

## Thermo Scientific Ramsey Microwave Point Level Detector

### Non-Contacting Chute Detection

The Thermo Scientific Ramsey Microwave Point Level Detector is a reliable instrument that can see through non-metallic wall build-up and detect the presence or absence of any material. By detecting the conditions in your chutes, it will alert you of any problems or disruptions in your process, allowing you to efficiently rectify the situation. This will save you time and money.



**Thermo Scientific Ramsey Remote Microwave System (RMS) Amplifier/Control**



**Thermo Scientific Ramsey Integral Microwave System (IMS) Sender, Receiver and Amplifier/Control**



The Thermo Scientific Ramsey Microwave Point Level Detector is a totally non-contacting instrument with a range from 10 cm (4 in) minimum to 150 m (492 ft) maximum. These reliable units can see through non-metallic wall build-up and detect the presence or absence of any material.

The switch can be used in pressurized coal down comers; electro-static precipitator hoppers; and in fly ash, clinker and coal transfer chutes. It provides high and low point level detection.

High temperature applications are not a problem for the Ramsey™ Microwave Point Level Detector. Each unit is protected from the process by a polyethylene, ceramic or tempered safety sight glass window. The switch is a safe and environment-friendly replacement for nucleonic switches and is not restricted by OSHA or FCC regulations.

#### Theory of Operation

The Thermo Scientific Ramsey Remote Microwave System (RMS) is a microwave pulse sender-receiver system comprised

of three electrically isolated units: the sender, the receiver, and the amplifier. The sender-receiver units are mounted in-line and face each other.

The Thermo Scientific Ramsey Integral Microwave System (IMS) is a microwave pulse sender-receiver system comprised of two electrically isolated units in an integral housing: the sender and the receiver/amplifier. The sender-receiver units are mounted in-line and face each other.

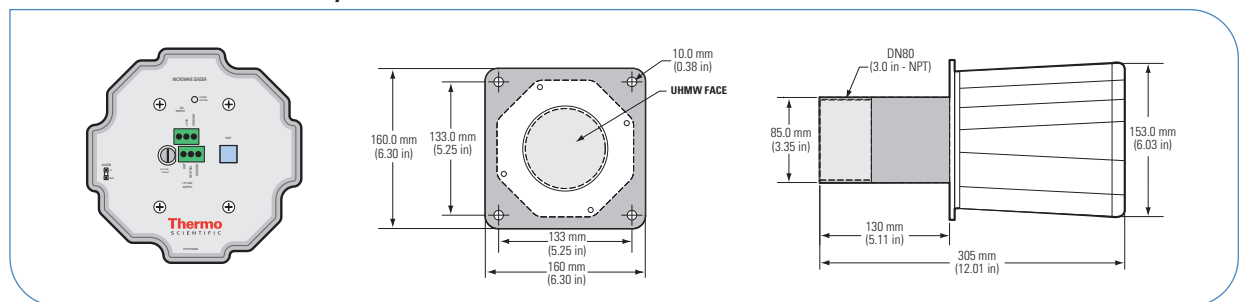
The sender emits a burst of microwave energy toward the receiver. Each burst occurs 200 times per second. When the line of sight is clear, the receiver will detect each of these bursts. If the line of sight is interrupted by sufficiently reflective or absorbent material, the receiver will not detect the microwave energy.

The receiver is designed to switch a relay when its detector changes. Settings for sensitivity and time delays allow the user to customize the control to their specific application.

