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HANDBOOK FOR MARINE AMPLIFIER SYSTEM ARGO A-1



Handbook rev. no. 01

MARINE AMPLIFIER SYSTEM ARGO A-1

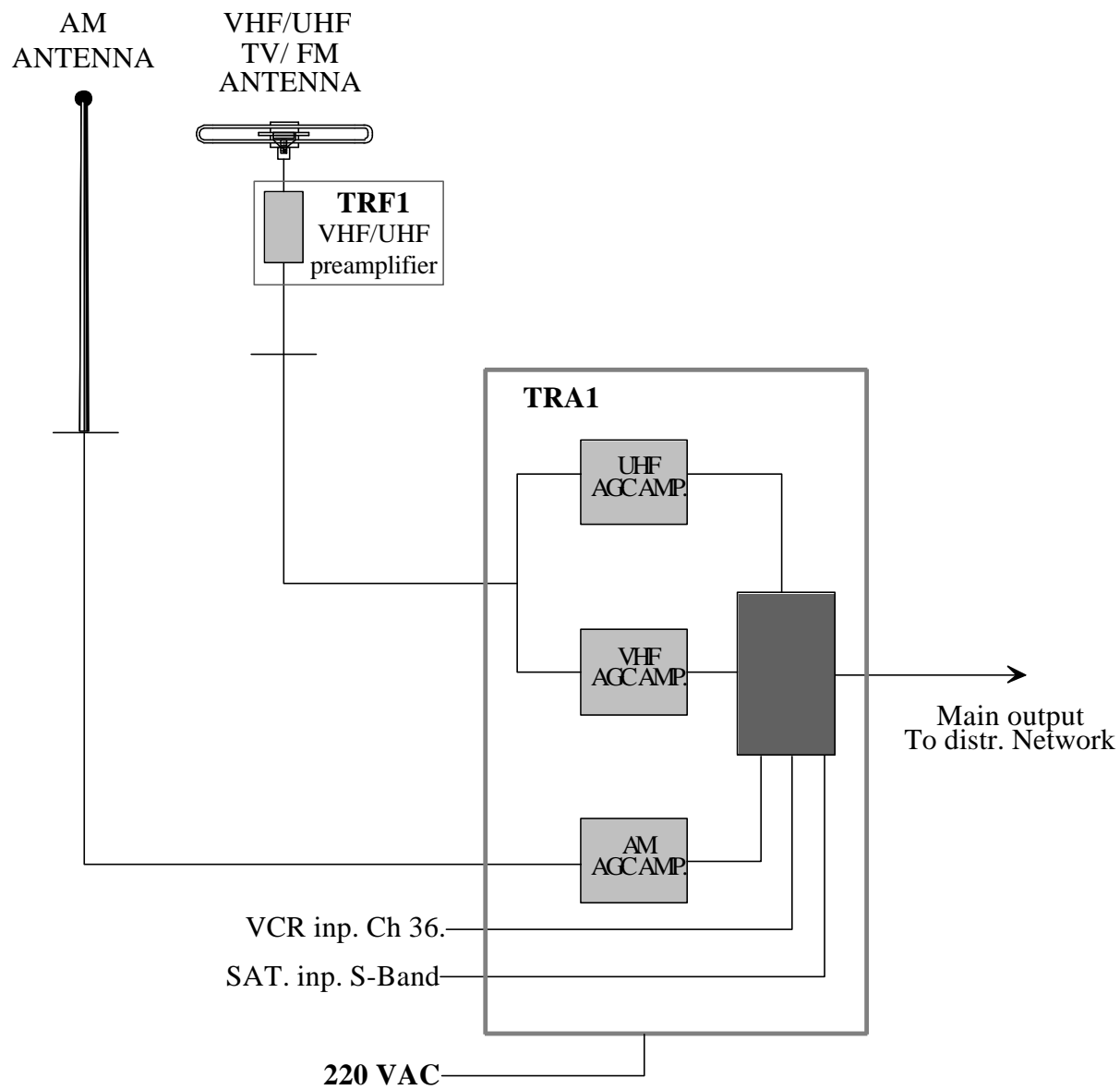
SYSTEM DESCRIPTION.

