

XR 微波料位开关

选型手册



Selection Guide of
XR Microwave Level Switches

选型手册(Selection Guide)

目录

XR05 通用型微波料位开关.....	3
XR06 加长型微波料位开关.....	8
XR07 双路输出微波料位开关.....	13
XR05 universal microwave level switch.....	19
XR06 lengthened microwave level switch.....	24
XR07 dual output microwave level switch.....	29

XR05 通用型微波料位开关

技术特点

- 应用性广 固体、液体及浆料
- 可靠性 不受泡沫的影响
- 抗粘附 可有效检测粘附性导电浆料
- 结构紧凑 适合狭小空间安装
- 接液材质 适合卫生及工业应用
PEEK 及不锈钢
- 使用方便 可使用手持式通信器设定报警点
及查看过程变量值
- 工作温度范围 标准型 115℃ 散热型 150℃



技术参数

性能指标

测量原理:	扫频
测量回差	±1mm
介质特性	DC≥1.5
响应时间	0.2s

阻尼时间	0~5s (可设定)
重复性	±1mm

过程条件

过程温度 (标准过程连接)	-40~115℃
过程压力 (标准过程连接)	-0.1~10MPa
其他连接 过程条件	参见操作条件表

过程连接类型

种类	参见尺寸图
安装位置:	顶部, 底部, 侧面

外壳

尺寸:	参见尺寸图
材质	不锈钢

电气连接

连接方式	4x0.5mm ² 电缆出线 M12 4 芯连接器
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供电

电压范围	12~30VDC
启动时间	<1s
供电电流 (无负载)	8mA (典型值) 40mA(最大值)
反极性保护	有
介电强度	500VAC

缺省出厂设定

阻尼时间	0s
报警点参数 AL1	250 (低介电常数介质) 550 (水基介质) 720 (导电浆液) P1000≥AL1 时输出报警

接液材质	PEEK 304 或 316L	测量值 PV	0~1000, 校准后: 100: 探头在空气中 900: 探头在自来水中
接液表面粗糙度	Ra < 0.8μm	报警回差	25
环境条件		保护功能	被解锁前, 参数不能修改
防护等级	IP67	认证情况	
湿度	<98%RH, 有凝结	EMI 辐射	GB/T 24338.4-2009
环境温度	电缆引出型: -25~70°C M12 连接器型: -40~85°C	EMC 抗扰性	GB/T 24338.4-2009
存储温度	电缆引出型: -25~70°C M12 连接器型: -40~85°C	防爆认证	Ex ia IIC T5 Ga Ex ta IIIC T100 °C
输出信号		卫生认证	FDA, AAA
输出类型	NPN PNP		
输出逻辑 (NPN,PNP 式)	● NO(常开) ● NC (常闭)		
输出压降 (典型值)	PNP:1.5±0.5V, Rload=10k NPN:1.5±0.5V, Rload=10k		
输出电流	20mA (最大值)		
泄漏电流	<100uA		
输出短路保护	有		

操作条件

过程连接	ID	工作温度 (长期) 环境温度 < 50°C	工作压力 (长期)	最高工作温度 (1 小时) 环 境温度 < 50°C	工作压力 (1 小 时, 最高温度)
G 1/2 螺纹标准型	0	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa
G 1/2 螺纹反向安装	1	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa
G1/2 螺纹带散热颈	2	-40~150°C	-0.1~10MPa	150°C	-0.1~10MPa

尺寸图:

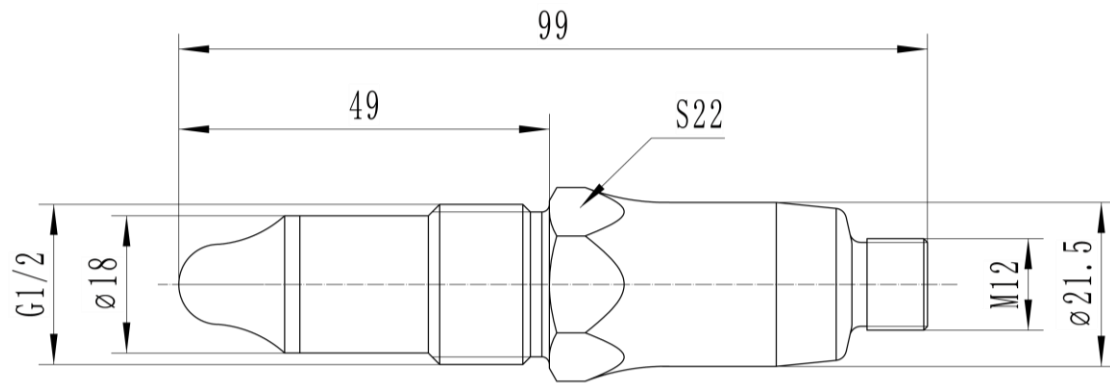


Fig.1 标准型 (ID=0)

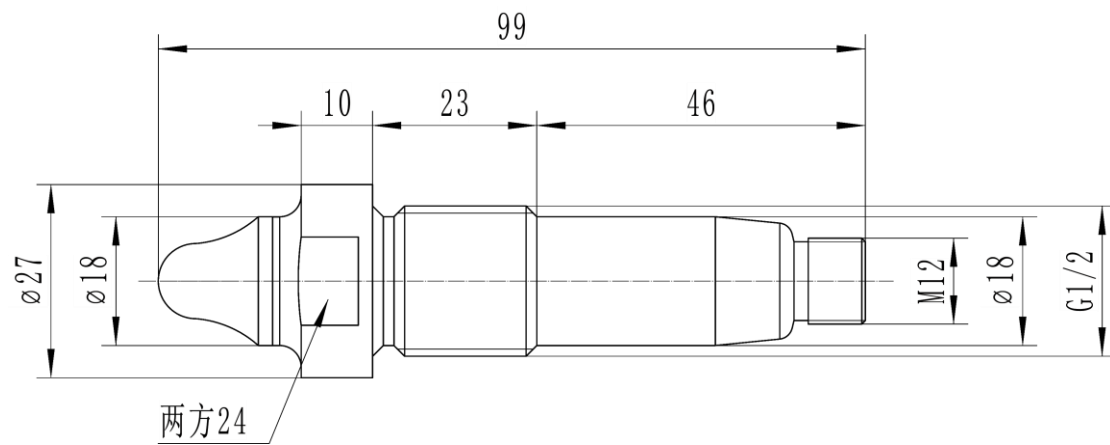


Fig.2 反向安装型(ID=1)

