

# PROTECTION SWITCH SYSTEM

*C and Ku Band*



AnaSat® PS

## GENERAL DESCRIPTION

AnaCom's Protection Switch System provides a high reliability 1 for 1 Hot Standby configuration for the ANASAT C and Ku-Band transceivers. The Protection Controller is designed for simple, intuitive operation. TX and RX switches function independently.

The Protection System consists of a Protection Controller outdoor box, and WR-229 and WR-137 waveguide switches for C-Band applications, or a pair of WR-75 waveguide switches for Ku-Band applications. Both switches include waveguide terminations for the off-line equipment.

## FEATURES

- Easy to install and operate
- No indoor equipment is needed
- No extra power source is required
- Built in test facilities for improved maintainability and reduced dependence on external test equipment
- No external power required
- Serial port for remote control
- Simple, low cost installation

## APPLICATIONS

- Anywhere high reliability requirements necessitate immediate switching action to a spare equipment
- Rural Telecommunications Expansion
- Data distribution and collection
  - Conventional Voice Traffic
  - Emergency link restoration
    - Remote Surveillance
    - Distance Learning
    - Broadcast
    - Video Teleconferencing
    - Industrial Networking
    - LAN and WAN extensions

## COMPACT, FUNCTIONAL DESIGN

AnaCom's Protection System integrates all necessary functions into a small outdoor package. The Protection Controller is fully contained in a small box with manual over-ride controls. Although normally intended for un-manned, automatic operation, the switch can be locally (*or remotely*) overridden to place a TX or RX switch (*or both*) on line and defeat the normal "switch-on-alarm" mode of operation. A single push-button (or remote command) returns the unit to completely automatic operation.

## BUILT IN TEST EQUIPMENT

To improve and simplify maintenance routines, an external terminal (*or computer*) can be connected to monitor a number of critical parameters without use of additional test equipment. These include:

- Transceiver alarm status (*TX, RX; A and B*)
- Switch alarm and position status

## CONTROLLABLE FUNCTIONS FROM THE TERMINAL

- Force TX switch to the A or to the B side
- Force RX switch to the A or to the B side
- Restore AUTOMATIC operation

## COMPREHENSIVE MONITOR & CONTROL

The M&C feature allows you to monitor and control the Protection Controller on the same RS485 M&C bus with most indoor equipment such as modems and multiplexers. If desired, the serial port can be configured as an RS-232.

## BENEFITS

- High reliability with independent TX and RX switching
- Simple, intuitive operation requires minimum training
- "Last Touch" controls allow for remote or local (*manual*) operation

PS 1+1



<b>ELECTRICAL</b>	ALARM SENSE	OPEN connection for alarm SHORT for normal (non-alarm state)
	ALARM TYPE	TX and RX independent
	RESPONSE TIME	< 1 Second
	TX MUTE	Active during a TX switch (0.5 seconds)
	TX IF IMPEDANCE	50 ohms (75 ohms optional); type N
	TX IF LEVEL	±20 dBm MAX
	TX IF INSERTION LOSS	3.5 dB typical
	RX IF IMPEDANCE	50 ohms (75 ohms optional); type N
	RX IF INSERTION LOSS	0.5 dB MAX
	TX RF INSERTION LOSS	0.02 dB MAX (switch only)
	TX RF VSWR	< 1.05:1 MAX (switch only); WR-137 or WR-75
	RX RF INSERTION LOSS	0.02 dB MAX (switch only)
	RX RF VSWR	< 1.05:1 MAX (switch only); WR-229 or WR-75

<b>SYSTEM</b>	MANUAL OPERATION	Five push-button switches
	SERIAL PORT	1 RS-232 or 1 RS-485
	PROTOCOL	RS-232 port supports any "dumb terminal" or ASCII interface RS-485 port supports addressed packetized data per ANACOM Supervisor™ software specifications
	ALARM RELAY	FORM C summary switch alarm; isolated
	VISUAL INDICATORS	GREEN LEDs indicate switch position RED LEDs indicate active alarms
	POWER	NONE (+12 volts @ 1 amp derived from transceivers)
	MECHANICAL	Switch Controller box
	— C-BAND INCLUDES — Ku-BAND INCLUDES TWO	WR-137 and WR-229 waveguide switches WR-75 waveguide switches

<b>ENVIRONMENTAL</b>	TEMPERATURE	-40 to +50°C operational -60 to +75°C storage
	ALTITUDE	15,000 ft (5,000 meters) MAX
	RAIN	20 inches per hour
	WIND	150 miles per hour
	VIBRATION	1.0 g random operational 2.5 g random survival
	SHOCK	10 g operational 40 g survival

<b>OTHER</b>	CONTROLLER BOX	SIZE / WEIGHT	8.5" x 9.5" x 4.0" (216 x 241 x 102 mm) / 3 lbs (1.36 kg) Mounting: 1/2" holes spaced 5" apart each end
	WR-75 SWITCH (KU Band)	SIZE / WEIGHT	4.5" x 2.1" x 2.1" (114 x 53 x 53 mm) / 1.5 lbs (.68 kg)
	WR-137 SWITCH (C Band)	SIZE / WEIGHT	5.2" x 2.3" x 2.3" (132 x 58 x 58 mm) / 2.5 lbs (1.14 kg)
	WR-229 SWITCH (C Band)	SIZE / WEIGHT	8.2" x 3.5" x 3.5" (208 x 89 x 89 mm) / 6.0 lbs (2.73 kg)