

ISOLATORS AND LOADS

Coaxial Loads

RF loads provide stable constant impedance termination for receiver panels and transmitters up to 300 watts. Dry loads can be operated in any position, and offer extremely low VSWR and Quick-Change connectors.



Ferrite Isolators

Telewave isolators provide isolation between transmitters by controlling the directional flow of RF energy. Power which is coupled into an antenna system from a nearby transmitter can be circulated into a load before it contributes to intermodulation.



High Power Isolators

High power isolators handle up to 400 watts of power. These rugged devices are custom-built for each application and extensively tested in the Telewave manufacturing plant.



Intermodulation Suppression

IM Panels are self-contained devices which generally include a single or dual isolator, low-pass filter, and output termination load. Each panel is designed to provide plug-and-play installation and can solve many difficult interference problems.



TWL-01	100 mW	0-2500 MHz
TWL-35	35 W	0-1000 MHz
TWL-60	60 W	0-1000 MHz

TWL-01, 35, 60 COAXIAL RF TERMINATIONS

Telewave compact coaxial loads offer extremely low VSWR. All loads are machined to withstand any bench or field use, and their power rating provides substantial overload protection. Unlike oil-filled loads, these dry coaxial loads can be operated in any position. Connectors have a silver-plated center conductor, except TWL-01 which uses a gold-plated pin.

TWL-01 is designed as a port termination for receiver splitters with N, SMA, UHF, or BNC female outputs. TWL-35 and TWL-60 feature recessed male connectors for reduced size and ease of use. Applications include hybrids, isolators, power monitors, wattmeters, and coaxial port terminations.

FEATURES

- EXTREMELY LOW VSWR
- CW POWER RATINGS TO 60 WATTS
- DRY LOAD
- BROAD FREQUENCY RANGE
- RUGGED CONSTRUCTION
- N, BNC, OR UHF MALE CONNECTOR (Specify connector type)



TWL-60



TWL-35



TWL-01

SPECIFICATIONS	TWL-01*	TWL-35	TWL-60
Frequency range	0-2500 MHz	0-1000 MHz	0-1000 MHz
Maximum avg. CW power	250 mW	35 W	60 W
Max VSWR (N connector)	1.22:1	1.05:1	1.05:1
Impedance (nom.)	50 ohms (nominal)		
Temperature rating	100% of rated power at 40°C • 50% of rated power at 95°C		
50% overload rating	2 Minutes		
Connectors	N / SMA / UHF / BNC Male	N or UHF Male	N or UHF Male
Dimensions (dia. x H) in (cm)	0.8 x 0.97 (2.0 x 2.5)	1.6 x 1.4 (4.1 x 3.6)	1.6 x 2.375 (4.1 x 6.0)
Weight lb. (kg)	0.07 (0.03)	0.25 (0.11)	0.5 (0.2)

*Used to terminate unused ports on receiver splitters and panels.

TWL-50, 75, 100, 100HS COAXIAL RF TERMINATIONS

Telewave Coaxial Loads feature extremely low VSWR and excellent stability. Applications include hybrids, isolators, power monitors, wattmeters, and coax line terminations.

Telewave loads are custom machined to withstand bench or field use. The conservative power rating provides substantial overload protection. Unlike liquid dielectric loads, Telewave dry coaxial terminations can be operated in any position.

All connectors have gold-plated center pins for maximum conductivity. Quick-Change connectors are standard on these loads, allowing easy configuration for any application. Specify connector type(s) when ordering.

For added flexibility, straight or elbow-type male-male adapters are available.

FEATURES

- EXTREMELY LOW VSWR
- CW POWER RATINGS TO 150 WATTS
- DRY DIELECTRIC
- BROAD FREQUENCY RANGE
- RUGGED CONSTRUCTION
- QUICK-CHANGE CONNECTORS



TWL-50



TWL-75



TWL-100



TWL-100HS

COMMON SPECIFICATIONS

Frequency range	0 - 2500 MHz
Nominal impedance	50 ohms
Temperature rating	40°C max ambient - 100% of rated power 95°C max ambient - 50% of rated power
50% overload rating	2 minutes

MODEL	TWL-50	TWL-75	TWL-100	TWL-100HS
Maximum CW avg power	50 watts	75 watts	100 watts	100 watts
Max VSWR (N connector)	1.1:1	1.05:1	1.05:1	1.05:1
Dimensions (H x dia.) in.	6 x 1.75	8 x 2.25	7.25 x 3.375	7 H x 2.75 W x 2.75 D
(incl. connector) cm	15.2 x 4.5	20.3 x 5.7	18.4 x 8.6	17.8 x 7 x 7
Weight lb. (kg)	1 (0.5)	2.1 (1)	4 (1.8)	2.7 (1.2)
Connectors	Quick-Change N Female (std.) UHF, TNC, BNC, 7-16 DIN (opt.)		Quick-Change N Male (std.) UHF, TNC, BNC, 7-16 DIN (opt.)	

