

TOSHIBA

AIR TRAFFIC CONTROL SYSTEMS

PSR/SSR

Primary Surveillance Radar and Secondary Surveillance Radar

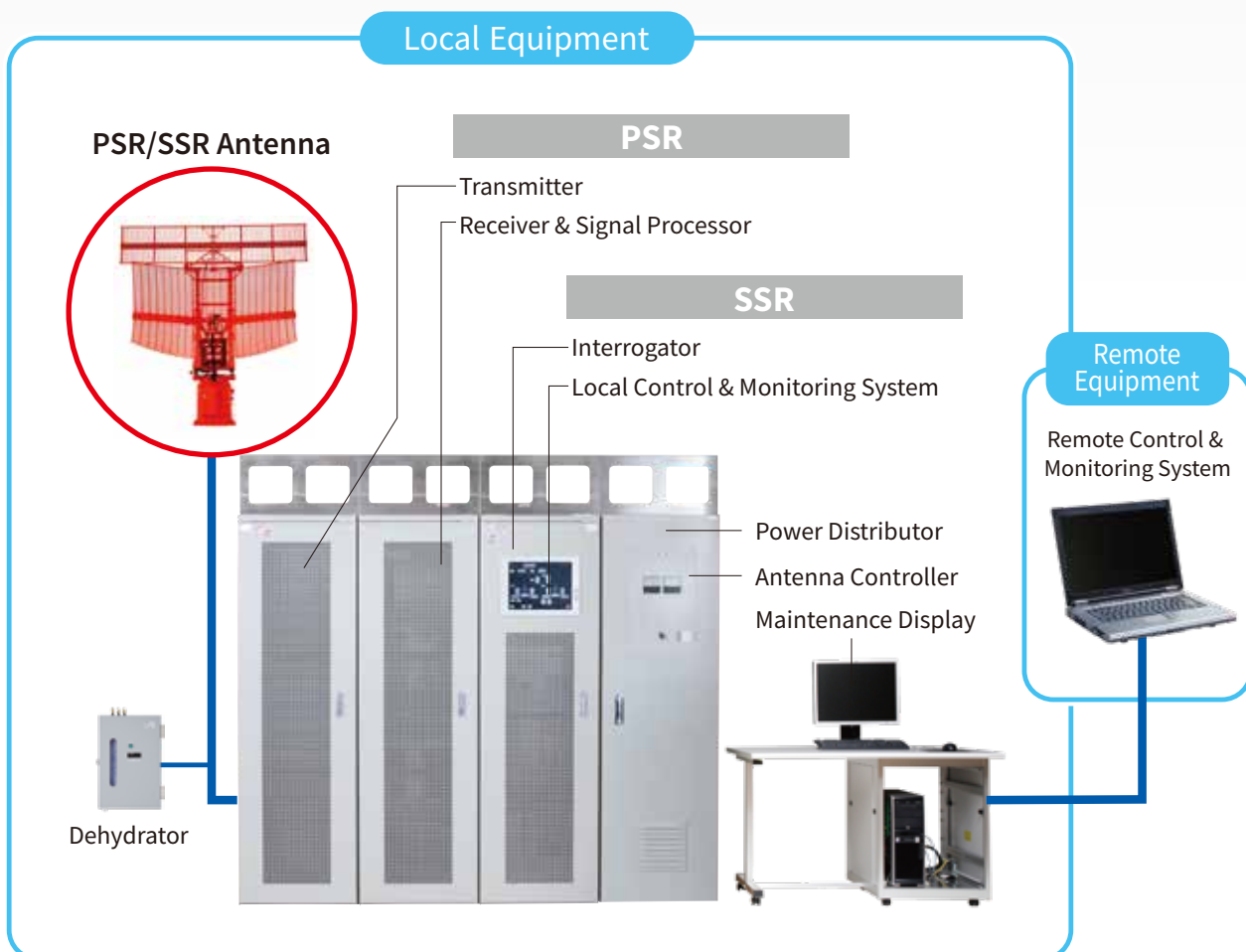
● Fully Digital Technology ● Compact Body ● Low Life-Cycle Cost

Toshiba's modular integrated Primary and Secondary Surveillance Radar (PSR/SSR) has been developed for today's stringent air traffic control requirements. The radar system interfaces with the Radar Data Processing System (RDPS) and provides the RDPS with important, accurate and reliable radar data highly for controllers and pilots.

The requirements for air traffic control radar systems are becoming stricter due to safety concerns because of the increase in air traffic during past decades.

Toshiba's PSR/SSR is designed by making good use of advanced digital technology and have such good features as compact size and low life-cycle cost.

Configuration



PSR/SSR

Key Product Features

System

- ◆ Full Solid State component
- ◆ Replace Work Minimization
- ◆ Duplex Configuration (Active /Stand-by Channel)
- ◆ Automatic Built-In-Test Equipment (BITE)
- ◆ Remote Control and Monitoring
- ◆ Low Life-Cycle Cost and High Reliability
- ◆ Compact size and Light weight
- ◆ Color touch panel for local control
- ◆ Front accessible plug-in modules for easy exchange

PSR (Primary Surveillance Radar)

- ◆ All Solid State Transmitter
- ◆ Continuous operation to replace PA (Power Amplifier)
- ◆ Compact Signal Processing - MTD (Moving Target Detector)
- ◆ High Speed Digital Processing - Digital I/Q Phase Detector, Digital Chirp Generator
- ◆ Weather Signal Processing

SSR (Secondary Surveillance Radar)

- ◆ All Solid State SSR Mode S Interrogator
- ◆ Large Vertical Aperture (LVA) Antenna
- ◆ Mode S Full Data Link Capability including ACAS Resolution Advisory Downlink Capability (GICB protocol)

CHARACTERISTICS

1. PSR

Frequency	2,700 to 2,900 MHz	
Detection Coverage	0.5 to 70 NM $\delta = 2 \text{ m}^2$ Pd = 80 % Pfa = 10^6	
Antenna Polarization	Linear / Circular	Selectable
Transmitter Power	20 kW peak	
Accuracy Azimuth	$\leq \pm 0.18^\circ$	
Range	$\leq \pm 60 \text{ m}$	
Maximum Target Rate	1,000 per scan	

2. SSR

Frequency	1,030 MHz	Transmitting
	1,090 MHz	Receiving
Detection Coverage	0.5 to 200 NM	
Accuracy Azimuth	$\leq \pm 0.022^\circ$	Bias Error
Range	$\leq \pm 30 \text{ ft}$	Bias Error
Interrogation	Mode ATCRBS	1, 2, 3 / A, C
	Mode S	UF = 4, 5, 11, 20, 21, 24
Maximum Target Rate	900 per scan	

ENVIRONMENTAL CONDITIONS

Ambient Temperature (Except COTS)	Indoor Equipment	
	Outdoor Equipment	
Relative Humidity	Maximum 95% RH	Non condensing
Wind Resistance (Outdoor Equipment)	Operating	Survival
AC Input Power	180 to 220 VAC (1 ϕ) 380 to 400 VAC (3 ϕ) 50 / 60 Hz $\pm 5 \%$	Average: up to 35 m/s Average: up to 50 m/s

APPLICABLE STANDARDS

ICAO Annex 10
ITU-R SM, 1541-2 Annex 8
ISO9001

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