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1. General Description

Argo system **A1** consist of **TRF1** preamplifier and **TRA1** main AGC amplifier. The excellent performance of the ARGO system A1 can be attributed to the design principles on which the construction of the amplifier is based. The ARGO system A 1 is designed to receive, amplify and distribute broadcasted radio and TV signals at sea. The ARGO system A 1 is based on the same technology as the ARGO system A2000. It has the same sensitivity to weak signals and the same ability to treat strong signals. The ARGO system A 1 is the obvious choice for vessels that require a high quality reception of weak and strong signals simultaneously when the ship is near land. Argo A1 is built in compact design and easy to install. All in and output are located at the same side. Some new features are complimented; -a input for satellite, S band area (250 – 450 Mhz). -a Video input, channel 36 (592 – 598 Mhz). Argo A1 uses one TV/FM receiving antenna and a wideband preamplifier TRF1. The TRF1 preamplifier has built in two frequency traps to prevent interference from the Maritime VHF transmitter and NMT 450 cellular phone. TRF1 preamplifier cover both VHF TV/FM and UHF TV frequency and has a gain from 17 to 20 dB. In the cable, which are connected between TRF1 preamplifier and TRA1 main amplifier, the preamplifier gets power and the TV/FM signal to the main amplifier. A green LED are located beside the VHF/UHF input on the TRA1 main amplifier. This LED functions as a built in self test of the cable and connection between the preamplifier and the main amplifier. If there is no contact, **the LED gives a strong light**. If there is a short circuit, **the LED don't give any light** and if the connection is good and the preamplifier functions as it should, **the LED gives a weak light**. TRA1 has a output market "TEST output". By connecting a field meter or a TV, it is possible to check the level or quality of the incoming signal from the TV/FM receiving antenna and the TRF1 preamplifier. TRA1 has one input for satellite, Note! Covers only S band area. TRA1 has one input for video (VCR), Note! Only channel 36. TRA1 has one input for AM antenna. TRA1 has built in AGC control. This keep the output level constant. For AM at 100 dB μ V, for VHF TV and FM 105 dB μ V and for UHF TV 110 dB μ V. Argo A1 system is able to run up to 40 antenna outlets directly. If the distribution network is larger, a Argo TRDA wideband distr. Amplifier is needed.

Blockdiagram Argo A1



2. List of unites in A-1 system

- 1 pc TRA1 main amplifier
- 1 pc TYRF1 preamplifier
- 1 pc Power cable, to be connected to 90 – 240 VAC
Note! Make sure that the cable is connected to an
Contact with proper grounding.