0 - 2500 MHz

TWL-50	50 W	0-2500 MHz
TWL-75	75 W	0-2500 MHz
TWL-100	100 W	0-2500 MHz
TWL-100HS	100 W	0-2500 MHz

TWL-150	150 W	0-2500 MHz
TWL-300	300 W	0-1000 MHz

TWL-150, TWL-300 HIGH POWER TERMINATIONS

The Telewave TWL-150 Bench Load is ideal as a general purpose medium power termination. It is perfectly suited for terminating the Model 44A Broadband wattmeter, or any other application requiring a very low VSWR, 50 ohm termination. The carry handle and rugged construction allow convenient field use.

The Telewave TWL-300 Bench Load is our highest power standard termination. This load is designed for testing high power amplifiers, or applications requiring longer duty cycles.

Telewave coaxial loads feature extremely low VSWR and excellent stability. Applications include hybrids, isolators, power monitors, wattmeters, and coax line terminations.

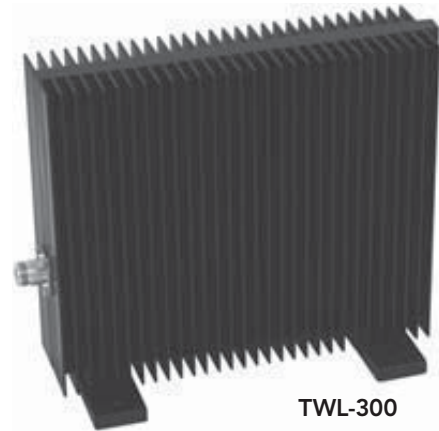
Telewave loads are custom machined to withstand bench or field use. The conservative power rating provides substantial overload protection. Unlike liquid dielectric loads, Telewave dry coaxial terminations can be operated in any position.

All connectors have gold-plated center pins for maximum conductivity. Quick-Change connectors are standard on these loads, allowing easy configuration for any application. Specify connector type(s) when ordering.

For added flexibility, straight or elbow-type male-male adapters are available.



TWL-150



TWL-300

SPECIFICATIONS	TWL-150	TWL-300
Frequency range	0 - 2500 MHz	0 - 1000 MHz
Power input (max)	150 watts	300 watts
Impedance (nom)	50 ohms	
VSWR (max)	1.05:1	1.25:1
Return loss (typ.)	32 dB	18 dB
Temperature rating	100% of rated power at 40°C • 50% of rated power at 95°C	
50% overload rating	2 Minutes	
Connector	Quick-Change N Female (std.), UHF, TNC, BNC, 7-16 DIN	
Dimensions (HWD) in. (cm)	6.5 x 3.5 x 6.5 (16.5 x 8.9 x 16.5)	8.1 x 2.5 x 9.5 (20.6 x 6.4 x 24.1)
Footprint in. (cm)	7 x 4 (17.8 x 10.2)	9.5 x 4.6 (24.1 x 11.7)
Weight lb. (kg)	4.8 (2.2)	13 (5.9)
Finish	High Temp Black	

T-1030 / T-1060 FERRITE ISOLATORS

Telewave Single and Dual Ferrite Isolators prevent intermodulation, and protect transmitters from high VSWR or mistuned filtering devices by providing a constant 50 ohm impedance. All Telewave isolators are manufactured and tested in our own plant to the highest quality standards. These isolators handle up to 50 watts of power, with several different load options. All Telewave isolators include one or two removeable 35 watt loads in the basic configuration. Typical tuning range is up to ± 3 MHz from the original center frequency, and typical isolation is 35 dB for single, and 70 dB for dual.

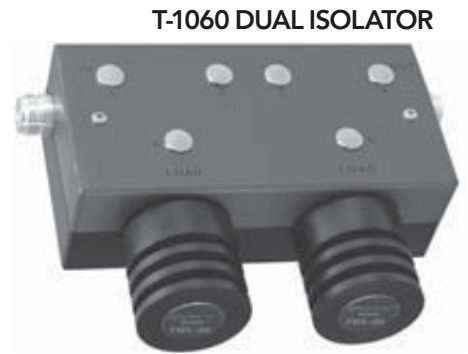
NOTE: Isolators have limited bandwidth and tuning range. Each isolator is manufactured for a specific range and tuned to a specific frequency. Please specify the exact desired operating frequency and special load requirements with the order.



T-1030 SINGLE ISOLATOR



CAVITY-MOUNT ISOLATOR



T-1060 DUAL ISOLATOR

BENEFITS

Under adverse conditions, the isolator performs several critical functions:

Broken Antenna, Damaged Cable, High VSWR

All of these conditions will cause large amounts of power to be reflected down the transmission line toward the transmitter. The circulatory property of the isolator will direct this energy to the load port, and protect the transmitter. The load on the isolator must be capable of handling full transmitter power. Age, water invasion, and incorrect cable length will also cause impedance changes. The tuned ports of the isolator provide a constant 50 ohm impedance for the transmitter to avoid overheating and oscillation.