等效电路 (电缆出线型)											
输出类型	电气连接	等效电路图	功能 (线色或线号)								
NPN			<table border="1"> <tr><td>VDC+</td><td>白 1</td></tr> <tr><td>SW1 (NO)</td><td>黄 4</td></tr> <tr><td>SW1 (NC)</td><td>棕 2</td></tr> <tr><td>GND (0V)</td><td>绿 3</td></tr> </table>	VDC+	白 1	SW1 (NO)	黄 4	SW1 (NC)	棕 2	GND (0V)	绿 3
VDC+		白 1									
SW1 (NO)	黄 4										
SW1 (NC)	棕 2										
GND (0V)	绿 3										
PNP		<table border="1"> <tr><td>VDC+</td><td>白 1</td></tr> <tr><td>SW1 (NO)</td><td>黄 4</td></tr> <tr><td>SW1 (NC)</td><td>棕 2</td></tr> <tr><td>GND (0V)</td><td>绿 3</td></tr> </table>	VDC+	白 1	SW1 (NO)	黄 4	SW1 (NC)	棕 2	GND (0V)	绿 3	
VDC+	白 1										
SW1 (NO)	黄 4										
SW1 (NC)	棕 2										
GND (0V)	绿 3										

等效电路 (M12 连接器)											
输出类型	电气连接	等效电路图	功能 (M12 端子编号)								
NPN			<table border="1"> <tr><td>VDC+</td><td>1</td></tr> <tr><td>SW1 (NO)</td><td>4</td></tr> <tr><td>SW1 (NC)</td><td>2</td></tr> <tr><td>GND (0V)</td><td>3</td></tr> </table>	VDC+	1	SW1 (NO)	4	SW1 (NC)	2	GND (0V)	3
VDC+		1									
SW1 (NO)	4										
SW1 (NC)	2										
GND (0V)	3										
PNP		<table border="1"> <tr><td>VDC+</td><td>1</td></tr> <tr><td>SW1 (NO)</td><td>4</td></tr> <tr><td>SW1 (NC)</td><td>2</td></tr> <tr><td>GND (0V)</td><td>3</td></tr> </table>	VDC+	1	SW1 (NO)	4	SW1 (NC)	2	GND (0V)	3	
VDC+	1										
SW1 (NO)	4										
SW1 (NC)	2										
GND (0V)	3										

订货信息

订货代码	XR05	-x	-0	-xx	-x	-x	-x	-x	-x	-x
产品代号:	XR05									
输出类型:										
NPN		N								
PNP		P								
继电器 (外部模块)		R								
工作模式:										
单路报警			0							
外壳材质										
304				04						
316L				6L						
电气连接:										
4 芯电缆					W					
4 针 M12 连接器					M					
探头及过程连接:										
G1/2 螺纹						0				
G1/2 螺纹+反向安装						1				
G1/2 螺纹+散热脖颈						2				
用户特定						3				
密封垫圈:										
无							0			
FKM							1			
EPDM							2			
NBR							3			
用户特定							4			
防爆认证:										
无								0		
Ex ia IIC T5 Ga								1		
Ex ta IIIC T100 °C								2		
用户特定								3		
卫生认证:										
无									0	
FDA									1	
3A									2	
其他									3	
出厂设置:										
低介电常数介质设定										0
水基介质设定										1
导电浆液设定										2
用户特定										3

XR06 加长型微波料位开关

技术特点

- 应用性 固体、液体及浆料
- 加长探杆
 - 加长探杆适合有保温层的罐体
 - 加长探杆有助于抗粘附
 - 加长探杆更适合测量高温介质
- 可靠性 不受泡沫的影响
- 抗粘附 可有效检测粘附性导电浆料
- 指示清晰 报警灯光 360 度可见
- 接液材质 适合卫生及工业应用
PEEK 及不锈钢
- 使用方便 可使用手持式通信器，查看测量值或
设定报警点。
- 适合高温介质 介质最高工作温度 200℃



技术参数

性能		外壳	
测量原理:	扫频	尺寸:	参见尺寸图
测量回差	±1mm	材质	不锈钢
介质特性	DC≥1.5	电气连接	
响应时间	0.2s	连接方式	M16x1.5 防水接头 M12 4 芯圆形连接器
阻尼时间	0~5s (可设定)	供电	
重复性	±1mm	电压范围	12~30VDC
过程条件		供电电流	12mA (典型值) 40mA(最大值)
过程温度	-40~115℃ (标准过程连接)	反极性保护	有
过程压力	-0.1~10MPa (标准过程连接)	介电强度	1000VAC (电源线对机壳)
其他连接	参见操作条件表	启动时间	<1s
过程条件			