## Thermo Scientific Ramsey Microwave Point Level Detector

<b>Input Voltage</b>	115 VAC nominal, 100-130 VAC acceptable, 50-60 Hz 240 VAC nominal, 200-270 VAC acceptable, 50-60 Hz AC supplies lined fuse: 100 mA, 250 VAC Both MRS & MRR units include terminals for 24 VDC supply power
<b>Power Consumption</b>	MRA <5 VA Remote Amplifier
<b>Power Density</b>	Rated from sender (MRS) to receiver (MRR) at approximately 20µW/cm <sup>2</sup> ; No interconnection wiring between sender and receiver; Complies with FCC Title Rules Part 15; Caution sign posting not required
<b>Transmitted Signal</b>	
Frequency	10.525 GHz, + 25MHz
Average Power Density	20 µW/cm <sup>2</sup> typical; Linearly Polarized Field; Beam angle (3 dB) approximately 30 degrees (conservative)
<b>Range</b>	
Maximum Range—Ideal Conditions	150 m (492 ft)
Minimum Range—Ideal Conditions	10 cm (4 in); Minimum ranges are dependent on application conductivity
<b>Mounting</b>	<ol style="list-style-type: none"> <li>DN80 (3 in - NPT) male thread or four 6 mm (0.250 in) blind bolt holes in flange <ol style="list-style-type: none"> <li>DN80 (3 in - NPT) weldments supplied for standard integral mounting</li> <li>Flange is used for remote mount in high vibration applications – isolation shock mounts are available</li> </ol> </li> <li>DN100 (4 in - NPT) weldments with PTFE (Teflon) and UHMW windows</li> <li>Ceramic window assemblies</li> <li>Firebrick window assemblies available on custom basis</li> <li>DN50 (2 in - NPT) sight glass window</li> <li>Waveguides – custom assemblies available</li> </ol>
<b>Adjustments</b>	
MRA	Test switch – momentary push-button. Single turn coarse and single turn fine adjustment potentiometers for set point. Relay time delays adjustable from 100 ms to 30 seconds via two independent on/signal make and off/signal break potentiometers with automatic reset.
<b>Fail-Safe</b>	
Switch Selectable	Presence or absence of material
High Level Fail-Safe Position	Relay is activated when material is present
Low Level Fail-Safe Position	Relay is activated when no material is present
<b>Temperature</b>	MRS & MRR: -30°C to +65°C (-20°F to +150°F). For higher temperature applications, remote mounting with windows is necessary. Custom waveguide assemblies can also be provided.
UHMW Window	+80°C (+176°F)
Ceramic Window	+800°C (+1,470°F)
Firebrick Assemblies	Consult factory for manufacturer's specifications.
<b>Cabling Entry(ies)</b>	MRA, MRS, MRR: 9.525 mm (0.375 in) NPT
<b>Relay Contact Output</b>	MRA: SPDT - 10 amps @ 250 VAC resistive, 10 amps @ 125 VAC resistive
<b>Enclosure</b>	NEMA-4X; Meets Class 2, Div. 1, Groups E, F & G (DIP-Dust Ignition Proof) classification; FM approval pending
Windows	UHMW (ultra-high molecular weight) polyethylene standard, PTFE (Teflon) available
<b>Shipping Weights</b>	11.8 kg (26 lb) per pair

### Microwave Point Level Detector – Physical Dimensions



© 2008 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries. Results may vary under different operating conditions. Specifications, terms and pricing are subject to change. Not all products are available in all countries. Please consult your local sales representatives for details. Literature Code PL8026.0708

	China +86 (0) 21 6865 4588 +86 (0) 21 6445 7830 fax	Netherlands +31 (0) 76-579-5555 +31 (0) 76-571-4958 fax	
Australia +61 (0) 8 8208 8200 +61 (0) 8 8234 3772 fax	Germany +49 (0) 208-824930 +49 (0) 208-852310 fax	South Africa +27 (0) 11-609-3101 +27 (0) 11-609-3110 fax	United States +1 (800) 445-3503 +1 (763) 783-2525 fax +1 (763) 783-2500 direct
Canada +1 (905) 888-8808 +1 (905) 888-8828 fax	India +91 (20) 6626 7000 +91 (20) 6626 7001 fax	Spain +34 (0) 91-484-5965 +34 (0) 91-484-3597 fax	
Chile +56 (0) 2 378 8050 +56 (0) 2 370 1082 fax	Italy +39 02-959514-1 +39 02-953200-15 fax	United Kingdom +44 (0) 1788-820300 +44 (0) 1788-820301 fax	<a href="http://www.thermo.com/bulk-handling">www.thermo.com/bulk-handling</a>