Intermodulation

When RF energy from a strong nearby signal source enters a transmitter via the antenna, mixing with the primary transmitter frequency often occurs, resulting in the radiation of new, undesired signals. The isolator antenna port reflects out-of-band energy back to the antenna. In-band energy enters the isolator, and is circulated to the output load. No energy from nearby transmitters enters the protected transmitter from the antenna, and intermodulation can be eliminated.

SPECIFICATIONS			T-1030	T-1060
Frequency band	66-108 MHz	Isolator type	Single	Dual
Tuning range (typ.)	± 3 MHz	Isolation (typ. / min)	35 dB / 30 dB	70 dB / 60 dB
Input power	50 watts	Insertion loss (typ.)	0.65 dB	1.0 dB
VSWR (typ.)	1.25:1	Load(s) included	(1) 35 W	(2) 35 W
Impedance	50 ohms	Dimensions in. (incl. loads)	4.5 x 4 x 2	6.5 x 4.5 x 2
Connectors	N Female	cm	11.5 x 10 x 5	16.5 x 11.5 x 5
Temperature range	-30°C to +60°C	Weight lb. (kg)	1.5 (1.4)	6 (2.7)

T-1530 / T-1560 FERRITE ISOLATORS

Telewave Single and Dual Ferrite Isolators prevent intermodulation, and protect transmitters from high VSWR or mistuned filtering devices by providing a constant 50 ohm impedance. All Telewave isolators are manufactured and tested in our own plant to the highest quality standards. These isolators handle up to 100 watts of power, with several different load options. All Telewave isolators include one or two removeable 35 watt loads in the basic configuration. Typical tuning range is up to ± 4 MHz from the original center frequency, and typical isolation is 35 dB for single, and 70 dB for dual.

NOTE: Isolators have limited bandwidth and tuning range. Each isolator is manufactured for a specific range and tuned to a specific frequency. Please specify the exact desired operating frequency and special load requirements with the order.

BENEFITS

Under adverse conditions, the isolator performs several critical functions:

Broken Antenna, Damaged Cable, High VSWR

All of these conditions will cause large amounts of power to be reflected down the transmission line toward the transmitter. The circulatory property of the isolator will direct this energy to the load port, and protect the transmitter. The load on the isolator must be capable of handling full transmitter power. Age, water invasion, and incorrect cable length will also cause impedance changes. The tuned ports of the isolator provide a constant 50 ohm impedance for the transmitter to avoid overheating and oscillation.



T-1530 SINGLE ISOLATOR



CAVITY-MOUNT ISOLATOR



T-1560 DUAL ISOLATOR

Intermodulation

When RF energy from a strong nearby signal source enters a transmitter via the antenna, mixing with the primary transmitter frequency often occurs, resulting in the radiation of new, undesired signals. The isolator antenna port reflects out-of-band energy back to the antenna. In-band energy enters the isolator, and is circulated to the output load. No energy from nearby transmitters enters the protected transmitter from the antenna, and intermodulation can be eliminated.

SPECIFICATIONS			T-1530	T-1560
Frequency band	118-174 MHz	Isolator type	Single	Dual
Tuning range (typ.)	± 4 MHz	Isolation (typ. / min)	35 dB / 30 dB	70 dB / 60 dB
Input power	100 watts	Insertion loss (typ.)	0.4 dB	0.8 dB
VSWR (typ.)	1.25:1	Load(s) included	(1) 35 W	(2) 35 W
Impedance	50 ohms	Dimensions (incl. loads) in.	4.5 x 4 x 2	6.5 x 4.5 x 2
Connectors	N Female	cm	11.5 x 10 x 5	16.5 x 11.5 x 5
Temperature range	-30°C to +60°C	Weight lb. (kg)	3 (1.4)	6 (2.7)

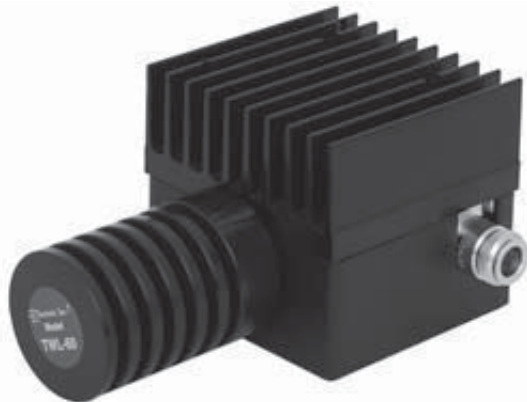
T-1530M / T-1560M MEDIUM POWER VHF ISOLATORS

Telewave T-1530M and T-1560M Medium Power Isolators protect transmitters from reflected power, and provide maximum intermodulation suppression. A dual-stage unit can provide as much as 70 dB isolation for adjacent channel suppression. The low loss characteristic of the Telewave design insures maximum power transfer to the antenna system.