技术参数	
过程连接类型	
种类	参见尺寸图
安装位置:	顶部, 底部, 侧面
接液材质	PEEK, 316L 或 304
接液表面粗糙度	Ra < 0.8μm
环境条件	
环境温度	-40~85°C
存储温度	-40~85°C
防护等级	IP67
湿度	<98%RH, 有凝结
输出信号	
输出类型	NPN PNP
输出逻辑 (NPN,PNP 式)	● NO(常开) ● NC (常闭)
输出短路保护	有
输出压降 (典型值)	PNP:1.5±0.5V, Rload=10k NPN:1.5±0.5V, Rload=10k
输出电流	20mA 最大值
泄漏电流	<100uA
缺省出厂设定	
保护功能	被解锁前, 参数无法修改。
报警点参数 AL1	250 (低介电常数介质) 550 (水基介质) 720 (导电浆液) P1000≥AL1 时输出报警
报警回差	25
阻尼时间	0s
报警延时	0s
测量值 PV 范围	0~1000 校准后: 100: 探头在空气中 900: 探头在自来水中
认证情况	
EMI 辐射	GB/T 24338.4-2009
EMC 抗扰性	GB/T 24338.4-2009
卫生认证	FDA, AAA
防爆认证	Ex ia IIC T4 Ga Ex tD A20 IP67 T100 ° C

操作条件					
过程连接	ID	长期工作温度 环境温度 <40°C	工作压力 (长期)	最高工作温度 (1 小时内) 环境温度<40°C	工作压力 (1 小 时内, 最高温 度)
标准型探头 长度 60mm	0	-40~115°C	-0.1~10MPa	140°C	-0.1~10MPa
加长型探头 长度 100mm	1	-40~175°C	-0.1~10MPa	175°C	-0.1~10MPa
加长型探头 长度 250mm	2	-40~200°C	-0.1~10MPa	200°C	-0.1~10MPa

尺寸图:

