



## MODEL MD9100T REMOTE HOT METAL DETECTOR THYRISTOR OUTPUT



- **110V AC Two Wire Thyristor Output.**
- **Interchangeable remote lenses: 1°, 2°, 4°, 7° F.O.V. spot & ½° x 25° F.O.V. precision slit rectangular.**
- **High Temp lens ratings of 180°C, 400°C & 1000°C.**
- **DIP switch selectable I.R. thresholds down to 270°C.**
- **Thyristor Output, N.O., Rated 350MA, 110VAC**
- **Adjustable response time from 2 to 200 msec.**
- **Supplementary analog output to assist in alignment.**
- **Remote Self-check facility.**
- **Robust lens mounts available including air purged, air cooled or water cooled.**

**Remote Design utilizing 400°C Optic Leads & Remote Lenses.**

### General Description

The MD9100T is a remote Hot Metal Detector that combines the features of various models into one unit. The MD9100T utilizes a modular electronic controller, flexible armored optic leads and interchangeable remote lenses. The MD9100T detector provides one electronic controller that can be standardized on throughout the mill. Now there is no need to stock a detector for each different trip level. Thus costly inventory of ordinary detectors can be replaced with the single MD9100T.

A wide variety of remote lenses are available. Impervious to water or steam and built to withstand the harshest environments. Used in conjunction with flexible armored optic lead, these lenses provide a high level of optical accuracy by allowing the selection of the ideal lens arrangement for the installation. Robust lenses with temperature ratings of 180°C, 400°C and 1000°C can be mounted close to the hot product. Various robust lens mounts are available including air purged, air purged & air cooled, and air purged & water cooled.

All remote lenses incorporate filters to minimize sensitivity to extraneous light. For general tracking, spot lenses are commonly used. Where high accuracy is required or the product deviates about the center line (i.e. Rod Mill) a ½° x 25° precision slit rectangular lens should be utilized. This slit rectangular lens is also highly suited to Strip Mills. Also available is a high temperature Quartz Rod lens specifically for mounting in exceptionally high ambient adjacent to furnaces, hot slabs or billets. Withstands 1000°C radiant heat and provided in a robust lens shroud with protective nozzle and air purge facility.

To accommodate variation in product temperature and background radiation, six specific I.R. thresholds, from 300°C to 550°C, are selectable by an internal DIP switch in 50°C steps. Further adjustment to the trip level down to 270°C and up to 750°C can be accomplished via a threshold sensitivity adjuster.

The MD9100T operates from 110VAC-50/60 Hz and utilizes a Two Wire AC Thyristor plus ground connection. The AC Thyristor is Normally Open and is rated for 350 mA. A supplementary 0-6VDC, non-linear, analog output that allows the user to align the detector to a low energy target (i.e. a flashlight) that would normally be insufficient to switch the detector. Also a remote self check feature that is remotely initiated. When activated the detector will switch and its performance checked.

## MODULOC Technology - The Total Sensor Solution

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## General Information

### Remote Electronic Controller

**Housing:** Aluminum AL6, Oven baked black enamel  
**Housing Rating:** IEC IP66, DIN, 89011  
**Weight w/o Cable:** 1.7 Kg  
**Connector:** IP65 Plug/Socket  
**Cable Length:** 1.5 M

### Remote Lenses:

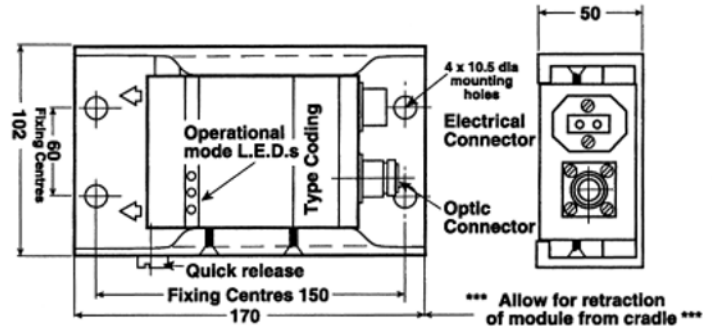
**Precision Rectangular Slit:** FOV: 1/2° x 5°, 1/2° x 15° & 1/2° x 25°; rated 160°C.  
**Stainless Rectangular Slit:** FOV: 2° x 5°; rated 400°C.  
**Stainless Tubular Spot:** FOV: 1°, 2°, 4° or 7°; rated 180°C or 400°C.  
**High Temperature Quartz Rod:** FOV: 1°; rated 1000°C.

### Optic Cables:

Armored Stainless Sheath available in lengths from 2 meters to 15 meters in 1 meter lengths; rated 400°C.

## Dimensions

### Model MD9100T Remote Electronic Controller



For dimensional information & specifications on remote lenses, lens mounts and optic cables please see the current MD9000 Bulletin.

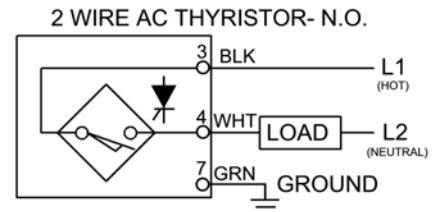
## General Specifications

Sensing Element	Germanium Diode	Supply Voltage	110 VAC ± 15% 50/60 Hz
Power Indication:	Red LED	Power Consumption	< 5 VA
Function Indication	Green LED	Operating Temperature	-20°C to +60°C (-4°F to 140°F)
Remote Self-Check	Single wire to 24 VDC internal line	Storage Temperature	-25°C to +75°C (-13°F to 167°F)
I.R. Threshold settings	Selector switch selectable in 50°C steps between 300°C to 550°C (572°F to 1022°F)	Output	AC Thyristor, Two Wire plus ground, 350mA, 110VAC . NOTE: When connecting Thyristor Output to a low leakage relay or PLC input card a 15K Ohm from load to neutral is required.
Min/Max I.R. Threshold settings	Down to 270°C and up to 750°C (1382°F) using internal sensitivity adjustment		
Response Time:	2 msec. min to 200 msec max., dip switch selectable.	IR Analog Output	0 - 6 VDC, non-linear, for aiding in alignment

### Smallest Detectable Product when utilizing a 1/2° x 25° Lens

The table below identifies the minimum % of vertical field of view required with hot steel at stated temperature for it to be repetitively detected.

Indicative Preset Thresholds		
Steel Temp.	Nominal 350°C Preset Trip	Nominal 450°C Preset Trip
400°C	10%	Not Detectable
450°C	5%	100%
500°C	1%	60%
500°C	1/2%	20%
800°C	Less than 1/2%	Less than 5%



Terminal Connections		
Pin No.	Wire Color	Function
1	Pink	Self-check to 24 VDC Supply
3	Black	110VAC Supply (L1)
4	White	Load
7	Green	Ground
10	Light Blue	Set IR Trip Point
11	Yellow	+ IR Analog Output
12	Grey	- IR Analog Output

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We reserve the right to alter specifications without prior notice. Specifications without tolerances are typical values.

Your Local Sales Representative:



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