RANATEC
High performance measurement solutions

RI 910
Radar Maintenance Instrument

RI 910 Radar Maintenance Instrument

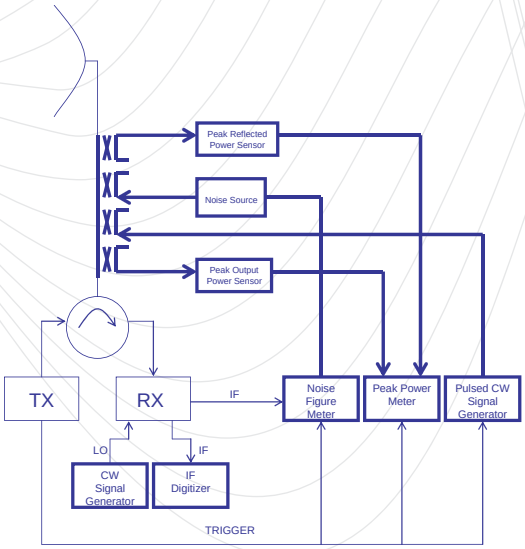
One-box-solution for Radar Maintenance measurements

Ranatec RI 910 is an all-in-one instrument for radar maintenance.

Features:
- Peak Power
- Average Power
- Noise Figure
- Pulsed Signal Generator
- IF Spectrum Analyzer
- High resolution touchscreen display
- Up to 4 independent instrument modules
- IF center frequencies between: 5 and 200 MHz
- RF frequencies between 10 MHz and 10 GHz in conjunction with Ranatec Noise Sources and Power Sensors
- Extensive triggering possibilities
- Remote control via RS232, GPIB or LAN

Overview
The Ranatec RI 910 is an invaluable tool for the radar service engineer. It contains all the RF instrumentation needed for maintenance of a radar. Peak Power, Noise Figure, Minimum Detectable Signal (MDS) and IF Spectrum can be measured with high precision without the need to carry around multiple rack-and-stack instruments.
All functions are controlled via an intuitive soft menu system and the result is displayed in either table- or graphical format on the the 7” touchscreen display

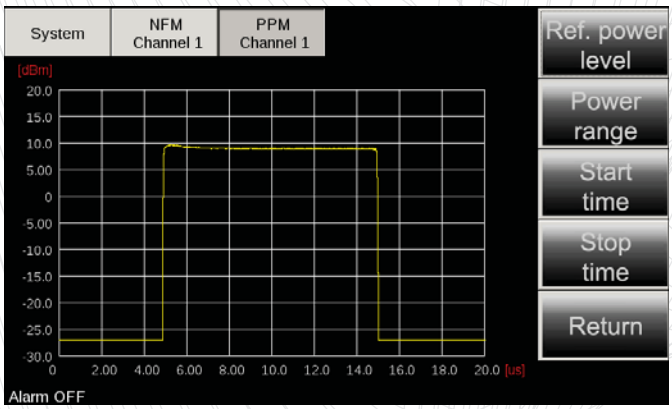
A complete maintenance system consists of:
- Instrument mainframe (RI 910)
- Measurement modules (see options)
- RF Head (see options)
- Power sensors including cables (see options)
- Noise Source (see options)



Typical setup for radar maintenance measurements.

Peak Power and Noise Figure measurements sometimes need to be synchronized with the radar transmit pulse. RI 910 has several trig signal inputs with independent delay settings. This enables online performance monitoring of multi-pulse systems with staggered PRF and pulse compression.
It can also be used for target simulation and radar receiver calibration.

Up to four modules can be inserted at the same time and the software automatically identifies them. They are controlled via an intuitive menu system and the measurement results can be displayed graphically or in table format.



Menu system and graphical display

The instrument can also be remotely controlled via LAN, GPIB, RS232 or RS422 (optional).

