冷床热金属检测器
使用说明书

冷床热金属检测器使用说明

HMD1－AC—L

S: 标准型带水冷
L: 低温型带水冷

AC（2Z）: 电源电压为交流 220V
DC（4Z）: 电源电压为直流 24V

HMD1 型（中体积）：标准直控式高、低温型
HMD4 型（小体积）：标准直控式高、低温型
HMD8 型（大体积）：标准直控式高、低温型（HGE95 型和 KDH6/7 型）
LTD1 型（中体积）：标准直控式高、低温型
T-LTD 型（圆柱形）：标准直控式高、低温型
HGE65 型（小体积）：标准直控式高、低温型（工作电压：AC220V）
HGE98 型（小体积）：标准直控式高、低温型（工作电压：DC24V）
RJJ1 型（中体积）：标准直控式高、低温型
RJJ3/4 型（小体积）：标准直控式高、低温型
RJJG 型：光纤间接式高、低温型
注： 所有型号适用于继电器无源接点输出和有源高电平输出，低温型温度检测范围：260℃-1400℃，高温型温度检测范围：550℃-1400℃

1、工作原理

本检测器接收到钢的运动信号，经光学部分进行聚焦到光学元件上后经电子线路处理，输出两对开关量，继电器触点输出和无触点电平输出，实现冷床一个站点的监控。

2、设计理念

新一代棒材冷床热金属检测器（红外线检测器，俗称热检或探头）在传统检测器的安装尺寸、接线编号的基础上进行升级。机芯采用进口元件、检测头采用多角度显微镜镜片和大口径耐高温工艺玻璃防尘，使检测范围更宽。检测器带有现场电源变色指示灯、高温警示灯、实验按钮和可靠的航空插头电线电缆，在现场具有稳定性好，操作维修方便等特点。

3、技术指标

—接收光谱范围：400nm-1100nm
—检　测 温 度：260℃-1400℃
—响　应 时 间：电平＜0.8ms　隔离＜1.6ms　继电器接点＜20ms
—检　测 距 离：0.03m-1m
—工　作 温 度：-25℃—75℃（带风冷）、-25℃—100℃（带水冷）
—储　存 温 度：-25℃—70℃
—电　源 电 压：AC220V±20％ 、 DC24V
—防　护 等 级：IP67
—自　检 功 能：按实验按钮，可检查出接点、电接点是否正常
—广　角 透 镜：采用显微镜镜片，让视角更宽
—光　电 元 件：采用进口高灵敏度 VXTB5080
—变 色 指示灯：电源指示绿色、工作动作指示红色
—冷　　却：水冷装置，可采用氧气管作水管，几个检测器串接起来同时冷却
—体　　积：小体积：310mm（长）×200mm（高）×56mm（厚）
　　中体积：420mm（长）×230mm（高）×85mm（厚）
　　大体积：320mm（长）×270mm（高）×80mm（厚）
—重　　量：小体积：2.10 千克
　　中体积：3.91 千克
　　大体积：4.35 千克

4、使用方法

红钢运动范围在检测中的视场范围内，然后上下左右调整检测器，使钢在检测器视场范围内的中间位置即可保证可靠工作，最后固定检测器。

5、注意事项

①请不要在太阳光直射到的地方安装检测器，做好防止阳光及其他光线的干扰；
②在周围环境达到 70℃以上时必须加水冷却；
③检测器使用一段时间后，请擦除防尘筒内平凸透镜上的灰尘等杂物，如灵敏度有下降，请调节检测器的灵敏度。

6、接线表

接线表 1（适用于 HMD1、LTD1、T-LTD、RJJ1 - DC24V 型）

<table>
<tr><td>插脚号</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>线色</td><td>棕(正极)</td><td>红</td><td>橙（粉红）</td><td>黄</td><td>绿</td><td>蓝</td><td>紫（白）</td></tr>
<tr><td rowspan="2">功用</td><td colspan="2" rowspan="2">DC24V
输入</td><td>常开</td><td>公共点</td><td>常闭</td><td>高电平
（+24V）</td><td>低电平
（0V）</td></tr>
<tr><td colspan="3">无源接点输出（继电器）</td><td colspan="2">有源电接点输出</td></tr>
</table>

接线表 2（适用于 HMD1、LTD1、T-LTD、RJJ1 - AC220V 型）

插脚号	1	2	3	4	5	6	7
线色	棕	红	橙（粉红）	黄	绿	蓝	紫（白）
功用	AC220V 输入		常开	公共点	常闭	常开型	
			无源接点输出（继电器）			电接点输出	

接线表 3（适用于 HMD8、HMD4、HGE98、HGE95、RJJ3/4 - DC24V 型）

插脚号	10	8	3	1	4	7
线色	绿	黄（正极）	紫	蓝	白	红
功用	DC24V 输入		低电平（0V）	高电平（+24V）	公共点	常开
			有源电接点输出		无源接点输出（继电器）	

接线表 4（适用于 HMD8、HMD4、HGE65、HGE95、RJJ3/4 - AC220V 型）

插脚号	10	8	3	2	1	4	7
线色	黑	红	绿	黄	蓝	白	橙
功用	AC220V 输入		常闭	公共点	常开	常开型	
			无源接点输出（继电器）			电接点输出	