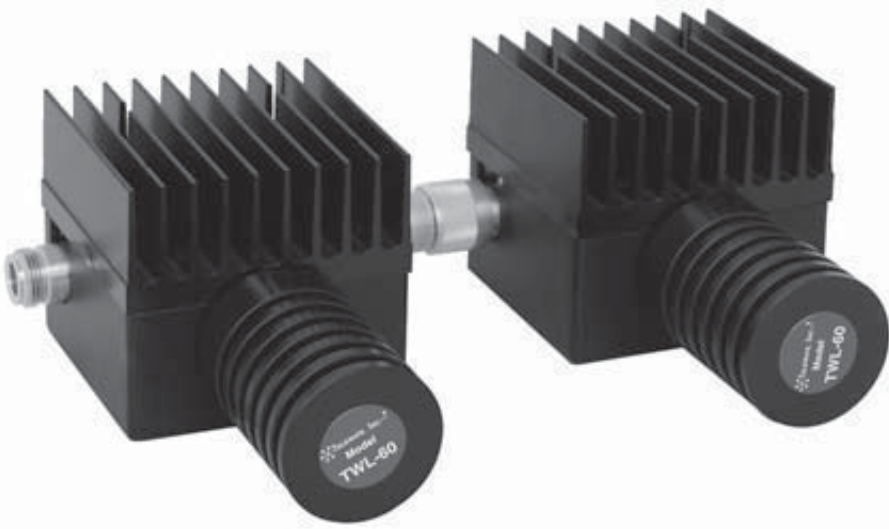
All Telewave isolators are manufactured and tested in our own plant to the highest quality standards. These isolators handle up to 115 watts of continuous power, with several different load options. One or two removeable 60 watt loads are included in the basic configuration. Higher power load options can be specified with an order.

Telewave isolators are magnetically compensated to allow mounting on any surface without significant detuning. Circulation direction may be specified for special mounting situations. To prevent radiation of harmonics, a cavity or harmonic filter should be placed between the isolator and the antenna.

NOTE: ISOLATORS ARE FACTORY TUNABLE ONLY, AND ARE BUILT FOR A SPECIFIC FREQUENCY.
ISOLATION DATA IS MEASURED WITH POWER APPLIED.



T-1530M SINGLE ISOLATOR



T-1560M DUAL ISOLATOR

SPECIFICATIONS		T-1530M	T-1560M
Frequency band	148-174 MHz	Isolator type	Single
Input power (continuous)	115 watts	Isolation (typ. / min)	35 dB / 30 dB
VSWR (typ.)	1.3:1	Insertion loss (typ.)	0.5 dB
Impedance	50 ohms	Load(s) included	(1) 60 W
Connectors	N Female	Dimensions (incl. loads) in.	4 x 5.4 x 2.75
Temperature range	-30°C to +60°C	cm	10.2 x 13.7 x 7
		Weight lb. (kg)	3 (1.4)
			6 (2.7)

T-2230 / T-2260 FERRITE ISOLATORS

Telewave Single and Dual Ferrite Isolators prevent intermodulation, and protect transmitters from high VSWR or mistuned filtering devices by providing a constant 50 ohm impedance. All Telewave isolators are manufactured and tested in our own plant to the highest quality standards. These isolators handle up to 100 watts of power, with several different load options. All Telewave isolators include one or two removeable 35 watt loads in the basic configuration. Typical tuning range is up to ± 5 MHz from the original center frequency, and typical isolation is 35 dB for single, and 70 dB for dual.

NOTE: Isolators have limited bandwidth and tuning range. Each isolator is manufactured for a specific range and tuned to a specific frequency. Please specify the exact desired operating frequency and special load requirements with the order.



T-2230 SINGLE ISOLATOR



T-2260 DUAL ISOLATOR

BENEFITS

Under adverse conditions, the isolator performs several critical functions:

Broken Antenna, Damaged Cable, High VSWR

All of these conditions will cause large amounts of power to be reflected down the transmission line toward the transmitter. The circulatory property of the isolator will direct this energy to the load port, and protect the transmitter. The load on the isolator must be capable of handling full transmitter power. Age, water invasion, and incorrect cable length will also cause impedance changes. The tuned ports of the isolator provide a constant 50 ohm impedance for the transmitter to avoid overheating and oscillation.

Intermodulation

When RF energy from a strong nearby signal source enters a transmitter via the antenna, mixing with the primary transmitter frequency often occurs, resulting in the radiation of new, undesired signals. The isolator antenna port reflects out-of-band energy back to the antenna. In-band energy enters the isolator, and is circulated to the output load. No energy from nearby transmitters enters the protected transmitter from the antenna, and intermodulation can be eliminated.