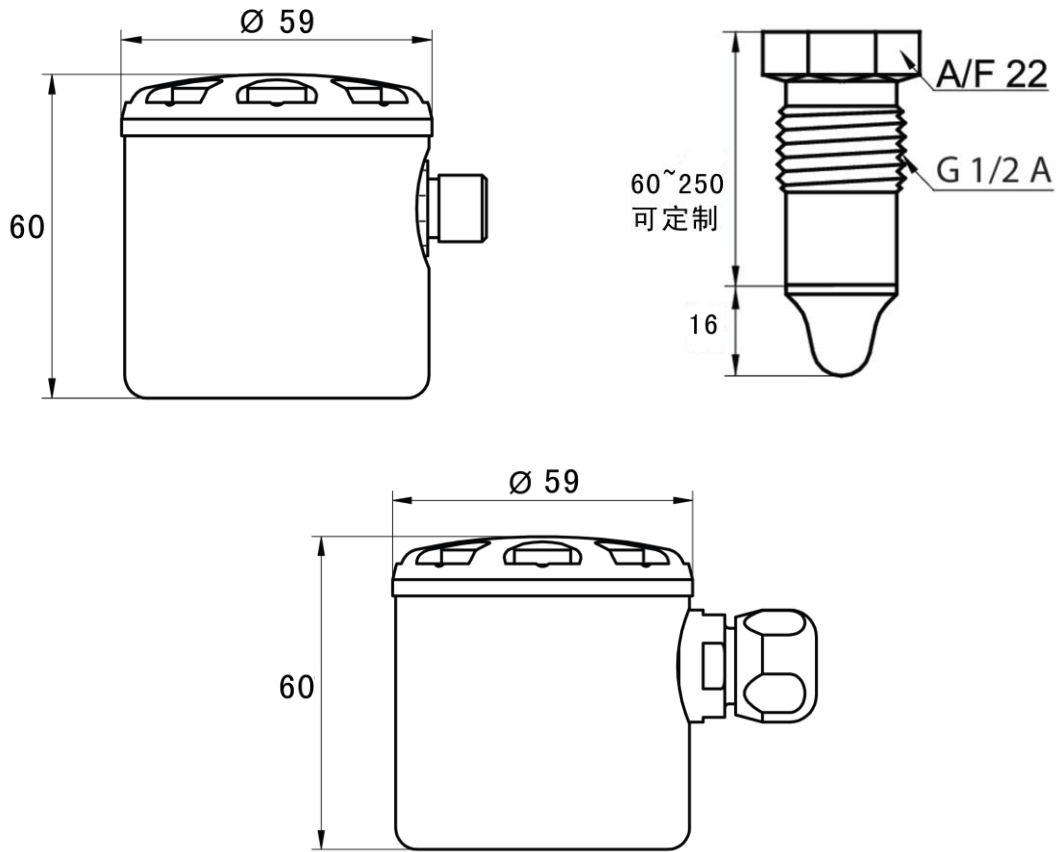


Fig.1 结构图

内部接线

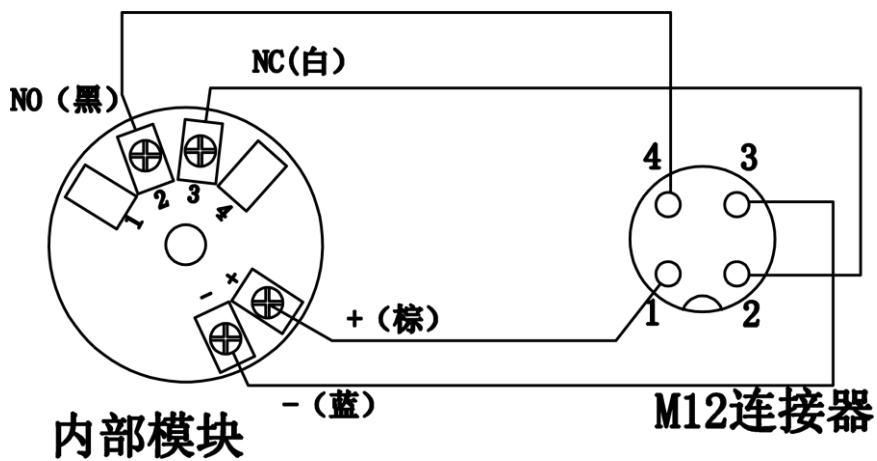
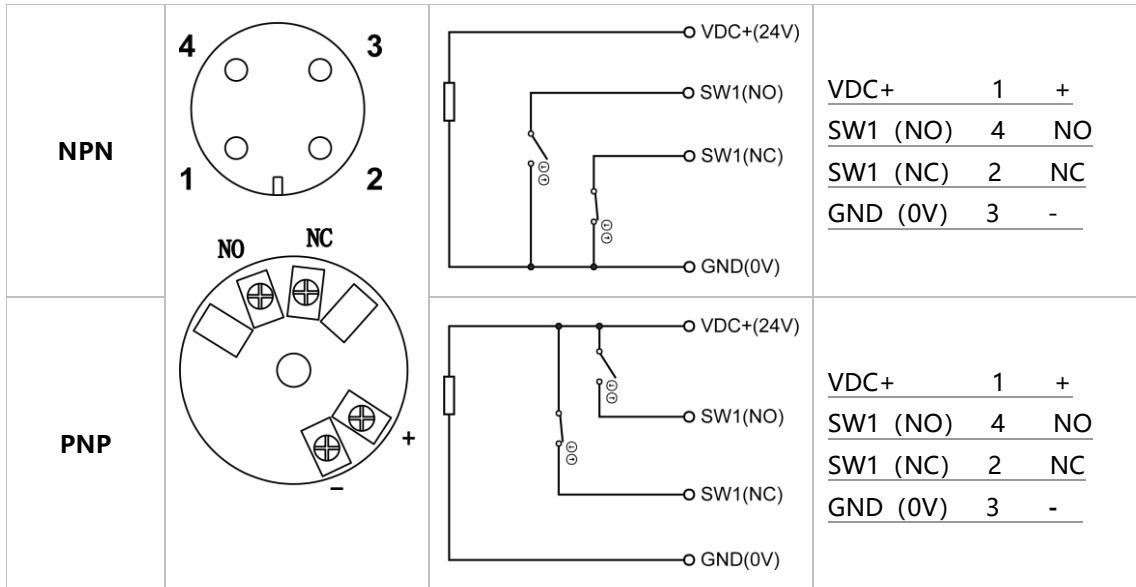


Fig.2 内部端子接线

等效电路 (M12 连接器, 内部端子)

输出类型	电气连接	等效电路图	功能
			M12PIN 内部端子



订货信息

订货代码	XR06	-x	-0	-xx	-x	-x	-x	-x	-x	-x
产品代号:	XR06									
输出类型:										
NPN	N									
PNP	P									
继电器	R									
工作模式:										
单路报警			0							
外壳及接液材质										
304 不锈钢				04						
316L 不锈钢				6L						
电气连接:										
4 针 M12 连接器					M					
M16x1.5 防水头					W					
探杆长度及过程连接:										
G1/2" 60mm						0				
G1/2" 100mm						1				

G1/2" 250mm	2		
G1/2 指定长度	3		
用户特定	4		
密封垫圈:			
无		0	
FKM		1	
EPDM		2	
NBR		3	
用户特定		4	
防爆认证:			
无			0
Ex ia IIC T4 Ga			1
Ex ta IIIC T100 °C			2
用户特定			3
卫生认证:			
无			0
FDA			1
3A			2
用户特定			3
出厂设置:			
低介电常数介质			0
水基介质			1
导电浆液			2
用户指定			3

XR07 双路输出微波料位开关

技术特点

- 应用性广 固体、液体及浆料
- 2 路独立报警 可检测分层介质中的不同层
- 抗粘附 可有效检测粘附性导电浆料
- 结构紧凑 适合狭小空间安装
- 接液材质 适合卫生及工业应用
PEEK、不锈钢
- 使用方便 可通过手持式通信器，查看测量值或设定报警点。
- 数据上传 在 24V 数据线上，实现串行数据上传
- PWM 输出 可通过 PWM 脉宽调制，上传过程变量



技术参数

性能		外壳	
测量原理:	扫频	尺寸:	参见尺寸图
测量回差	±1mm	材质	不锈钢
介质特性	DC≥1.5	电气连接	
响应时间	0.2s (典型), 可设定	连接方式	4x0.5mm ² 屏蔽电缆出线 M12 4 芯连接器
阻尼时间	0~5s (可设定)	供电	
重复性	±1mm	电压范围	12~33VDC
过程条件		供电电流 (无负载)	12mA (典型值) 40mA(最大值)
过程温度 (标准过程连接)	-40~115°C	启动时间	<1s
过程压力 (标准过程连接)	-0.1~10MPa	反极性保护	有
其他连接 过程条件	参见操作条件表	介电强度	1000VAC

技术参数

过程连接类型

种类	见尺寸图
安装位置:	顶部, 底部, 侧面

接液材质	PEEK, 316L
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接液表面粗糙度	Ra < 0.8μm
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环境条件

环境温度	电缆引出型: -25~70°C M12 连接器型: -40~85°C
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存储温度	电缆引出型: -25~70°C M12 连接器型: -40~85°C
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防护等级	IP67
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湿度	<98%RH, 有凝结
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输出信号

输出类型	数字 (推挽式) NPN PNP
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输出逻辑 (数字式)	<ul style="list-style-type: none"> ● 碰到物料, 输出高电平 ● 碰到物料, 输出低电平
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输出逻辑 (NPN,PNP 式)	<ul style="list-style-type: none"> ● NO (常开) ● NC (常闭)
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输出压降 (典型值)	NPN: (+0.4 V) ± 0.2 V, Rload ≥ 10 kΩ PNP: (+Vs -0.5 V) ± 0.2 V, Rload ≥ 10 kΩ
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输出电流 (最大)	100mA
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PNP 泄漏电流	<100uA
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NPN 泄漏电流	50~600uA
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输出短路保护	有
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缺省出厂设定