RANATEC INSTRUMENT AB Flöjelbergsgatan 1c, SE-431 35 Mölndal, SWEDEN
Telephone: +46 (0)31 706 16 60, Telefax: +46 (0)31 706 16 61,
Email: info@ranatec.com, Internet: www.ranatec.com

Revision B

RANATEC

High performance measurement solutions

RI 910 Mainframe

Features:

- Can accomodate 1-4 modules
- 7”, 800x480 pixels touchscreen display
- Remote control via RS232, RS422, LAN or GPIB

RF Heads

Features:

- High directivity directional couplers
- Customized coupling factors
- Available as:
  - Single channel for output power monitoring or Pulsed CW injection (324 series)
  - Dual channel for output and reflected power monitoring (323 series)
  - Triple channel for output and reflected power and noise figure monitoring (326 series)
  - Customized versions on request

RI 1710 Noise Figure Meter

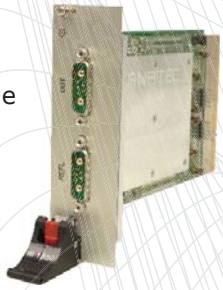
Features:

- Online or offline monitoring of radar receiver noise figure
- IF frequencies between 5-200 MHz
- ± 0.2 dB accuracy for NF range 0 to 5 dB
- Compatible with the RI 910 mainframe

RI 1860 Peak Power Meter

Features:

- Online monitoring of output- and reflected power
- 100 MHz to 10 GHz frequency range
- 50 dB dynamic range
- ± 0.5 dB repetitive accuracy
- Compatible with the RI 910 mainframe



Noise sources

Features:

- High ENR value (35 dB)
- Designed for online noise figure measurement
- Protected against transmitter output power
- Available for all radar bands

RI 150X Pulsed CW Generator

Features:

- Pulsed CW mode for online or offline calibration of radar receiver
- Continuous CW mode for STALO (Stable Local Oscillator) applications
- -110 ~ +10 dBm output power
- ± 0.2 dB repetitive accuracy
- Compatible with the RI 910 mainframe

RI 8610 Peak Power Sensor

Features:

- 10 MHz - 10 GHz frequency range
- 50 dB dynamic range
- 10 ns rise-/falltime
- Internal correction table

RI 1802 IF Spectrum Analyzer

Features:

- 10-140 MHz IF input bandwidth
- Time- or frequency domain analysis
- Compatible with the RI 910 mainframe

RANATEC INSTRUMENT AB Flöjelbergsgatan 1c, SE-431 35 Mölndal, SWEDEN
Telephone: +46 (0)31 706 16 60, Telefax: +46 (0)31 706 16 61,
Email: info@ranatec.com, Internet: www.ranatec.com

RANATEC
High performance measurement solutions

Specifications:

User interface:
- Display size: 7” widescreen
- Resolution: 800x480
- Input method: Touchscreen

Communication interfaces:
- Remote control via RS232 is standard
- Remote control via GPIB is optional
- Remote control via LAN is optional

Environmental specification:
- Operating temp: 0°C to +50°C
- Storage temp: -20°C to +70°C
- Relative humidity: 95% at +40°C
- Altitude: 5000 m
- Vibration: MIL-SRD-810B Method S14
- Shock: MIL-STD-810B Method S16

Power input:
- Power input: 115/230 VAC, 50-60 Hz, 50 W

Mechanical specifications:
- Dimensions: 431x255x132.5 mm
- Weight: 8 kg

Noise Figure Meter specifications:
- Number of channels: 1-4*
- NF Accuracy: (ENR = +5 dB, 18°C - 28°C) +/-0.2 dB (0 < NF < 5 dB) +/-0.3 dB (5 < NF < 10 dB) +/-0.5 dB (10 < NF < 15 dB)
- IF center frequency: 5 to 200 MHz
- IF bandwidth: +/-10% standard upon request)
- IF input power range: -80 to -35 dBm/MHz
- IF input impedance: 50 Ohm
- Connector: BNC female

- Noise source voltage: +12 ~ +28VDC (SW defined)
- PRF range: 100 Hz - 25 kHz
- Pulse width: 5-50 µs
- ENR range: 0 to 50 dB
- Connector: BNC female

