

ACS-009K

Antenna Control Switch, HF/VHF TX/RX coupler/switch, 1.6-88 MHz
Naval Antennas and Systems: Submarine



Description

This second generation advanced HF switch is based on the proven Comrod product ACS007K. The switch is upgraded with antenna selectors, increased number of IO signals for each transceiver, storage of the last frequency for each TRx port and upgraded CPU.

The updated HF switch supports distribution of frequency information from the transceiver to the antenna controller located in the HF-antenna via RS-485 interface. Key information from the antenna controller will be available from the switches front panel, and via Ethernet. In case frequency information is not available from the Tx, the HF switch will carry out frequency sensing and forward this information to the antenna controller via RS-485. Expected time for a frequency measurement is approximately 1 ms.

The fail-safe relays will provide a fail-safe signal path for TRX1 to the HF antenna whenever power is not present as required for GMDSS equipment. For fail-safe handling of the hand-shake, the fail-safe relays disable the inhibit signal to TRX1, while a constant inhibit signal is issued to the rest of the transceivers.

Relays are added to support the connection of an external 3dB attenuator in the RF path, and to be able to route the RF power directly to an external dummy load. As an alternative for the 3dB attenuator, an external PA or LNA could be used for special operation conditions, or in case of a system failure.

A selector relay is used to choose between two different Rx antennas. In this system, this will be the tuneable HF antenna, and the active HF antenna (e.g. routed through the Comrod RxDU).

This logic provides the control of the switches, including a low level handshake with the transmitters. Any of transceiver may request connection to the HF antenna for transmission by issuing a PTT signal. This request will open the RX switch and close the TX switch (only one TX switch is closed at a time). In case of multiple transceivers requesting transmission, a priority scheme is used to block the non-prioritized transceivers. Blocking includes issuing of inhibit signals and opening both the RX- and TX switches. The priority scheme is part of the configuration data presented from the HF switch computer. As SSB transmission may be used, a delay is introduced before exiting the transmitting state (SSB-delay). This feature is overridden by the priority scheme. When PTT is used the SSB delay will be 0, and when power sensing is used to switch, the selected SSB delay is used. The configuration, as well as the state of the HF switch is displayed on the graphical display. By connecting a keyboard/mouse to the USB interface, a session may be established for configuration and maintenance.

- Advanced transceiver interaction for modern data modes (3G-ALE)
- 5 transceivers to one common tuneable antenna
- External/separate Rx-antenna if needed (option for 8 RX channels)
- Local and remote control via web or SNMP
- Ctrl and Tuner connectors with size 14, 19pins for additional I/O to/from TRx
- Updated Bi-Directional RF-detector with output for frequency counting
- 1kW power handling
- Advanced interface to the Comrod tuneable HF antenna (HF1830S)



Technical Specifications

- Number of transceivers : 5
- TX operation : TX antenna connects to the transmitting TRX
- Priority (default) : TRX1
- TX antenna busy : Transmitting TRX with less priority is left unconnected
- RX operation : TX antenna (or optional RX antenna) is fed to all TRX
- TRX connection : Single – or dual coax for TX/RX signals
- Single/dual coax configuration : Automatic through connector with switch
- Main antenna selector : Ant_Bypass connects to Main antenna when : Aux_Ant1 or Aux_ant_2 is selected
- RX antenna selector : Selects the Main- or Auxiliary RX antenna

TX Signal Path

- Frequency: 1.6 .. 88(30) MHz
- Impedance: 50 Ω
- TX level: 500 W max continuous
- TX level: 1000 W max 1 minute
- Loss: 0.2dB typical 1.6 .. 30 MHz,
0.2dB typical 30 .. 88 MHz
- TX switching level: 37 dBm +/-3 dB
- Switching speed: 1 ms typical
- SSB delay (default): 100 ms Interrupted by higher priority TRX
- SSB delay (config.): 0 .. 2.55 s, 10 ms resolution

RX Signal Path

- Frequency: 1.6 .. 88(30) MHz
- Impedance: 50 Ω
- Gain: 0 dB +2/-1 dB 1.6 .. 30 MHz,
0 dB +2/-4 dB 30 .. 88 MHz
- P-1dB output: 30 dBm typical
- IP3 output: 40 dBm typical
- Output isolation: > 20 dB 1.6 .. 30 MHz,
Any RX1 .. 5: > 10 dB 30 .. 88 MHz
- Maximum input power: 1 W/30 dBm continuous Aux, RX ant
and RX1 .. 5: 250 W for 50 ms

Power Supply

- Nominal voltage: 24 V, Operating voltage: 18 .. 36 V
- Current: 1.1A typ. @ 24 V
- Fuse rating: F10A, 5x20 mm
- Galvanic isolation: > 100 M Ω
- Indicators:
- Text Colour Function
- Power on Green 24 DC power is applied

Physical

- Size: 3U, 19", 455 mm depth (ex. handles and connectors)
- Colour: RAL7030
- Mass : 15 kg
- Connectors: 24 VDC: Amphenol 62GB-5016-102P
- Antennas and TRx: 50 Ω N, female
- Tuner and Ctrl (Transceiver interaction): Amphenol MS3112E14-19S

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All specifications are subject to change without notice
The information contained herein is for reference only and does not constitute a warranty of performance

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