保护功能	被解锁前, 参数无法修改
工作模式:	0: 单路报警 (缺省) 1: 双路报警 (NO+NC) 2: 双路报警 (NO+NO) 3: 数据上传 4: PWM 脉宽调制输出

SW1 (工作模式 0,1)	NO (常开)
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SW 2 (工作模式 0,1)	NC (常闭)
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报警点参数	AL1=350, AL2=750
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报警回差	25
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阻尼时间	0s
------	----

报警延时	0s
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测量值 PV 范围	0~1000, 校准后: 100: 探头在空气中 900: 探头在自来水中
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认证情况

EMI 辐射	GB/T 24338.4-2009
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EMC 抗扰性	GB/T 24338.4-2009
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防爆认证	Ex ia IIC T4 Ga Ex ta IIIC T100 °C
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卫生认证	FDA, AAA
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轨道交通认证	GBT25119
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操作条件					
过程连接	ID	长期工作温度 环境温度<50°C	工作压力 (长期)	最高工作温度 (1 小时内) 环境温度<50°C	工作压力 (1 小 时内, 最高温 度)
G 1/2 + A0 型探头	0	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa
G1/2 + A1 型探头	1	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa
G1/2 + A2 型探头	2	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa

尺寸图:

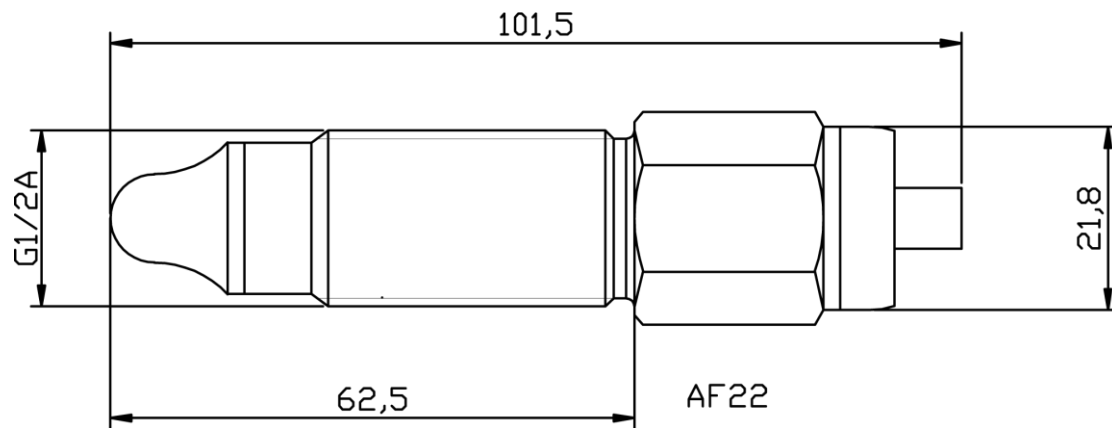


Fig.1 A0 标准型探头

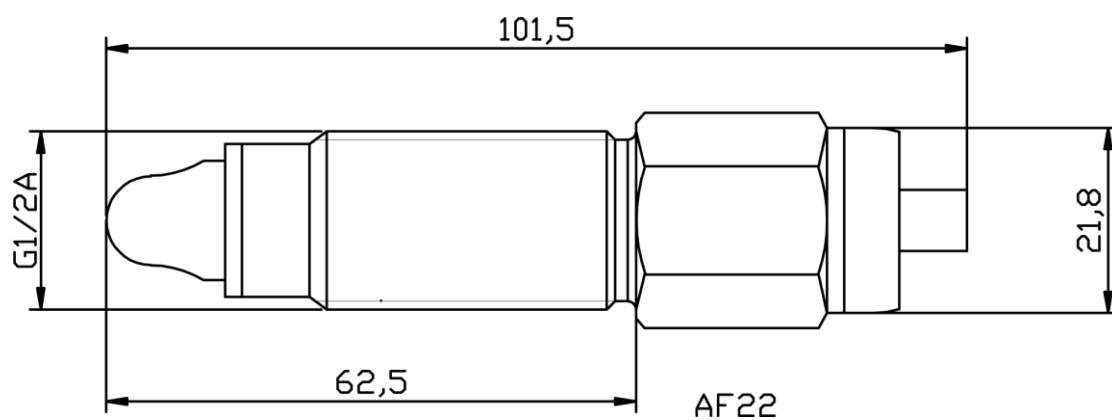


Fig.2 A1 抗挂料增强型探头

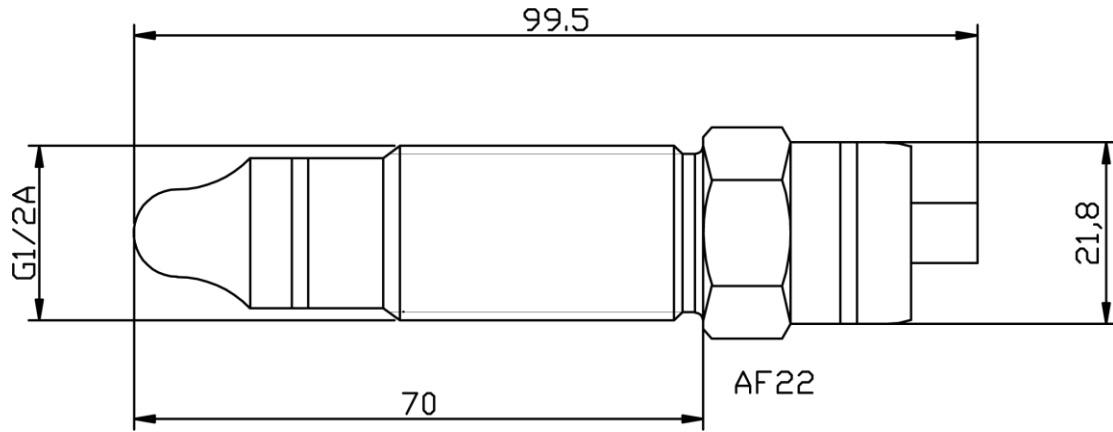
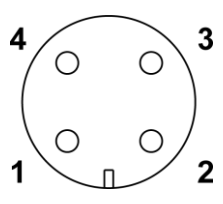
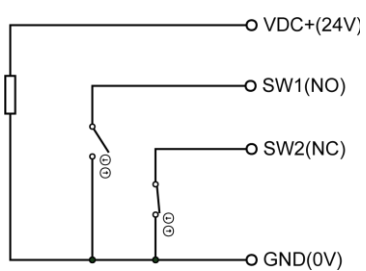
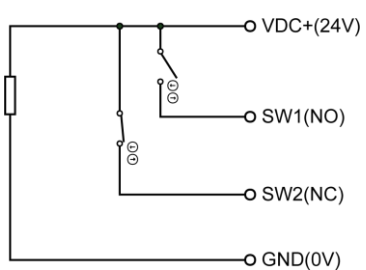
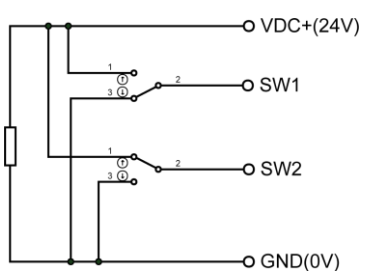


Fig.3 A2 抗挂料增强型探头

等效电路 (电缆出线型) , 工作模式 0 或 1 时											
输出类型	电气连接	等效电路图	功能 (线色或线号)								
NPN	<p>白 1 绿 3 4/2 黄、棕</p>		<table border="0"> <tr><td>VDC+</td><td>白 1</td></tr> <tr><td>SW1</td><td>黄 4</td></tr> <tr><td>SW2 (可通信)</td><td>棕 2</td></tr> <tr><td>GND (0V)</td><td>绿 3</td></tr> </table>	VDC+	白 1	SW1	黄 4	SW2 (可通信)	棕 2	GND (0V)	绿 3
VDC+	白 1										
