



PF1000 PATHFINDER DIGITAL HOT METAL DETECTOR (HMD) SCANNER



The self-contained PF1000 PATHFINDER is available with either air coolant chamber venting as air purge or alternatively with water coolant chamber and separate air purge.

- **Bar display of product pass line and programmed settings**
- **Operates by control margin/signal comparison that compensates for hot scale, steam and water**
- **Fully digital - no motor driven rotating mirror**
- **1 - 250 mSec adjustable response time**
- **Continuous & remote self-test**
- **Relay and Opto-isolated outputs**
- **NPN / PNP Transistor Output (with 24 VDC)**
- **110 VAC & 24 VDC connection in one unit**
- **Robust IP66 aluminum housing with unique combined air purge cooling facility. Optional water cooling is available**

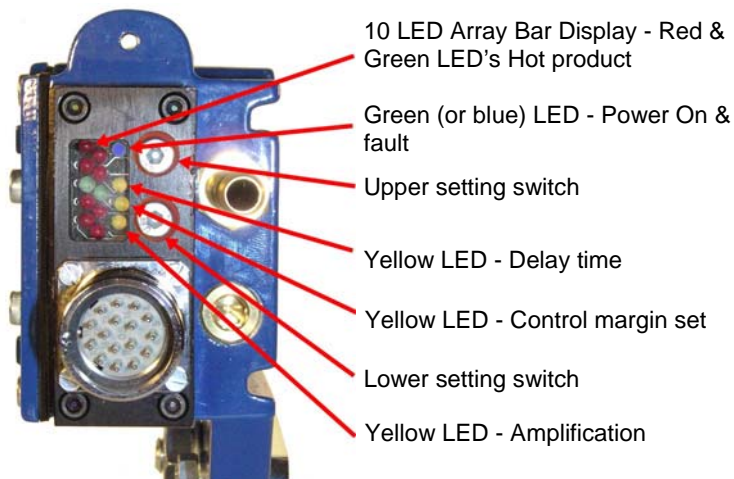
General Description

The **PATHFINDER Digital HMD Scanner** utilizes the latest microprocessor technology to ensure precise reliable detection in the most difficult area of detection such as experienced on furnace exits, run-out table and cooling beds.

Whereas old style HMD's purely detect the hot product above pre-set thresholds, the **PATHFINDER** operates by microprocessor comparison of the background and hot product signal. Neither static hot scale or steam and water in the field of view causes false triggering or loss of detection.

While static analog HMD's utilize single diode detection and Rotary Scanners incorporate rotating mirrors, the **PATHFINDER** utilizes a digitally scanned InGaAs Photodiode Array. This new technology removes the maintenance associated with Rotary Scanners yet provides the high reliability and accuracy associated with Scanners.

Microprocessor technology provides exceptionally fast and accurate detection of Rod or Strip leading/trailing edge where wide variations of IR signal are present. Response times are digitally adjusted by external switches. To assist in alignment, product path is duplicated by an 10 LED Array Bar Display which is also used to indicate adjustments to precise values.



10 LED Array Bar Display - Red & Green LED's Hot product

Green (or blue) LED - Power On & fault

Upper setting switch

Yellow LED - Delay time

Yellow LED - Control margin set

Lower setting switch

Yellow LED - Amplification

Rear Bar Display

10 LED Array - LED's indicate location of hot product when the Scanner is in Operating mode or pre-set levels when in Adjustment mode. Green LEDs indicate center of scan.

Yellow LED's - Illustrate in self - test mode. Also top and bottom yellow LED's mimic outputs - except when adjusting a setting or when in self - test mode.

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Housing Specifications

Housing: Aluminum AL6, Oven baked blue paint
Housing Rating: IEC IP66, DIN, 89011
Weight w/o Cable: 1.9 Kg
Connector: IP65 Plug/Socket
Cable Length: 1.5 M

Air & Water Specifications

Air Pressure: 1 - 2 cu ft./min at 5 PSI for normal conditions, non instrument dry air and 10 - 15 PSI for severe conditions

Water Pressure: 1 - 2 Bar

Water Volume: Regulate between 0.5 - 1 liter/min.

Water Temp.: For Ambient Temperature up to +80°C (176°F) use industrial quality water at 25°C (77°F)

For Ambient Temperature up to +120°C (250°F) use water chilled to 5°C (41°F)

