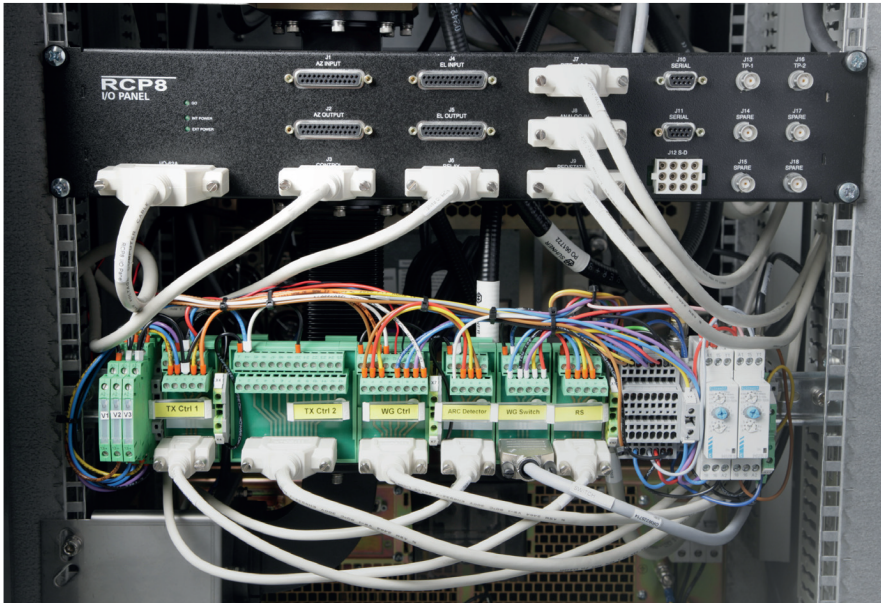




RCP8™ Radar Control Processor



Features

- PC/Linux architecture in standard PCI package
- Flexible I/O through IO-62 PCI card
- Rackmount backpanel for easy signal connection
- Comprehensive static discharge protection
- Fail-safe watchdog software to protect the antenna
- Output over 10/100/1000T Ethernet or RS232C serial line
- Can run as a separate thread on a IRIS™ or RVP900™ Linux workstation
- Public APIs
- Optional moving platform stabilization

Radar control processor (RCP™) controls and monitors weather radar system sub-units, including the pedestal, power supply unit, transmitter, receiver, waveguide matrix, cabinet cooler, dehydrator, and safety interlock system.

Connect Weather Radars to the Outside World

A radar controller provides a simple interface between high-level user applications to the electrical signals required to control and monitor a radar and antenna system.

Vaisala Radar and Antenna Control Processor RCP8, a PCI/ Linux based controller, provides the flexibility to connect to radar systems from a variety of manufacturers.

With comprehensive BITE monitoring, wide range inputs and programmable control logics, RCP8 offers outstanding versatility in the field.

Fully documented APIs allow sophisticated users to develop their own application software.

RCP8 is compatible with the IRIS software for LINUX workstations and the RVP900 Signal Processor.

Flexible Algorithms for Ground-Based and Stabilized Moving Platform Applications

RCP8 implements flexible digital position and velocity servos.

Because of the digital approach, the servo feedback can be easily adjusted to stabilize virtually any weather radar antenna system.

RCP8 can connect to an inertial navigation unit and compensate for ship motion to <0.1 degree.

Comprehensive Over-Voltage Protection for I/O Lines

The I/O-62 PCI card serves as the gateway for signals in and out of the RCP8.

Each I/O line is configured with a fast switching diode to protect it against transient high-voltage spikes from lightning or other sources.

Fail-Safe Protection

RCP8 provides comprehensive fail-safe features. For example, a watchdog program constantly checks for consistency between the tachometer versus position angles, for velocity overspeed, unresponsive antenna and out of tolerance elevation angles.

In addition, programmable control logics allow users to create their own custom monitoring/response actions such as alarm bells, warning lights, or transmitter shutdown.

Technical Data

Inputs and Outputs

Antenna drive output	±/- 10V to servo amplifiers
A/D Inputs	12 A/D inputs nominal ±6V, 12 bits @ 100 Hz
Control BitOutput Range	TTL
Tachometer inputs	Analog up to ±80 V
AZ and EL Angle Inputs	
TTL	Up to 16-bit binary and BCD
Synchro/Resolver	Various frequencies supported
AZ and EL Angle Outputs	
Parallel	TTL Binary angle up to 16 bits
Asynchronised	Serial RS232
Host Interface	
Ethernet	10/100/1000T
Asynchronised serial selectable up to 39 Kbps	RS232C
Status Bit Input Range	
Standard	±27 V triggering at +2.5V
Switch Closure configurable pull-up/down	+5V, 0V
Wide range	± /- 27V, 330K impedance
Logic threshold	+2.5V

Physical and Environmental Characteristics

Operating environment	Temperature: 0 ... 40° C
	Humidity: 10 ... 95% @ 40° C, non-condensing
	Vibration (5 ... 500Hz): 1 Grms
	Shock: 10 G (with 11 ms duration, half sine wave)

Antenna Control and Monitoring

Servos	AZ and EL (independent) Digital position and velocity servos.
Tachometer	Analog TACH Virtual Tach from differentiated angle input.
Velocity servo accuracy	0.5 % at 3 RPM typical
Position Accuracy	0.1° typical
Fail safe checks	<ul style="list-style-type: none">• Limit switch diode clamping• Limit switch shutdown• Out-of-bound elevation request limiting• Out-of-bound elevation• Out-of-bound antenna speed• Soft limiting• Tach and angle changes inconsistent• Unresponsive antenna• "Dead" host computer

Radar Control and Monitoring

Dedicated control outputs	Servo power, Radiate, T/R power, Pulse width (4), Reset signal
Dedicated status inputs	Servo power, Radiate, Standby, Waveguide pressure, Interlock, Cooling airflow, Pulse width (4), Antenna local mode
BITE inputs and outputs	Up to 100 TTL lines configurable in groups of 10 to either input or output lines.
Other interfaces	GPIO, CAN-bus, Ethernet

Scan and Display

Scan modes	PPI, RHI, Volume, Sector, Manual, Rapid Scan
Local display	Real time, Ascope, BITE, products

Moving Platform Option

Motion reference	Honeywell or Seatec INU with GPS update and serial output
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