SW1	黄 4										
SW2 (可通信)	棕 2										
GND (0V)	绿 3										
PNP			<table border="0"> <tr><td>VDC+</td><td>白 1</td></tr> <tr><td>SW1</td><td>黄 4</td></tr> <tr><td>SW2 (可通信)</td><td>棕 2</td></tr> <tr><td>GND (0V)</td><td>绿 3</td></tr> </table>	VDC+	白 1	SW1	黄 4	SW2 (可通信)	棕 2	GND (0V)	绿 3
VDC+	白 1										
SW1	黄 4										
SW2 (可通信)	棕 2										
GND (0V)	绿 3										
数字推挽式输出			<table border="0"> <tr><td>VDC+</td><td>白 1</td></tr> <tr><td>SW1</td><td>黄 4</td></tr> <tr><td>SW2 (可通信)</td><td>棕 2</td></tr> <tr><td>GND (0V)</td><td>绿 3</td></tr> </table>	VDC+	白 1	SW1	黄 4	SW2 (可通信)	棕 2	GND (0V)	绿 3
VDC+	白 1										
SW1	黄 4										
SW2 (可通信)	棕 2										
GND (0V)	绿 3										

等效电路 (M12 连接器) , 工作模式 0 或 1 时											
输出类型	电气连接	等效电路图	功能 (编号)								
NPN			<table border="1"> <tr><td>VDC+</td><td>1</td></tr> <tr><td>SW1</td><td>4</td></tr> <tr><td>SW2 (可通信)</td><td>2</td></tr> <tr><td>GND (0V)</td><td>3</td></tr> </table>	VDC+	1	SW1	4	SW2 (可通信)	2	GND (0V)	3
VDC+	1										
SW1	4										
SW2 (可通信)	2										
GND (0V)	3										
PNP			<table border="1"> <tr><td>VDC+</td><td>1</td></tr> <tr><td>SW1</td><td>4</td></tr> <tr><td>SW2 (可通信)</td><td>2</td></tr> <tr><td>GND (0V)</td><td>3</td></tr> </table>	VDC+	1	SW1	4	SW2 (可通信)	2	GND (0V)	3
VDC+	1										
SW1	4										
SW2 (可通信)	2										
GND (0V)	3										
数字 推挽式输出			<table border="1"> <tr><td>VDC+</td><td>1</td></tr> <tr><td>SW1</td><td>4</td></tr> <tr><td>SW2 (可通信)</td><td>2</td></tr> <tr><td>GND (0V)</td><td>3</td></tr> </table>	VDC+	1	SW1	4	SW2 (可通信)	2	GND (0V)	3
VDC+	1										
SW1	4										
SW2 (可通信)	2										
GND (0V)	3										

订货信息											
订货代码	XR07	-X	-X	-XX	-X	-X	-X	-X	-X	-X	-X
产品代号:	XR07										
输出类型:											
NPN	N										
PNP	P										
数字式 (推挽输出)	D										
继电器 (外部模块)	R										
工作模式:											
单路报警	0										
双路报警 (NO+NC)	1										
双路报警 (NO+NO)	2										
数据上传	3										
PWM 输出	4										
外壳材质											
304 不锈钢	04										