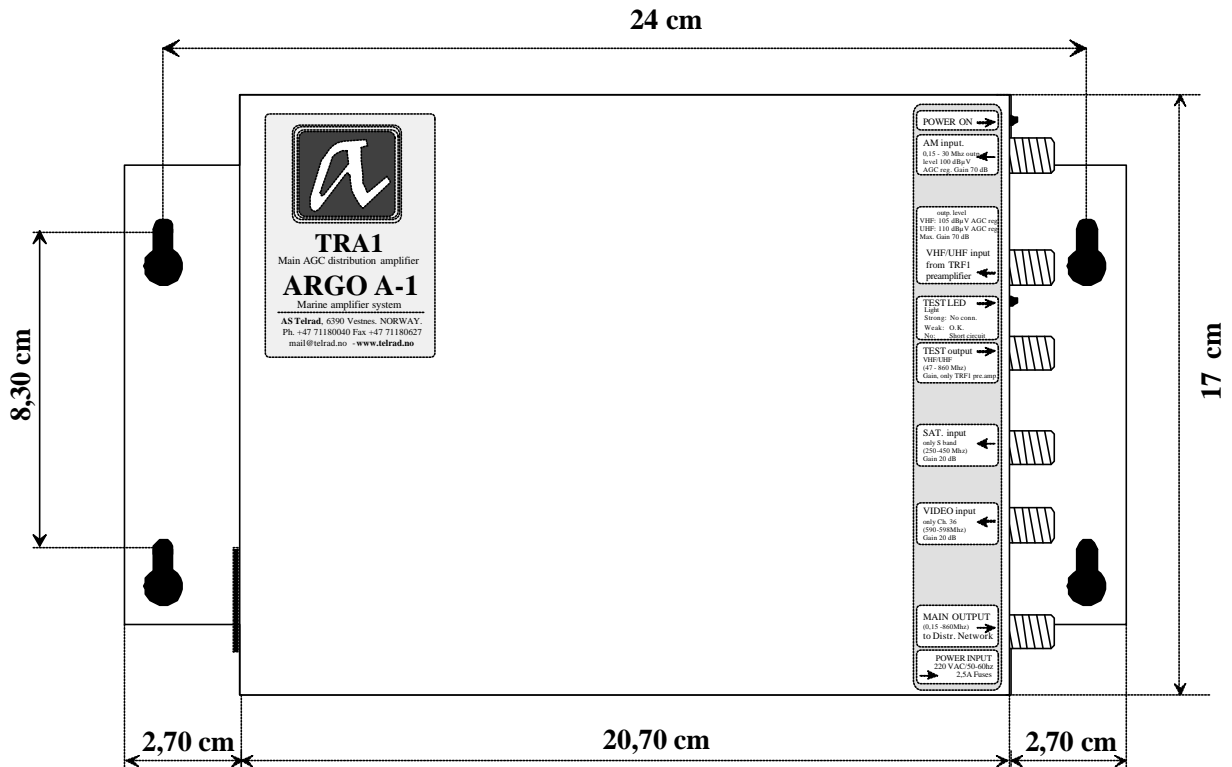
Sub unites in A-1 system

- 1 pc AM receiving whip antenna
- 1 pc TV/FM receiving antenna

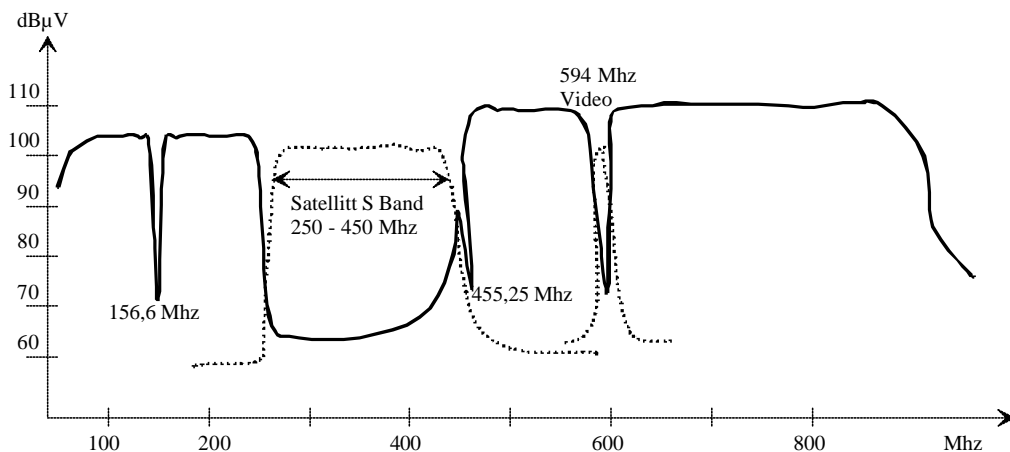
3. TRA1 main amplifier unit

TRA1 is the main amplifier in the Argo A1 system. Install the TRA1 main amplifier as close to the antenna as possible. Avoid placing it in rooms with high current cables, generators etc. Corroding environments should also be avoided. Make sure the amplifier is sufficiently grounded.