Peak Power Meter specifications:
- Number of channels: 1 Output + 1 Reflected per module*
- RF frequency range: 100 MHz - 10 GHz
- Dynamic range: 50 dB @ 1 GHz, 50 dB @ 3 GHz, 40 dB @ 6 GHz, 30 dB @ 10 GHz
- Abs. power accuracy: +/-0.5 dB
- Rise-/fall-time: 10 ns
- Connector: Special cable supplied

Pulsed CW Generator Specifications:
- Number of channels 1-4*
- Frequency range 5 - 10 GHz
- Frequency resolution 10 Hz
- Pulse ON/OFF ratio 40 dB (opt 80 dB)
- Frequency settling time 50 µs full band (0.1 ppm deviation)
- Frequency accuracy 25 ppm (internal ref)
- Output power range +15 to -50 dBm (opt +25 to -110 dBm)
- Output power resolution 0.1 dB
- Output power settling time 10 µs full range
- Abs. output power accuracy 0.8 dB > -50 dBm, 1.5 dB ≤ -50 dBm*
- Rel. output power accuracy 0.3 dB > -50 dBm, 0.6 dB ≤ -50 dBm*
- Harmonics < -25 dBc
- Non harmonics < -90 dBc
- Phase noise at 5GHz output <-100 dBc/Hz@10kHz, <-120dBc/Hz@1MHz
- Phase noise at 10GHz output <-96 dBc/Hz@10kHz, <-117dBc/Hz@1MHz
- Connector N female

IF Spectrum Analyzer Specifications:
- Number of channels 1-4*
- Input impedance 50 Ohm
- Input frequency range 10 - 140 MHz
- Input return loss ≥15 dB
- Input range 2.25 or 1.5 V_{P-P}
- Absolute max input +20 dBm
- Connector: BNC female

* Maximum 4 modules are possible in one instrument.

RANATEC INSTRUMENT AB Flöjelbergsgatan 1c, SE-431 35 Mölndal, SWEDEN
Telephone: +46 (0)31 706 16 60, Telefax: +46 (0)31 706 16 61,
Email: info@ranatec.com, Internet: www.ranatec.com

RANATEC
High performance measurement solutions

Ordering

RI 910	Radar Maintenance Instrument Mainframe
Option RS232	Remote control via RS232
Option RS422	Remote control via RS422
Option LAN	Remote control via LAN
Option GPIB	Remote control via GPIB
Option RI 150X	Pulsed CW Generator, 5-10 GHz
Option RI 8610	Coaxial Peak Power Sensor, 0.1-10 GHz
Option RI 8611	Waveguide Peak Power Sensor, L-band
Option RI 8612	Waveguide Peak Power Sensor, S-band
Option RI 8613	Waveguide Peak Power Sensor, C-band
Option RI 8614	Waveguide Peak Power Sensor, X-band

5m cable included. Other cable lengths upon request

Option 150	RF Head with directional coupler for Noise injection
Option 323	RF Head with directional couplers for Output- and Reflected Power
Option 324	RF Head with directional coupler for Output Power
Option 326	RF Head with directional couplers for Noise injection, Output power and Reflected Power

Option LN30N	Noise Source L-band, 0 isolator
Option LN31N	Noise Source L-band, 1 isolator
Option LN32N	Noise Source L-band, 2 isolators
Option SN30N	Noise Source S-band, 0 isolator
Option SN31N	Noise Source S-band, 1 isolator
Option SN32N	Noise Source S-band, 2 isolators
Option CN30N	Noise Source C-band, 0 isolator
Option CN31N	Noise Source C-band, 1 isolator
Option CN32N	Noise Source C-band, 2 isolators
Option XN30N	Noise Source X-band, 0 isolator
Option XN31N	Noise Source X-band, 1 isolator
Option XN32N	Noise Source X-band, 2 isolators

RANATEC INSTRUMENT AB Flöjelbergsgatan 1c, SE-431 35 Mölndal, SWEDEN
Telephone: +46 (0)31 706 16 60, Telefax: +46 (0)31 706 16 61,
Email: info@ranatec.com, Internet: www.ranatec.com