316L 不锈钢	6L		
电气连接:			
4 芯电缆		W	
4 针 M12 连接器		M	
探头及过程连接:			
G1/2 螺纹+标准探头			0
G1/2 螺纹+A1 型探头			1
G1/2 螺纹+A2 型探头			2
用户特定			3
密封垫圈:			
无			0
FKM			1
EPDM			2
NBR			3
用户特定			4
防爆认证:			
无			0
Ex ia IIC T4 Ga			1
Ex ta IIIC T100 °C			2
用户特定			3
卫生认证:			
无			0
FDA			1
3A			2
用户特定			3
出厂设置:			
低介电常数介质			0
水基介质			1
导电浆液			2
油水分层双路检测			3
泡沫和液体分层双路检测			4
用户特定			5

XR05 universal microwave level switch

Features

- **Wide application** Solids, liquids and slurries
- **Reliability** Not affected by bubbles
- **Anti-coating technique** Suitable for detection of adhesive sticking media
- **Compact structure** Suitable for installation in tight spaces
- **Material of wetted part: PEEK and stainless steel** Suitable for hygienic and industrial applications
- **Easy to use** Alarm threshold can be set with hand-held communicator.
- **Temperature range** Standard type 115 °C, heat dissipation type 150 °C



Technical parameters

Performance

Measurement Sweep frequency principle:

Measurement error ±1mm

Dielectric properties $DC \geq 1.5$

Response time 0.2s

Damping time 0 ~ 5s (adjustable)

Repeatability ±1mm

Process conditions

Process temperature -40~115°C
(standard process connection)

Process pressure -0.1~10MPa
(standard process connection)

Other connections See table of operating
Process conditions conditions

Process connection type

Type See dimension drawing

Installation Top, bottom, side

Housing

Size: See dimension drawing

Material Stainless steel

Electrical connection

Type 4x0.5mm² cable outlet
M12 4-pin connector

Power supply

Voltage range 12~30VDC

Start time <1s

Supply current 8 mA (typical)
(no load) 40mA (max)

Reverse polarity protection Yes

Dielectric strength 500VAC

Default factory settings

Damping time 0s

Alarm threshold AL1 250 (low dielectric constant)

position:		medium)	
		550 (water based medium)	
		720(conductive slurry)	
		SW1 is activated when	
		P1000 \geq all	
Material of wetted part	PEEK 304 or 316L	Process variable P1000	
		0 ~ 1000, after calibration: 100: probe in air 900:probe in tap water	
Roughness of wetted surface	Ra < 0.8 μ m	Alarm hysteresis	
		25	
Environment conditions		Protection	
Protection level	IP67	Parameters cannot be modified before unlocking	
Humidity	< 98%RH, condensing	Certification	
Ambient temperature	Cable outlet type: - 25 ~ 70 °C M12 connector type: - 40 ~ 85 °C	EMI radiation	GB/T 24338.4-2009
Storage temperature	Cable outlet type: - 25 ~ 70 °C M12 connector type: - 40 ~ 85 °C	EMC immunity	GB/T 24338.4-2009
		Explosion proof certification	Ex ia IIC T5 Ga Ex ta IIIC T100 °C
Output signal		Hygienic certification	FDA, AAA
Type of output	NPN PNP		
Output logic (NPN, PNP type)	<ul style="list-style-type: none"> ● NO (normally open) ● NC (normally closed) 		
Output voltage drop	PNP:1.5 \pm 0.5V, Rload=10k NPN:1.5 \pm 0.5V, Rload=10k		
Output current	20mA (maximum)		
leakage current	<100uA		
Output short circuit protection	Yes		

Operating conditions					
Process connection	ID	Operating Temperature (long term) Ambient temperature < 50 °C	Working pressure (long term)	Maximum working temperature (1 hour) Ambient temperature < 50 °C	Working pressure (1 hour, maximum temperature)
G 1 / 2 thread standard type	0	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa
G 1 / 2 thread reverse installation	1	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa

G1/2 thread with cooling neck	2	-40~150°C	-0.1~10MPa	150°C	-0.1~10MPa
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Dimension drawing

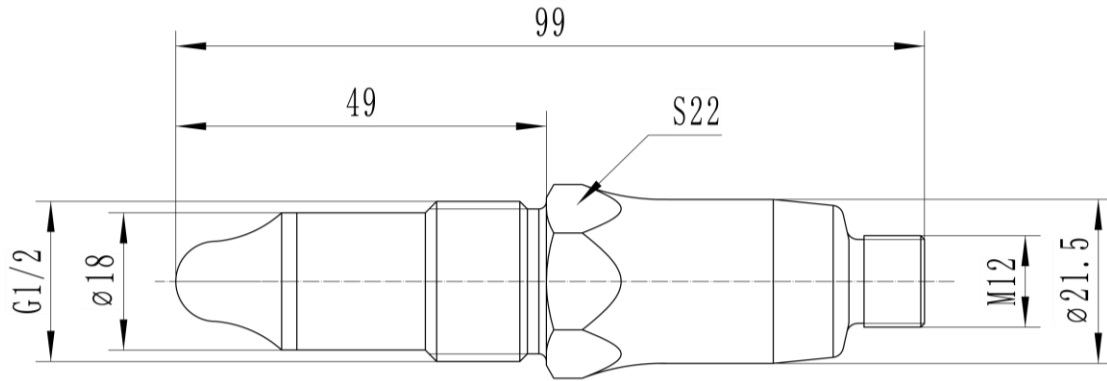


Fig.1 standard type (id = 0)