SPECIFICATIONS			T-2230	T-2260
Frequency band	216-252 MHz	Isolator type	Single	Dual
Tuning range (typ.)	± 5 MHz	Isolation (typ. / min)	35 dB / 30 dB	70 dB / 60 dB
Input power	100 watts	Insertion loss (typ.)	0.4 dB	0.8 dB
VSWR (typ.)	1.25:1	Load(s) included	(1) 35 W	(2) 35 W
Impedance	50 ohms	Dimensions (incl. loads) in.	4.5 x 4 x 2	6.5 x 4.5 x 2
Connectors	N Female	cm	11.5 x 10 x 5	16.5 x 11.5 x 5
Temperature range	-30°C to +60°C	Weight lb. (kg)	1.5 (1.4)	6 (2.7)

T-3530 / T-3560 FERRITE ISOLATORS

Telewave Single and Dual Ferrite Isolators prevent intermodulation, and protect transmitters from high VSWR or mistuned filtering devices by providing a constant 50 ohm impedance. All Telewave isolators are manufactured and tested in our own plant to the highest quality standards. These isolators handle up to 150 watts of power, with several different load options. All Telewave isolators include one or two removeable 35 watt loads in the basic configuration. Typical tuning range is up to ± 5 MHz from the original center frequency, and typical isolation is 35 dB for single, and 70 dB for dual.

NOTE: Isolators have limited bandwidth and tuning range. Each isolator is manufactured for a specific range and tuned to a specific frequency. Please specify the exact desired operating frequency and special load requirements with the order.

BENEFITS

Under adverse conditions, the isolator performs several critical functions:

Broken Antenna, Damaged Cable, High VSWR

All of these conditions will cause large amounts of power to be reflected down the transmission line toward the transmitter. The circulatory property of the isolator will direct this energy to the load port, and protect the transmitter. The load on the isolator must be capable of handling full transmitter power. Age, water invasion, and incorrect cable length will also cause impedance changes. The tuned ports of the isolator provide a constant 50 ohm impedance for the transmitter to avoid overheating and oscillation.

Intermodulation

When RF energy from a strong nearby signal source enters a transmitter via the antenna, mixing with the primary transmitter frequency often occurs, resulting in the radiation of new, undesired signals. The isolator antenna port reflects out-of-band energy back to the antenna. In-band energy enters the isolator, and is circulated to the output load. No energy from nearby transmitters enters the protected transmitter from the antenna, and intermodulation can be eliminated.



T-3530 SINGLE ISOLATOR



T-3560 DUAL ISOLATOR

SPECIFICATIONS		T-3530	T-3560	
Frequency band	300-400 MHz	Isolator type	Single	Dual
Tuning range (typ.)	± 5 MHz	Isolation (typ. / min)	35 dB / 30 dB	70 dB / 60 dB
Input power	150 watts	Insertion loss (typ.)	0.4 dB	0.8 dB
VSWR (typ.)	1.25:1	Load(s) included	(1) 35 W	(2) 35 W
Impedance	50 ohms	Dimensions (incl. loads) in.	4.5 x 4 x 2	6.5 x 4.5 x 2
Connectors	N Female	cm	11.5 x 10 x 5	16.5 x 11.5 x 5
Temperature range	-30°C to +60°C	Weight lb. (kg)	3 (1.4)	6 (2.7)

T-4530 / T-4560 FERRITE ISOLATORS

Telewave Single and Dual Ferrite Isolators prevent intermodulation, and protect transmitters from high VSWR or mistuned filtering devices by providing a constant 50 ohm impedance. All Telewave isolators are manufactured and tested in our own plant to the highest quality standards. These isolators handle up to 150 watts of power, with several different load options. All Telewave isolators include one or two removeable 35 watt loads in the basic configuration. Typical tuning range is up to ± 5 MHz from the original center frequency, and typical isolation is 35 dB for single, and 70 dB for dual.

NOTE: Isolators have limited bandwidth and tuning range. Each isolator is manufactured for a specific range and tuned to a specific frequency. Please specify the exact desired operating frequency and special load requirements with the order.

BENEFITS

Under adverse conditions, the isolator performs several critical functions:

Broken Antenna, Damaged Cable, High VSWR

All of these conditions will cause large amounts of power to be reflected down the transmission line toward the transmitter. The circulatory property of the isolator will direct this energy to the load port, and protect the transmitter. The load on the isolator must be capable of handling full transmitter power. Age, water invasion, and incorrect cable length will also cause impedance changes. The tuned ports of the isolator provide a constant 50 ohm impedance for the transmitter to avoid overheating and oscillation.



T-4530 SINGLE ISOLATOR



CAVITY-MOUNT ISOLATOR



T-4560 DUAL ISOLATOR

Intermodulation

When RF energy from a strong nearby signal source enters a transmitter via the antenna, mixing with the primary transmitter frequency often occurs, resulting in the radiation of new, undesired signals. The isolator antenna port reflects out-of-band energy back to the antenna. In-band energy enters the isolator, and is circulated to the output load. No energy from nearby transmitters enters the protected transmitter from the antenna, and intermodulation can be eliminated.

