installation is simplified and cost reduced by the elimination of the lightning protector trapeze. Bulkhead mounted Lightning Protectors eliminate added trapeze ground lead inductance, creating a perfect return path for surge currents during a Lightning event. The completely weatherized Times-Protect™ Smart-Panel™ adjusts to the shelter wall thickness and is supplied with all the necessary installation hardware as well as a heavy duty copper internal master ground bar and a low inductance ground plate. The Times-Protect™ Smart-Panel™ is constructed of powder-coated heavy duty aluminium and is available in both 12 and 24 port designs and either type N or 716 DIN bulkhead mount configurations. A copper version is also available. All designs can also accommodate EWG, Cat 5 data, DC or Fibre entry ports.



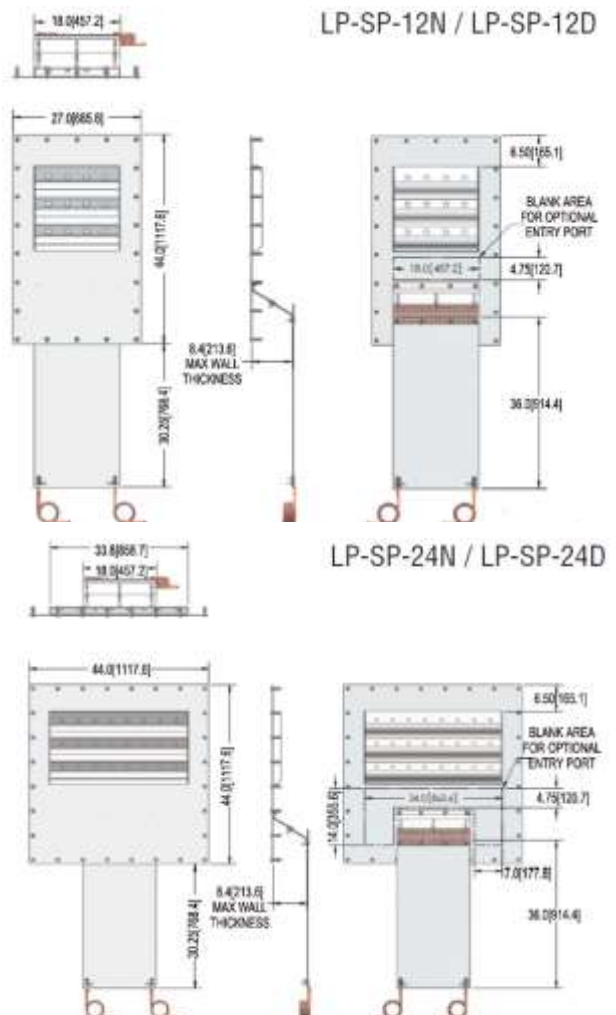
## Specifications

Part Number LP-SP-12N 12 port N hole  
 LP-SP-12D 12 port 716 DIN hole  
 LP-SP-24N 24 port N hole  
 LP-SP-24D 24 port 716 DIN hole

Material: 6061-T6  
 Ground Bar: C110 Copper  
 Finish: Powder Coat  
 Weight 23Kgs (50lbs) (12 Port)  
 27Kgs (58lbs) (24 Port)

### Included Installation Hardware

- 3/8" x 2" tamper Resistant Galv Lag Screw
- 3/8" Short Galv Lag Shield
- 3/8" x 1-3/4" Tamper Resistant Bolt
- 3/8" SS Flat Washer
- 3/8" Lock Washer
- 3/8" SS Hex Nut
- Ground Lug 2/0 AWG
- Tamper Resistant Wrench
- Hole Cut out Template



# Times Lightning Protection Devices Cross Reference



Times Microwave Systems has designed a range of quality lightning protection devices in the same form factor as some competitors. This is to enable the clients to purchase the Times product in direct replacement from stock and extremely competitively.

Advantages you will immediately notice is the quality, brass bodies vs aluminium, white bronze plating, better PIM characteristics, broader bandwidths, higher power, lower loss, IP67 weatherization, right down to the engraved markings at will not degrade outdoors through to the universal mounting brackets, the self-captivated screws

## 7/16

### DIN Times Cross Ref to ...

LP-GTR-DFF	APG-BDFDF-090	GT-DFF-AL	
LP-GTR-DFF-35	APG-BDFDF-350		
LP-GTR-DFM	APG-BDFDM-090	GT-DFM-AL	
LP-GTR-DFM-35	APG-BDFDM-350		
LP-STRL-DFF	APT-BDFDF-DB		
LP-STRL-DMS	APT-DBFDM-DB		
LP-STRL-DMP	APT-DBFDM-DB		
LP-STRL-DMS	APT-DFDM-DB		
LP-STRL-DMP	APT-DFDM-DB		
LP-STR-DFF	DSXL-D	3407.41.0042	3400.41.0216
LP-STR-DMS	DSXL-D-MA	3407.41.0039	3400.41.0204
LP-STR-DMP	DSXL-D-ME		

## N

### Type Times Cross Ref to ...

LP-BTR-50NFF	IS-B50LN-C1 & C2	IS-B50MX-C2	IS-NEMP-C2
LP-BTR-50NMS	IS-B50LN-C2-MA	IS-B50NX-C2MA	IS-NEMP-C2-MA
LP-BTR-50NMP	IS-B50LN-C2-ME	IS-50NX-C2-ME	IS-NEMP-C2-ME
LP-GPX-05-NFF	3403.17.0060**/**B		
LP-GPX-05-NFM	3403.17.0063**/**B		
LP-GTR-NFF	APG-BNFNF-090	RGT	
LP-GTR-NFF-35	APG-BNFNF-350		
LP-GTR-NFM	APG-BNFNM-090	RGT-ME	
LP-GTR-NFM-35	APG-BNFNM-350		
LP-STR-NFF	DSXL	3407.17.0067	
LP-STR-NMS	DSXLMA	3407.17.0068	3400.17.0377
LP-STR-NMP	DSXLME		
LP-WBX-NMS	3407.17.0085		