Dimension / Mounting TRA1



Frequency response / Output level Argo A 1



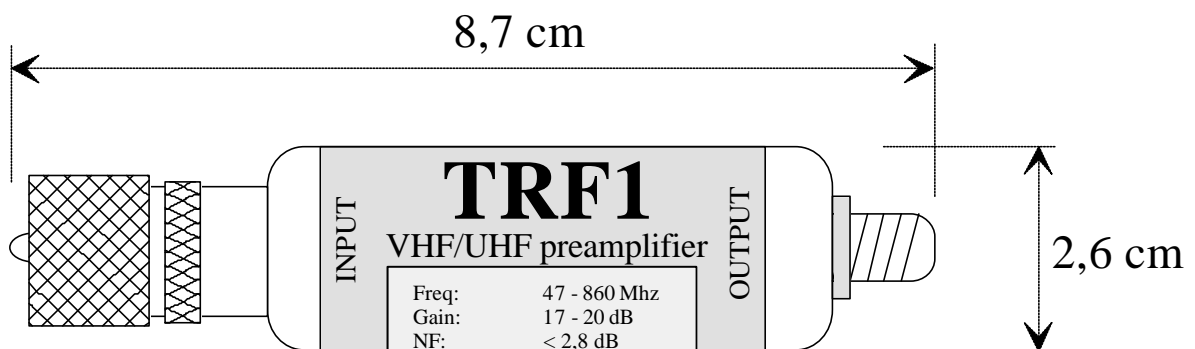
TRF1 preamplifier unit



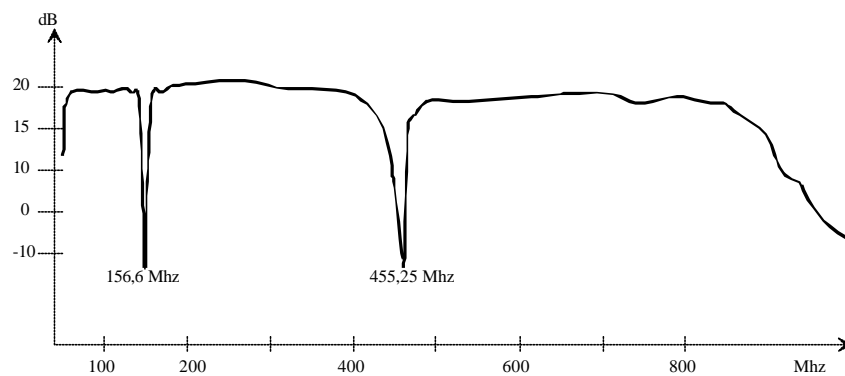
TRF1 is a preamplifier in the ARGO A1 system.

TRF1 is power supplied either from TRA1 main amplifier in a std. system or TRPF power feed in a system with only pre-amplifier, ex. implemented in a existing / older system. TRF1 cannot be supplied from other equipment than these ARGO units.

Dimensjon TRF1



Frequency response / Gain TRF1



5. Installation

Antenna system in general.

Radio and TV frequency reception on board a ship is characterized by:

- WEAK SIGNALS (NOISE PROBLEMS).
- STRONG SIGNALS (DISTORTION PROBLEMS).
- A MIXTURE OF WEAK AND STRONG SIGNALS (INTERFERENCE PROBLEMS).
- SLOW VARIATIONS IN SIGNAL STRENGTH (FADING).
- RAPID FLUCTUATIONS IN SIGNAL STRENGTH.
- MULTIPATH RECEPTION (REFLECTIONS FROM SEA SURFACE).
- A NEED FOR OMNIDIRECTIONAL ANTENNA.

The different forms of signal variations and scenarios are due to:

- THE MANEUVERING AND ROLLING OF THE SHIP.
- THE MOVEMENT OF THE SHIP.
- REFLECTIONS FROM THE SEA SURFACE.
- ATMOSPHERIC CHANGES.
- REFLECTIONS AND ABSORPTION DUE TO MASTS ETC.