SPECIFICATIONS			T-4530	T-4560
Frequency band	400-512 MHz	Isolator type	Single	Dual
Tuning range (typ.)	± 5 MHz	Isolation (typ. / min)	35 dB / 30 dB	70 dB / 60 dB
Input power	150 watts	Insertion loss (typ.)	0.4 dB	0.7 dB
VSWR (typ.)	1.25:1	Load(s) included	(1) 35 W	(2) 35 W
Impedance	50 ohms	Dimensions (incl. loads) in.	4.5 x 4 x 2	6.5 x 4.5 x 2
Connectors	N Female	cm	11.5 x 10 x 5	16.5 x 11.5 x 5
Temperature range	-30°C to +60°C	Weight lb. (kg)	3 (1.4)	6 (2.7)

T-7530 / T-7560 FERRITE ISOLATORS

Telewave Single and Dual Ferrite Isolators prevent intermodulation, and protect transmitters from high VSWR or mistuned filtering devices by providing a constant 50 ohm impedance. All Telewave isolators are manufactured and tested in our own plant to the highest quality standards. These isolators handle up to 150 watts of power, with several different load options. All Telewave isolators include one or two removeable 35 watt loads in the basic configuration. Typical tuning range is up to ± 6 MHz from the original center frequency, and typical isolation is 35 dB for single, and 70 dB for dual.

NOTE: Isolators have limited bandwidth and tuning range. Each isolator is manufactured for a specific range and tuned to a specific frequency. Please specify the exact desired operating frequency and special load requirements with the order.

BENEFITS

Under adverse conditions, the isolator performs several critical functions:

Broken Antenna, Damaged Cable, High VSWR

All of these conditions will cause large amounts of power to be reflected down the transmission line toward the transmitter. The circulatory property of the isolator will direct this energy to the load port, and protect the transmitter. The load on the isolator must be capable of handling full transmitter power. Age, water invasion, and incorrect cable length will also cause impedance changes. The tuned ports of the isolator provide a constant 50 ohm impedance for the transmitter to avoid overheating and oscillation.

Intermodulation

When RF energy from a strong nearby signal source enters a transmitter via the antenna, mixing with the primary transmitter frequency often occurs, resulting in the radiation of new, undesired signals. The isolator antenna port reflects out-of-band energy back to the antenna. In-band energy enters the isolator, and is circulated to the output load. No energy from nearby transmitters enters the protected transmitter from the antenna, and intermodulation can be eliminated.



T-7530 SINGLE ISOLATOR



T-7560 DUAL ISOLATOR

SPECIFICATIONS		T-7530	T-7560	
Frequency band	700-806 MHz	Isolator type	Single	Dual
Tuning range (typ.)	± 6 MHz	Isolation (typ. / min)	35 dB / 30 dB	70 dB / 60 dB
Input power	150 watts	Insertion loss (typ.)	0.4 dB	0.8 dB
VSWR (typ.)	1.25:1	Load(s) included	(1) 35 W	(2) 35 W
Impedance	50 ohms	Dimensions (incl. loads) in.	4.5 x 4 x 2	6.5 x 4.5 x 2
Connectors	N Female	cm	11.5 x 10 x 5	16.5 x 11.5 x 5
Temperature range	-30°C to +60°C	Weight lb. (kg)	3 (1.4)	6 (2.7)

T-8630 / T-8660 FERRITE ISOLATORS

Telewave Single and Dual Ferrite Isolators prevent intermodulation, and protect transmitters from high VSWR or mistuned filtering devices by providing a constant 50 ohm impedance. All Telewave isolators are manufactured and tested in our own plant to the highest quality standards. These isolators handle up to 150 watts of power, with several different load options. All Telewave isolators include one or two removeable 35 watt loads in the basic configuration. Typical tuning range is up to ± 6 MHz from the original center frequency, and typical isolation is 35 dB for single, and 70 dB for dual.

NOTE: Isolators have limited bandwidth and tuning range. Each isolator is manufactured for a specific range and tuned to a specific frequency. Please specify the exact desired operating frequency and special load requirements with the order.

BENEFITS

Under adverse conditions, the isolator performs several critical functions:

Broken Antenna, Damaged Cable, High VSWR

All of these conditions will cause large amounts of power to be reflected down the transmission line toward the transmitter. The circulatory property of the isolator will direct this energy to the load port, and protect the transmitter. The load on the isolator must be capable of handling full transmitter power. Age, water invasion, and incorrect cable length will also cause impedance changes. The tuned ports of the isolator provide a constant 50 ohm impedance for the transmitter to avoid overheating and oscillation.

Intermodulation

When in-band or out-of-band RF energy from a strong nearby signal source enters a transmitter via the antenna, mixing with the primary transmitter frequency often occurs, resulting in the radiation of new, undesired signals. The isolator antenna port reflects out-of-band energy back to the antenna. In-band energy enters the isolator, and is circulated to the output load. No energy from nearby transmitters enters the protected transmitter from the antenna, and intermodulation can be eliminated.