Part Number Specifications

Example: PF1015-82-D

PF1015: 1° x 15° Scanning Angle

Supply Voltage: -8

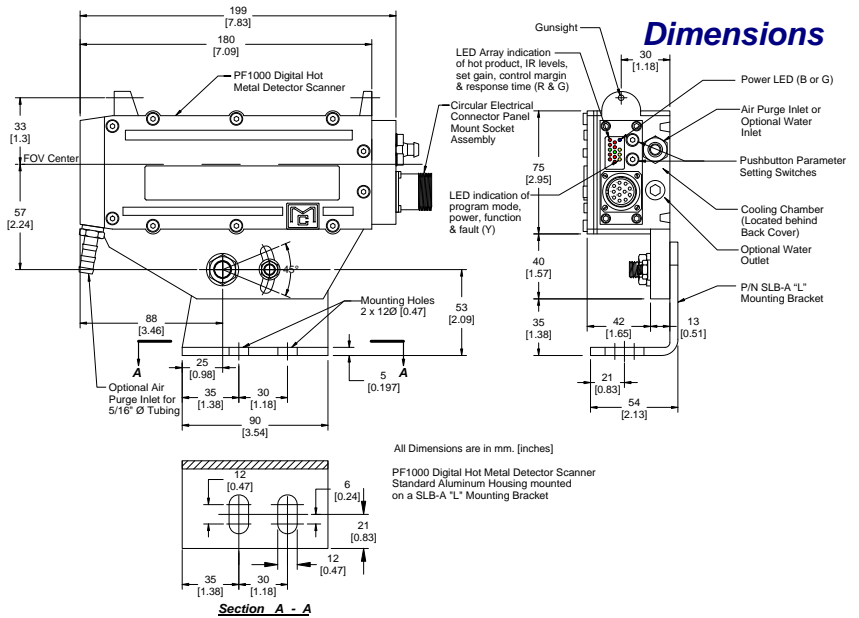
110VAC and 24 VDC

PF1022: 2° x 22° Scanning Angle

Cooling: -A Air Cooled & Air Purged

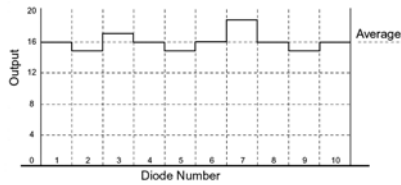
PF1035: 3° x 35° Scanning Angle

-D Water Cooled & Air Purged



General Specifications

Typical Detection	10mm Rod at 350°C from 2 meters and 50mm Bar at 350°C from 4 meters.	Supply Voltage	110 VAC ± 15% 50/60 Hz and 24 VDC +10%, -15% (Optional 220VAC AC ± 15%)
Sensing Elements	Electronically Scanned InGaAs Photodiode Array	Power Consumption	5 VA
Scan Rate	1,200 Scans/Sec.	Operating Temperature	-20°C (-4°F) to +50°C (122°F) without air or water cooling -20°C (-4°F) to +60°C (140°F) with air cooling -20°C (-4°F) to +90°C (194°F) inline vortex air cooling +2°C (36°F) to +120°C (250°F) with water cooling
Min Product Temp.	250°C	Remote Self Check	Remotely Energized - Continuous Test
Product Position Display	10 LED Array Bar Display	Output (1)	Reed Relay Output (N/O) 240 VAC, 1A, 20W - 4 msec. response
Continuous Self Check	Opto-isolated Outputs (+) & (-)	Output (2)	Opto-isolated NPN Output 300 V, 150 mA, 200mW - 2 msec. response
Scanning Angle:	Standard: 1° x 15° Optional: 2° x 22°, 3° x 35°;	Output (3)	NPN & PNP Outputs 400 mA, 45 V, 2A peak
Detection Technique	Differential comparison between background and hot product.		
Response Time:	1- 250 msec. digitally adjustable locking timers		



Background IR Signal

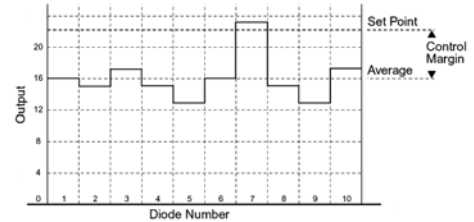
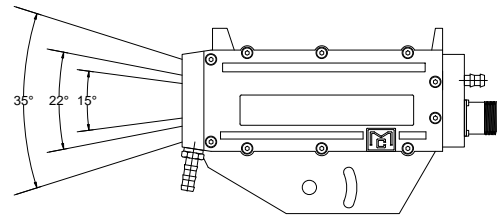
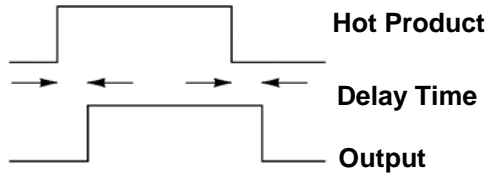


Chart illustrating signal from passing hot product

Chart illustrating signal from typical hot background

The hot product is detected by reference to an appropriate site-adjusted control margin (stored in Non-Volatile memory) that ensures sufficient gap between background IR signal and the IR radiating from the product.

This chart illustrates the control margin. Where the background IR is uniform then the control margin can be set to a lower figure. Any hot product passing needs to give a signal that exceeds the set point.



Scanning Angle Options

Delay Timer Function

Outputs delayed from the detection of leading and trailing edge by 10 digitally adjustable preset delay times from 1msec. to 250msec. Set delay time indicated by relative high/low Red LED indication.

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MODULOC
Control Systems

Your Local Sales Representative:



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

Bulletin MC-PF1000-10-09
September 2010