Other problems worth considering are:

- MAN MADE NOISE (GENERATORS, REGULATORS ETC.).
- ON - SHIP TRANSMITTERS.
- VARIATIONS IN POWER SUPPLY, INCL. OVER VOLTAGE.
- LIGHTENING.
- EARTHING PROBLEMS.
- CLIMATE (CORROSION).
- MECHANICAL VIBRATIONS.

TRF1 preamplifier

Mount the TRF1 preamplifier directly to the TV/FM antenna. TRF1 can also be mounted to a directive antenna. TRF1 is doubly protected against static charge and strong signals from the main transmitter on board the vessel. After installing the preamplifier, the connectors should be thoroughly covered with vulcanization tape. (**NB! Apply the tape from the bottom up.**)

TRA1 main amplifier

TRA1 is the main amplifier in the Argo A1 system. Install the TRA1 main amplifier as close to the antenna as possible. Avoid placing it in rooms with high current cables, generators etc. Corroding environments should also be avoided. Make sure the amplifier is sufficiently grounded

AM receiving antenna / TV/FM receiving antenna

Install the antennas as instructed by the manufacturer. They should be placed as high up as possible and have as large distance as possible from any transmitting aerial, any mast or other equipment.

Grounding

Make sure that the main power cable (220 VAC) are connected in a grounded electric outlet. A separate grounding cable can be install to avoid oscillation, specially in the AM frequency area. The cable should be as short as possible.

Blocking from main transmitter

Since the Argo equipment is built to stand against the strong signal from the main transmitter, a blocking of the system is not needed. However should the surroundings make it wise, or it is a demand from the ship owners / shipyard, mount a blocking relay between the TRF1 preamplifier and the TRA1 main amplifier. Do the same on the cable between the AM antenna and the AM input on TRA1.

6. Technical data

Technical data TRA1

Gain AM:	70 dB
Frequency range AM:	0,15 – 30 Mhz
AGC area AM:	70 dB
Output level AM:	100 dB μ V
Gain VHF:	70 dB
Frequency range VHF:	47 – 230 Mhz
AGC area VHF:	70 dB
Output level VHF	105 dB μ V
Gain UHF:	70 dB
Frequency range UHF:	470 – 860 Mhz
AGC area UHF:	70 dB
Output level UHF:	110 dB μ V
Frequency range satellite	300 – 450 Mhz
Gain Satellite:	20 dB
Frequency range Video:	592 – 598 Mhz (K-36)
Gain Video:	20 dB
Weight:	1 kg
Power supply:	220 VAC / 50 – 60 Hz

Technical data TRF1

Gain:	17 – 20 dB
Frequency range:	47 – 860 Mhz
Noise figure:	< 2,8 dB
1 dB compression:	107 dB μ V
Input / Output impedance:	75 ohm
Frequency trap:	75 ohm
Power supply:	TRA1 or TRPF
Input signal plug:	UHF male connector
Output signal plug:	F - connector
Dimensions:	87x26x26 mm
Weight:	105 g

11. Declaration of manufacturer – CE declaration



DECLARATION OF MANUFACTURER (Manufacturers Declaration)

Manufacturer:
AS Telrad, Vestnesbukt, 6390 Vestnes. NORWAY

Ph. + 47 71180040 Fax. + 47 71180627
e.mail.: mail@telrad.no homepage: www.telrad.no

declare under our sole responsibility that the product(s)

**Argo marine amplifier system A-1,
Argo AM, VHF and UHF wideband distribution amplifier TRDA,**

to which this declaration relates is in conformity with the following
EMC requirements for standards

Emission standards:

EN 50081-2 1992
EN 55022 A
EN 55011

Immunity standards

EN 50082-2 1995
EN 61000-6-2 1999

Following the provision of the EMC Directive 03 05 1989, (89/336/EEC).

Vestnes, Norway date 2001.06.30

AS Telrad/ Phontech Communications AS



ARGO