T-8630 SINGLE ISOLATOR



T-8660 DUAL ISOLATOR

SPECIFICATIONS			T-8630	T-8660
Frequency band	806-960 MHz	Isolator type	Single	Dual
Tuning range (typ.)	± 6 MHz	Isolation (typ. / min)	35 dB / 30 dB	70 dB / 60 dB
Input power	150 watts	Insertion loss (typ.)	0.4 dB	0.8 dB
VSWR (typ.)	1.25:1	Load(s) included	(1) 35 W	(2) 35 W
Impedance	50 ohms	Dimensions (incl. loads) in.	4.5 x 4 x 2	6.5 x 4.5 x 2
Connectors	N Female	cm	11.5 x 10 x 5	16.5 x 11.5 x 5
Temperature range	-30°C to +60°C	Weight lb. (kg)	3 (1.4)	6 (2.7)

HIGH POWER ISOLATORS

SINGLE AND DUAL STAGE TO 400 WATTS

Telewave High Power Isolators provide maximum effectiveness in intermodulation suppression. A dual-stage unit can provide as much as 85 dB isolation for adjacent channel suppression, and better than 60 dB across the entire bandwidth. The low loss characteristic of the Telewave design insures maximum power transfer to the antenna system.

Telewave isolators are magnetically compensated to allow mounting on any surface without significant detuning. Circulation direction may be specified for special mounting situations. To prevent radiation of harmonics, a cavity or harmonic filter should be placed between the isolator and the antenna.

Telewave High Power Isolators are available in single or dual stage configurations from 148 to 960 MHz. Power capability of up to 400 watts is available, and many different termination options can be specified.

One or two removable 60 watt loads are supplied standard. Optional loads to 300 watts are available. Consult Telewave with load requirements, and special mounting or mechanical configurations.



T-1530H



T-1560H



T-4530H



T-4560H



T-8660H

NOTE: HIGH POWER ISOLATORS ARE NOT FIELD TUNABLE, AND ARE MANUFACTURED FOR A SPECIFIC FREQUENCY.

ISOLATION DATA IS MEASURED WITH POWER APPLIED.

SPECIFICATIONS		T-1530H	T-1560H	T-4530H	T-4560H	T-8660H
Isolator type		Single	Dual	Single	Dual	Dual
Frequency range (MHz)		148-174	148-174	440-475	440-475	806-960
Isolation (typ.)		35 dB	65 dB	35 dB	80 dB	70 dB
Isolation (min)		30 dB	55 dB	30 dB	60 dB	60 dB
Insertion loss (typ.)		0.6 dB	0.9 dB	0.5 dB	0.8 dB	0.8 dB
VSWR (typ.)				1.25:1		
Maximum power		300 W	300 W	400 W	400 W	300 W
Connectors		N Female				
Temperature		-30 to +60 °C				
Dimensions incl. loads	in.	6.75 x 5 x 2.625	9.75 x 6.75 x 2.75	6.5 x 5.25 x 2.5	9 x 6.5 x 2.5	6.5 x 5.25 x 2.75
	cm	17.1 x 12.7 x 6.7	24.8 x 17.1 x 7	16.5 x 13.3 x 6.4	22.9 x 16.5 x 6.4	16.5 x 13.3 x 7

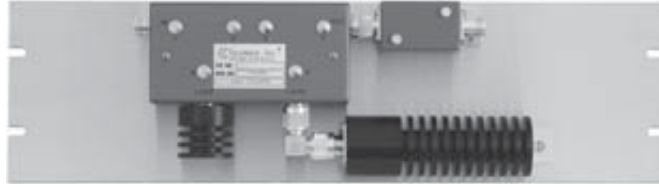
TS150, 220, 350, 450, 760, 900 SERIES INTERMOD SUPPRESSION PANELS

Telewave Intermod Suppression Panels provide a simple, affordable, high-performance solution for cleaning up interference at congested radio sites, when a full combining system may not be cost-effective. In addition to controlling transmitter intermodulation, IM Panels also greatly reduce transmitter maintenance and expensive repairs by providing a constant 50 ohm load, protecting the transmitter from opens, shorts, or other faults in the antenna system.

Telewave IM Panels do not rely on any cables or other lossy interconnections, other than to the transmit chain. Each standard or custom panel includes one or more isolators with appropriate terminations, and a low-pass filter.

Each panel is factory tuned to specific frequencies supplied with the order. All 100 and 150 watt units are field tunable by approximately $\pm 3-6$ MHz depending on frequency, and include complete tuning instructions. No specialized equipment is required.

150 watt units ship with a 35 watt primary load, and a 50 watt termination on the antenna isolation (2nd) port. 300 and 400 watt units ship with a 100 watt second stage termination, and are not field tunable. Center frequency and load requirements must be specified when ordering. Contact Telewave if additional information or assistance is required.



