General Information NavSat® System

NavSat® products are an enhancement and complement to the line of traditional Naval products for radio and TV reception. NavSat® products improve the quality of terrestrial radio/TV reception and distribution and also add satellite TV capability. For more general information on satellite TV please refer to the Naval booklet "Facts about satellite TV at sea".

Improvement of terrestrial TV reception

Terrestrial TV reception can be improved compared to a standard system in two principal ways:

- Add an automatic directional antenna.
- Introduce channel processors for each TV channel desired.

Working principle of the terrestrial directional antenna

The TDA-3 antenna is a special, log-periodic directional antenna that covers all TV bands and has a rotor mechanism to keep it constantly aimed at the TV transmitter. With the directional antenna, a higher antenna gain is achieved and reflections from foreign objects are reduced. The control signal for aiming the antenna is derived from the antenna control unit with necessary input from the ship's gyro and GPS. The ACU needs to be pre-programmed with available transmitter locations and frequencies.

Benefits of satellite TV reception

Satellite TV reception is obviously a great addition to terrestrial TV reception in many ways:

- It significantly increases the available number of TV and radio channels.
- It significantly increases the areas where TV can be watched.
- The quality of satellite TV picture is generally superior to what can be achieved with a normal omni-directional antenna.

Working principle of the satellite antennas

The satellite antennas are more complex than the terrestrial antenna because they have to be much more accurate and aimed accurately at the satellite. As an example, there is actually a much higher accuracy required for satellite TV reception than for Inmarsat M. The TV antenna must usually be aimed with less than one degree error. This accuracy is achieved by a ingenious touchless control system and by measuring the signal reference from the satellite with a conical scan unit.

Satellite receiver and terrestrial channel processor

The satellite receiver and the channel processor for terrestrial reception operate on the same basic principle. The signal is received by the antenna and passed on to the tuner or demodulator. The signal is then converted to an intermediate frequency or to separate audio and video signals. These signals are then usually further processed and converted back to a radio frequency signal by a modulator. The RF signal can then be distributed over the ship's regular distribution network.⇒

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Since 1971, the objective of Naval Electronics has been to offer the best possible products for TV and Radio reception at sea. Naval began with omnidirectional antennas and is the world leader in this field of technology today. Now, with an expanded product range, the name Naval means much more than antennas. Naval operates in more than 40 countries and has installations on thousands of vessels all over the world.

All specifications stated are subject to change without notice.

Naval®
Marine Broadband Communication

SS-EN ISO 9001

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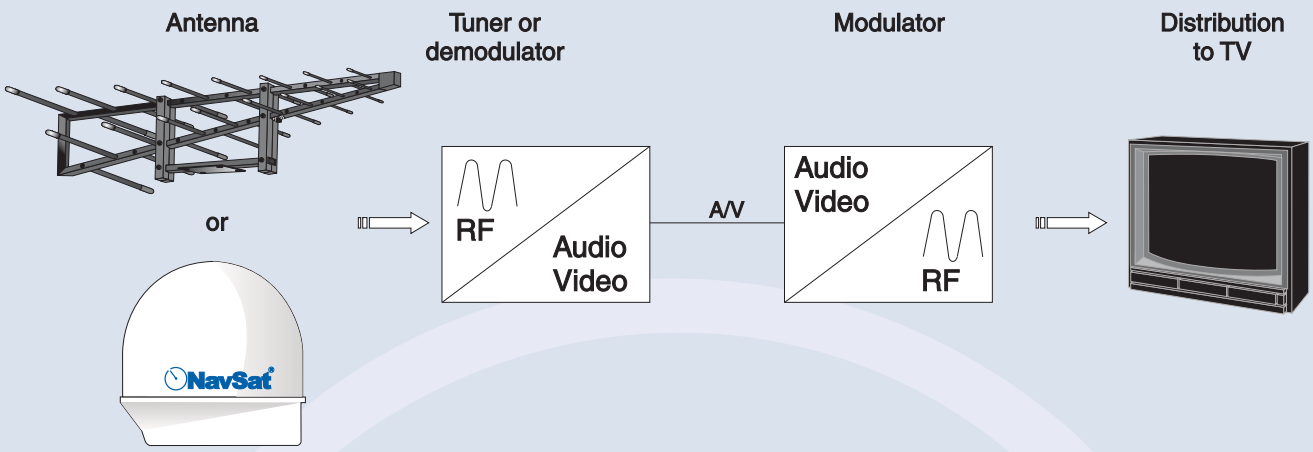

Terrestrial world-wide reception with channel processor
By using a multi standard demodulator and passing its IF frequency directly, without converting to audio/video, to the modulator, all TV systems can be received on a multi-standard TV without conversion or without changing output modulator types.

Satellite world-wide reception with Digital Multi System Converter
Many satellite receivers are capable of receiving both PAL and NTSC transmissions. The problem for world-wide reception is in the modulator, which is generally either PAL or NTSC. Thus normally the receiver must be either PAL, NTSC or SECAM or dual receivers must be used. There are ways around this, with the Naval Digital Multi System Converter, that will convert either PAL,SECAM or NTSC system to PAL or NTSC.
With such a system reception is available around all continents with a single receiver system. Sometimes TV channels are coded or digital. Decoders and digital receivers can be added to decode and transmit the signal to the ship's network.

Distribution system for satellite TV
There are a few pitfalls with the satellite TV distribution system that need to be avoided. First of all it is preferable to modulate the output of satellite channels to the hyperband channels which in Europe are called S channels. The reason is to avoid interference from terrestrial TV, since no terrestrial channels are transmitted on these frequencies.
If the S channels cannot be used, the corresponding
TV channels must be filtered away to avoid interference.

Multi-switch technique for satellite TV distribution
On land based applications the multi-switch technique is used in small networks. This can be used for ships too, but it is not possible to combine AM radio, terrestrial TV and satellite TV in one cable system. Our experience is generally that separating the satellite TV system from the terrestrial TV and radio system works best on a ship.

Expert advice
To avoid problems with the design of the network Naval is always giving advice free of charge how to best design a system that fits your specific needs.