ACS-004

Antenna Control System, VHF/UHF TX/RX coupler/switch, 30-512 MHz

Control Systems, Couplers and Diplexers

Application

The antenna coupler is intended for use with 4 transceivers plus two additional receivers together with one (or two) common antennas. It is possible to transmit or receive on all channels at the same time. The transmit insertion loss depends on the number of active transmitters. A low noise amplifier is used in the receive path.

When used with two antennas simultaneous transmission and reception is possible. With only one antenna all reception will be disabled when one or more transmitters are active.

It is possible to give priority to one transmitter.

For fail-safe operation one transmitter is connected directly to the antenna in case of power failure.

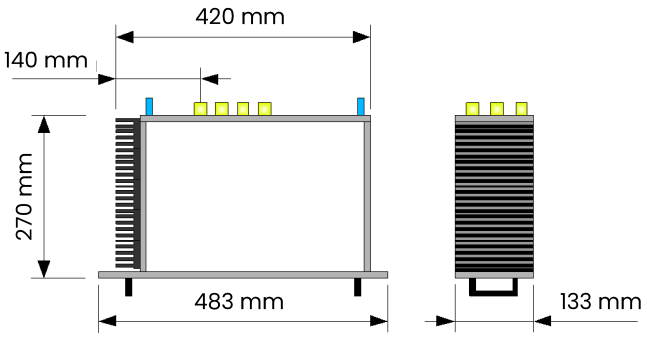
See reverse page for a closer functional description.

Electrical Specifications

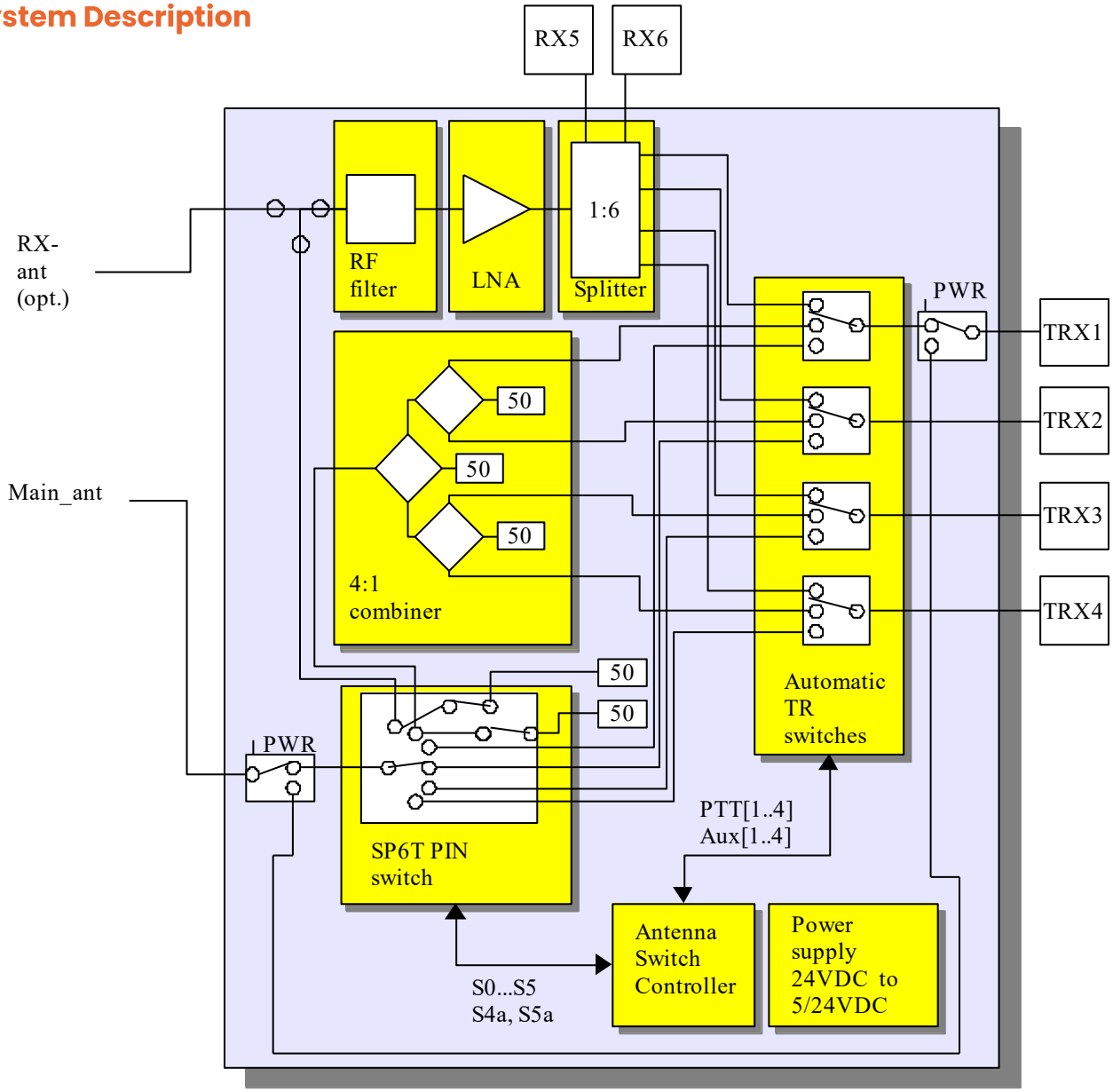
Frequency Range	30-512 MHz
Nominal Impedance	50 Ω
TX Signal Path	
Power Rating	100 W, each transmitter
Loss	< 2 dB (one transmitter), or < 8 dB
Phase Integrity	< 10° (< 20 mm)
Switching Speed	< 100 µs
RX Signal Path	
Gain	0..4 dB
P -1dB, out	> 14 dBm
IP3, out	> 30 dBm
Noise Figure	< 4 dB
Isolation, Out	> 20 dB
Max. inp. Power	30 dBm continuous
Power Supply	18-32 V @ < 1 A, galvanic isolation
Connectors	
RF	N female standard, others on request
Power	Amphenol 62GB series, others on request

Mechanical Specifications

Size	3U, 19", 270 mm depth (ex. handles and connectors)
Temperature Range	
Operational	- 25°C to + 55°C
Storage	- 40°C to + 70°C



System Description



During reception, the transceivers (TRX1 .. 4) receive their signals from the LNA via the Automatic TR switches. The LNA may be connected to a separate RX antenna for duplex operation, or to a common TX/RX antenna via the SP6T PIN switch (simplex only). Two additional RX ports are available.

A transceiver in TX mode is detected by the Automatic TR switch that issue signals (PTT) to the Control Logic to enable a direct signal path to the antenna.

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 4:1 combiner by using the Auxiliary TX output.

By nature this action will introduce a loss of 6 dB for each of the signals in the internal 50 Ω terminations.

One of the transceivers may be configured for priority in TX mode. The TX signal is routed to the antenna, independent of the mode any other transceiver. These are instead connected to the 50 Ω dummy load through the 4:1 combiner and the SP6T.

The switches are implemented using PIN diode technology for fast switching speed and low insertion loss.

Relays on one input and the antenna port implements the fail-safe function.

A power supply provides galvanic isolation.