TS450PB1



TS150PB2-SP

COMMON SPECIFICATIONS

Tuning range (100-150 W units only)	$\pm 3-6$ MHz (depending on freq.)
Impedance (nom.)	50 ohms
VSWR (max)	1.3:1
Harmonic attenuation (min)	60 dB
Connectors	N Female

MODEL	FREQ. RANGE	INPUT POWER	ISOLATION (dB) TYP	INS. MIN	LOSS (dB) TYP	PANEL HEIGHT	LOAD POWER
TS150PA1	118-174	100 W	38	30	0.6	5.25 in.	50 W
TS150PB1	118-174	100 W	75	60	0.9	5.25 in.	50 W
TS150PA2	148-174	300 W	30	21	0.7	8.75 in.	100 W
TS150PB2	148-174	300 W	60	42	1.0	8.75 in.	100 W
TS220PA1	216-250	100 W	38	30	0.6	5.25 in.	50 W
TS220PB1	216-250	100 W	75	60	0.9	5.25 in.	50 W
TS350PA1	300-400	150 W	38	30	0.6	5.25 in.	50 W
TS350PB1	300-400	150 W	75	60	0.9	5.25 in.	50 W
TS450PA1	400-512	150 W	38	30	0.5	5.25 in.	50 W
TS450PB1	400-512	150 W	75	60	0.8	5.25 in.	50 W
TS450PA2	440-475	400 W	38	30	0.6	8.75 in.	100 W
TS450PB2	440-475	400 W	75	60	0.9	8.75 in.	100 W
TS760PA1	763-869	150 W	38	30	0.6	5.25 in.	50 W
TS760PB1	763-869	150 W	75	60	0.6	5.25 in.	50 W
TS760PB2	763-869	300 W	75	60	0.9	8.75 in.	100 W
TS900PA1	806-960	150 W	38	30	0.6	5.25 in.	50 W
TS900PB1	806-960	150 W	75	60	0.9	5.25 in.	50 W
TS900PB2	806-960	300 W	75	60	0.9	8.75 in.	100 W

THRP-1548, 4548, 7648, 8648 HIGH PERFORMANCE REPEATER PANEL

The Telewave High Performance Repeater Panel greatly improves the effective sensitivity and selectivity of a repeater receiver for extended mobile and portable coverage, and provides maximum intermodulation protection for the transmitter.

The THRP panel uses a dual isolator with a 50 watt termination on the second stage output, and a low pass filter for transmitter IM protection. This combination provides more than 60 dB of IM protection over a ± 5 MHz bandwidth, and transmitter 2nd harmonic attenuation of over 50 dB.

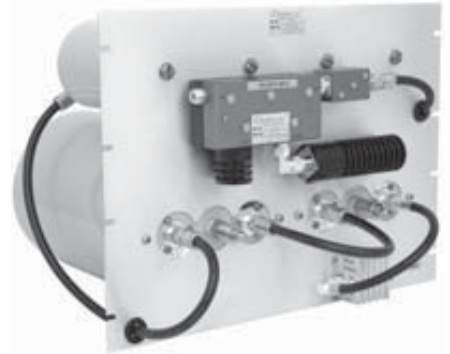
The duplexer utilizes four 4" cavities in a pass/reject configuration. This duplexer has only 1.8 dB insertion loss, and provides over 110 dB isolation. The receiver side of the duplexer is interconnected to two 8" high "Q" bandpass cavities, to form a narrow pass-band preselector.

The output of the preselector is coupled to one of two types of low-noise preamplifiers. The standard configuration uses a TLA series low-noise bipolar preamp. This preamp is recommended for areas that are prone to lightning damage or high ambient signal levels.

The optional TGA series preamps use a PHEMT amplifier for higher sensitivity. This preamp is recommended for sites with low existing RF noise levels.

The THRP series puts all this equipment on one 14" x 19" panel, pretuned and ready to install. The total price is less than if the equipment was purchased separately, and requires less rack space.

FREQUENCY RANGES	
THRP-1548	138 - 174 MHz
THRP-4548	400 - 512 MHz
THRP-7648	763 - 869 MHz
THRP-8648	806 - 960 MHz



THRP-7648 FRONT



THRP-7648 BACK

SPECIFICATIONS		PREAMP	Bipolar	PHEMT (opt.)
Frequency range	138-960 MHz	Gain - Antenna to RX	+8 to +20 dB	+8 to +15 dB
Frequency separation (min)	3 MHz	Noise figure (typ.)	2.5 dB	0.7 dB
Power input (continuous)	125 watts	3rd order intercp.	+35 dBm	+25 dBm
VSWR (max)	1.22:1	Input power	+12 to +24 VDC	+9 to +18 VDC
TX-RX isolation (typ.)	110 dB	Current (typ.)	170 mA	40 mA
Insertion loss TX to Antenna (typ.)	1.8 dB			
TX 2nd harmonic attn. (typ.)	50 dB			
Antenna to TX isolation (typ.)	75 dB at 5 MHz			
RX-TX isolation (typ.)	120 dB			
Temperature range	-30°C to +40°C			
Connector type	N Female			
Finish	Grained aluminum			
Dimensions (HWD) in. (cm)	14 x 19 x 12 (35.6 x 48.3 x 30.5)			
Net weight lb. (kg)	25 (11.4) (400-860 MHz)			