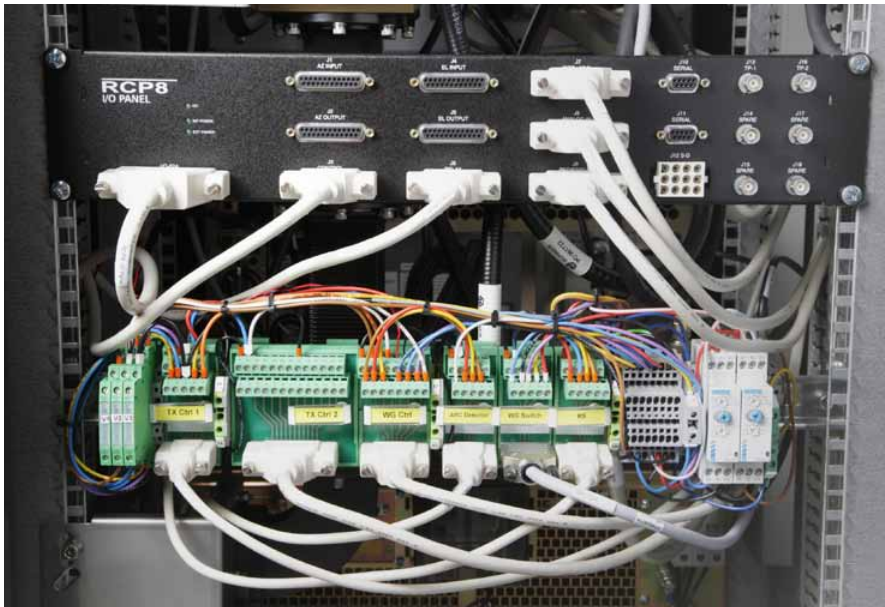


## Vaisala Sigmet Radar and Antenna Control Processor RCP8™



### Features

The Vaisala Sigmet RCP8™ is the 3rd generation radar/antenna control processor. It is a proven, trusted product, re-hosted on a PC/Linux platform:

- PC/Linux architecture in standard PCI package
- Flexible I/O via the Vaisala IO-62 PCI card
- Rackmount backpanel for easy signal connection
- Comprehensive static discharge protection
- Fail-safe watchdog software to protect antenna
- Optional moving platform stabilization
- Output via 10/100/1000T Ethernet or RS232C serial line
- Can run as a separate “thread” on Vaisala Sigmet IRIS™ and RVP900™ Linux workstation
- Public API's

### Connecting a Weather Radar to the Outside World

The purpose of a controller is to provide a simple interface between high-level user applications to the various electrical signals that are required to control and monitor a radar and antenna system. The Vaisala Sigmet 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, the RCP8™ offers outstanding versatility in the field. We provide a fully documented API so that sophisticated users can develop their own application software. Specify the RCP8™ for weather radar upgrades or for new weather radar systems. Of course the RCP8™ is 100% compatible with the IRIS™ software for LINUX workstations and the RVP900™ Signal Processor.

### Flexible Algorithms for Ground-Based and Stabilized Moving Platform Applications

The RCP8™ implements digital position and velocity servos that are more flexible than traditional analog servos- there are no pots to tweak to tune the servos. Because of the digital approach, the servo feedback can be easily adjusted to stabilize virtually any weather radar antenna system. The RCP8™ is so flexible that it is the favorite controller for shipboard weather radar applications since it 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. This

is important since radar systems are often sited in locations that are prone to lightning strikes.

### Fail-Safe Protection for Your Investment

A radar antenna is a costly item. To protect this investment, the RCP8™ provides the most comprehensive fail-safe features in the industry. For example, a watchdog program constantly checks for consistency between the tachometer versus position angles, for velocity over-speed, unresponsive antenna and out of tolerance elevation angles. Aside from these built-in safety checks, the RCP8™'s programmable control logics allow users to create their own custom monitoring/response actions (e.g., alarm bells, warning lights, transmitter shutdown, etc.).

# Technical data

## RCP8™ I/O Characteristics

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
Tachometer Inputs	Analog up to $\pm 80V$
Antenna Drive Output	$\pm 10V$ to servo amplifiers
Status Bit Input Range	$\pm 27V$ triggering at +2.5V
Switch Closure configurable pull-up/down	+5V, 0V
Wide range	$\pm 27V$ , 330K impedance
Logic thresholded at	+2.5V
Control Bit Output Range	TTL
A/D Inputs	12 A/D inputs nominal $\pm 6V$ , 12 bits @ 100 Hz
Host Interface	
Ethernet	10/100/1000T
Asynchronised serial selectable up to 39 Kbps	RS232C

## Antenna Control/Monitoring Features

Servo Types	
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 degrees typical
Fail Safe Checks	Soft limiting
	Out-of-bound elevation request limiting
	Out of bound elevation
	Limit switch diode clamping
	Limit switch shutdown
	Out of bound antenna speed
	Unresponsive antenna
	Tach and angle changes inconsistent
	“Dead” host computer

## Radar Control/Monitoring Features

Dedicated Control Outputs	Servo Power, Radiate, T/R Power, Pulse Width (4), Reset Signal
Dedicated Status Inputs	Servo Power, Radiate, Standby, Wave Guide Pressure, Interlock, Cooling Airflow, Pulse Width (4), Antenna Local Mode
Other Interfaces	GPIO, CANbus

## Configurable BITE Monitoring and Control Features

BITE Status/Control Inputs	Up to 80 lines configurable in groups of 8 to be either input or output
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## Moving Platform Option

Motion Reference	Honeywell or Seatec INU with GPS update and serial output
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## Physical and Environmental

Packaging	
Rack mount connection panel	3U
Input Power	85-264 VAC, 47-63 Hz
Power Consumption	70 Watts
Environmental	
Operating temperature	0 °C to 50 °C
Operating humidity	0 to 95 %RH (no condensation)
Reliability	>50,000 Hours MTBF



For more information, visit [www.vaisala.com](http://www.vaisala.com) or contact us at [sales@vaisala.com](mailto:sales@vaisala.com)

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