User's Manual for Hot Metal Detector

HMD1—AC—L

S: Standard water-cooling
L: Low temperature water-cooling

AC(2Z): Power voltage AC-220V
DC(4Z): Power voltage DC-24V

HMD1-type (Medium size) : Standard direct control type
HMD4-type (Small size): Standard direct control type
HMD8-type (Large size): Standard direct control type
(adapting to HGE95-type or KDH6,7-type)
LTD1-type (Medium size) : Standard direct control type
T-LTD-type (Cylinder-shaped): Standard direct control type
HGE65-type (Small size): Standard direct control type
(working at power voltage AC-220V)
HGE98-type (Small size): Standard direct control type
(working at power voltage DC-24V)

RJJ1-type (Medium size): Standard direct control type
RJJ3/4-type (Small size): Standard direct control type
RJJG-type: Optical fiber indirect type

Note: All types are equipped with two kinds of outputs: relay passive contact output and active high level output. There are two subtypes for all products: one is low-temperature type with temperature detection range 260℃-1400℃, the other is high-temperature type with temperature detection range 550℃-1400℃.

1. Working principle

The hot metal detector receives a light signal from the moving steel. The light is concentrated on the optical component. After the signal is processed by electronic circuits, two kinds of switches are outputted: relay passive contact output and contactless active high level output, which implement the monitoring of one station on the cooling bed.

2. Design philosophy

These new generations of hot metal detectors are updated from the traditional in aspects of installation dimension and Connection number. Imported components are

used in electronic circuits. In the detecting head, the multi-angle microscope lens and the large-diameter heat-resistant dustproof glass are introduced. All these improvements make the detection range wider. The detectors are equipped with color-change indicator, high-temperature warning indicator, test button and reliable aviation plug, electric wires and cables, which have the characteristics of stability, easy-use, easy-maintenance, etc.

3. Technical parameters

— Detected spectral range:	400nm-1100nm	
— Detected temperature:	260℃-1400℃	
— Response time:	level < 0.8ms; isolation < 1.6ms; contact < 20ms	
— Detected distance:	0.03m-1m	
— Working temperature:	–25℃－75℃ (air-cooling);	
	–25℃－100℃ (water-cooling)	
— Storage temperature:	–25℃－70℃	
— Power voltage:	AC-220V±20％; DC-24V	
— Level of protection:	IP67	
— Self-checking:	Press the test button and check if the contact or electric contact is normal.	
— Wide-angle lens:	microscope lens widening the visual angle of devices	
— Photoelectric element:	imported VXTB5080 with high sensitivity	
— Color-change indicator:	green (power supply); red (working)	
— Cooling:	For water-cooling devices, oxygen hoses can be used as water hoses and several detectors can be concatenated to be cooled together.	
— Size:	small size:	310mm × 200mm × 56mm
(length × height × thickness)	medium size:	420mm × 230mm × 85mm
	large size:	320mm × 270mm × 80mm
— Weight:	small size:	2.10kg
	medium size:	3.91kg
	large size:	4.35kg

4. How to use

Put the detector in a position where the movement of the hot metal is within the range of detection. Then adjust the direction of the detector to make sure that the hot metal is at the center of detection range. In the end, immobilize the detector.

5. Cautions

① Please do not install the detector in the position radiated by the sunlight directly. Prevent disturbances of sunlight and other possible lights.

② Water-cooling is a must when the environment temperature exceeds 70℃.

③ After a period of usage time, please wipe the dust or dirt on the lens which is hidden in the dustproof cylinder. If the sensitivity is declined, please adjust the sensitivity knob.

6. Wiring tables

Wiring table 1 (applicable to HMD1, LTD1, T-LTD, RJJ1 - DC24V)

Pin number	1	2	3	4	5	6	7
Color	brown (positive)	red	orange (pink)	yellow	green	blue	purple (white)
Function	DC24V input		NO	COM	NC	high level (+24V)	low level (0V)
			passive contact output (relay)			active electric contact output	

Wiring table 2 (applicable to HMD1, LTD1, T-LTD, RJJ1 - AC220V)

Pin number	1	2	3	4	5	6	7
Color	brown	red	orange (pink)	yellow	green	blue	purple (white)
Function	AC220V input		NO	COM	NC	NO	
			passive contact output (relay)			electric contact output	

Wiring table 3 (applicable to HMD8, HMD4, HGE98, HGE95, RJJ3/4 - DC24V)

Pin number	10	8	3	1	4	7
Color	green	yellow (positive)	purple	blue	white	red
Function	DC24V input		low level (0V)	high level (+24V)	COM	NO
			active electric contact output		passive contact output (relay)	

Wiring table 4 (applicable to HMD8, HMD4, HGE65, HGE95, RJJ3/4 - AC220V)

Pin number	10	8	3	2	1	4	7
Color	black	red	green	yellow	blue	white	orange
Function	AC220V input		NC	COM	NO	NO	
			passive contact output (relay)			electric contact output	

Note: COM = common point, NO = normally open, NC = normally close.