

## Description

This 8-Way VHF Switch is designed for use in systems where LVHF/VHF/UHF transceivers share common TX and RX antennas. The unit includes:

- Two independent 4-way switches for automatic TR switching and combining of 4 transceivers sharing common antennas.
- Configurable switch matrix used to select one out of 6 TX antennas for each of the 4-way switches.
- Three diplexers channels, where of two provides forward and reverse power monitoring.
- Diplexer channel switch matrix.
- Control system with CPU, Graphical display and interfaces (LAN, USB)
- 24V power supply.
- 100W power handling for the 8 Tx ports, and lower diplexer channels (under 700MHz), and 20W CW (500W peak) for the high diplexer channels (over 700MHz).

The main function of the ACS0008-K V/UHF-switch is two, 4-way automatic switches (each equivalent to the Comrod product ACS004). It consist of automatic TR switches, 4:1 combiner, LNA and SP6T switches. Each switch supports 4 transceivers operating in the frequency band 30MHz to 512MHz, and a dedicated fail-safe signal path.

The RX signal may be selected from either of the two RX antenna connectors. If none of them are used, the signal is routed from the TX antenna which is then used for both TX and RX. The RX signal is distributed to all the transceivers TRX1 .. 4(5 .. 8) through an RF-filter, an LNA, a power splitter and the automatic TR switches. Four additional RX ports are available (RX1 .. RX4). These can be used if dedicated Rx and Tx antennas are desired.

A transceiver in TX mode is detected by the automatic TR switch that issues signals (PTT) to the control logic to enable a direct signal path to the selected TX antenna through the SP6T switch. If more than one transceiver is in TX mode, the control logic will make the SP6T connect the antenna to the 4:1 combiner and issue signals (Aux) to the automatic TR switch to connect to the 4-way combiners by using its auxiliary TX output. The phase of the signals are maintained in any combination. If a single transceiver is in Tx mode, the signal will bypass the 4:1 combiner and go straight to the switch matrix and antenna port, introducing less than 3dB loss through the whole switch.

Transceivers may be configured for priority in TX mode, causing its signal to by-pass the 4-way combiner while the other transceivers sharing the same 4-way combiner are connected to the 50ohm dummy-load located inside the 4-way combiner. Since signals with priority (like GMDSS) always bypass the 4:1 combiner due to implemented logic, inhibit output signals are not needed in order to ensure priority. Inhibit signals can be implemented o the end user requirement.

**ACS008K**

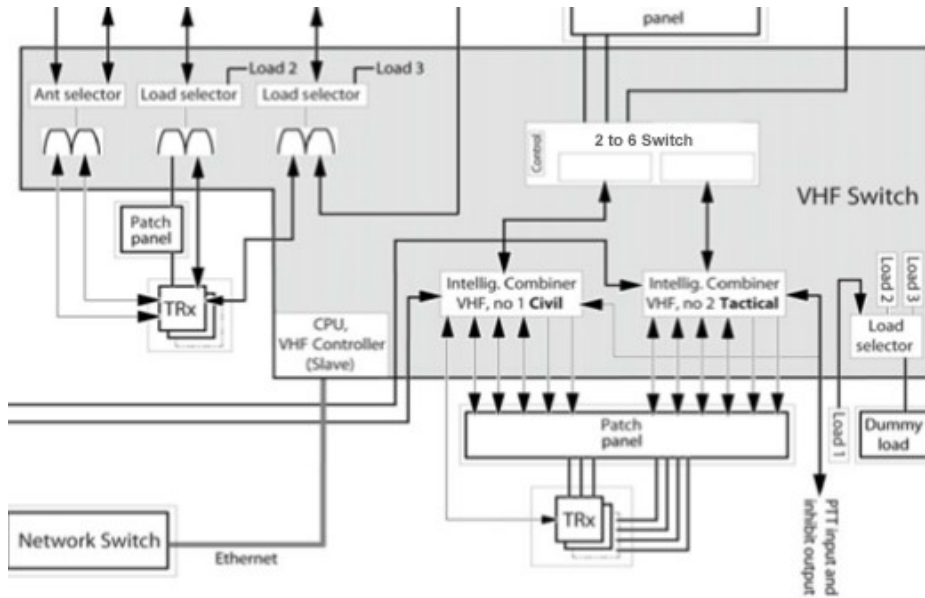
The unit occupies 6 units of 450mm depth in a 19" rack

## Control system

The control system includes the switch control logic and a CPU with display and interfaces (LAN, USB). The switch control logic supports the mission-critical functions without need of any CPU interaction. The CPU provides both local and remote user interface for configuration and monitoring of the unit.

## Power-supply

The power supply provides the required internal voltages as well as the galvanic isolation of the external 24V power source.



ACS0008-K Block Diagram

## Technical data

- 4-way switch: Frequency range : 30 .. 512MHz
- TX signal path: TX level : 17dBm .. 50dBm 50mW .. 100W  
Insertion loss : Direct <3dB, Combined <10dB  
Phase integrity : <20deg Phase shift direct to combined  
Switching speed : 15us (typ) : 10ms (typ) Applies to electro-mechanical relays
- RX signal path: Gain : 1.5dB +/-2dB  
P-1dB input : 10dBm typical  
IP3 input : 22dBm typical  
Noise figure : 5dB typical  
Output isolation : >20dB Between RX-ports  
Maximum input power : 30dBm continuous  
TX isolation : >45dB TX- to RX-ports
- Thermal properties (each 4-wayswitch):  
Max RF dissipation : 150W Applies to 4x50W input,50W output  
Max heat sink temp : 100deg. C
- 2 to 6 switch: Switching time : 5ms typ.  
Insertion loss : <1dB
- Connectors: 24VDC : Amphenol 62GB-5016-102P  
RX ant and TX ant : 50ohm N, female