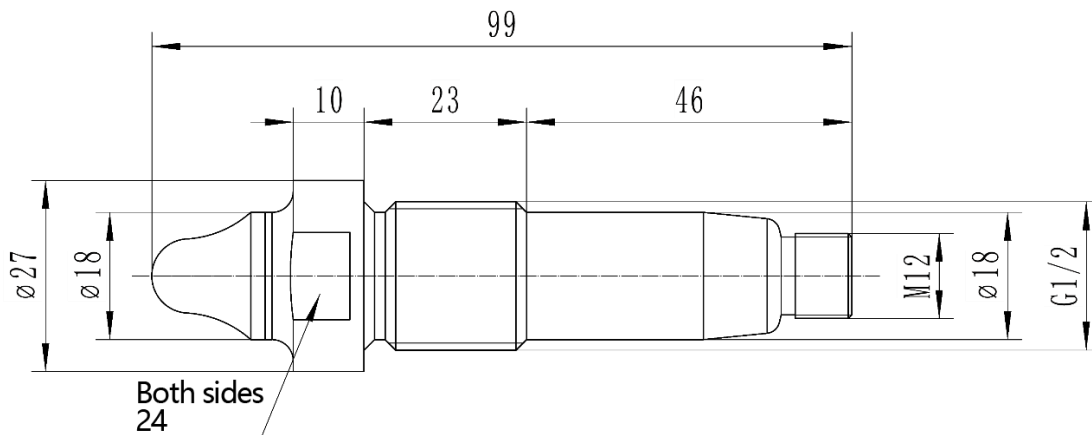


Fig. 2 reverse mounting type (id = 1)

Equivalent circuit (cable outlet type)			
Type of output	Electrical connection	Equivalent circuit diagram	Function (wire color or wire label)
NPN			<p>VDC + White 1</p> <p>SW1 (NO) Yellow 4</p> <p>SW1 (NC) Brown 2</p> <p>GND (0V) Green 3</p>

PNP		<u>VDC +</u> <u>White 1</u> <u>SW1 (NO)</u> <u>Yellow 4</u> <u>SW1 (NC)</u> <u>Brown 2</u> <u>GND (0V)</u> <u>Green 3</u>
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Equivalent circuit (M12 connector)			
Type of output	Electrical connection	Equivalent circuit diagram	Function (M12 pin number)
NPN			<u>VDC+</u> <u>1</u> <u>SW1 (NO)</u> <u>4</u> <u>SW1 (NC)</u> <u>2</u> <u>GND (0V)</u> <u>3</u>
PNP			<u>VDC+</u> <u>1</u> <u>SW1 (NO)</u> <u>4</u> <u>SW1 (NC)</u> <u>2</u> <u>GND (0V)</u> <u>3</u>

Ordering Information											
Order Code	XR05	-x	-0	-xx	-x	-x	-x	-x	-x	-x	-x
Product Code:	XR05										
Output type:											
NPN		N									
PNP		P									
Relay (external module)		R									
Working mode:											
Single alarm			0								
Housing material											
304				04							
316L				6L							
Electrical connection:											
4-Core cable						W					
4-Pin M12 connector						M					
Probe and process connection:											

G1 / 2 thread	0	
G1 / 2 thread + reverse mounting	1	
G1 / 2 thread + cooling neck	2	
User specific	3	
Sealing ring		
None	0	
FKM	1	
EPDM	2	
NBR	3	
User specific	4	
Explosion proof certification:		
None		0
Ex ia IIC T5 Ga		1
Ex ta IIIC T100 °C		2
User specific		3
Hygienic certification:		
None		0
FDA		1
3A		2
User specific		3
Factory settings:		
Setting for low dielectric constant media		0
Setting for water based media		1
Setting for conductive slurry		2
User specific		3

XR06 lengthened microwave level switch

Features

- **Wide application** Solids, liquids and slurries
- **Extended probe rod**
 - The lengthened probe rod is suitable for vessels with insulation layer
 - Lengthening the rod helps to prevent sticking
 - Longer probe rod is more suitable for measuring high temperature medium
- **Reliability** Not affected by bubbles
- **Anti-coating technique** Suitable for detection of conductive slurries.
- **Clear indication** The indicator light is visible from 360 degrees
- **Material of wetted part:** Suitable for hygienic and industrial applications
PEEK and stainless steel
- **Easy to use** The alarm threshold can be set with hand-held communicator.
- **Suitable for high temperature medium** The maximum working temperature of process medium is 200 °C



Technical parameter

Performance		Housing	
Measurement principle:	Sweep frequency	Size:	See dimension drawing
Measurement error	±1mm	Material	Stainless steel
Dielectric constant	DC≥1.5	Electrical connection	
Response time	0.2s	Type	M16x1.5 waterproof gland M12 4-core circular connector
Damping time	0 ~ 5s (settable)	Power supply	
Repeatability	±1mm	Voltage range	12~30VDC
Process conditions		Supply current (no load)	8~12mA (typical) 40mA (max)
Process temperature (standard process connection)	-40~115°C	Reverse polarity protection	Yes
Process pressure (standard process connection)	-0.1~10MPa	Dielectric strength	1000VAC
Other connections	See table of operating conditions	Start time	<1s
Process conditions			

Technical parameter

Process connection type		Default factory settings	
Type	See dimension drawing	Protection	The parameters cannot be modified before being unlocked.
Installation position:	Top, Bottom, Side	Alarm threshold AL1	250 (low dielectric constant medium) 550 (water based medium) 720 (conductive slurry) SW1 is activated when $P1000 \geq AL1$
Material of wetted part	PEEK, 316L or 304	Alarm hysteresis	25
Roughness of wetted surface	$Ra < 0.8\mu m$	Damping time	0s
Environment condition		Alarm delay	0s
Ambient temperature	-40~85°C	Process variable P1000	0 ~ 1000, after calibration: 100: probe in air 900: probe in tap water
Storage temperature	-40~85°C	Certification	
Protection level	IP67	EMI radiation	GB/T 24338.4-2009
Humidity	< 98%RH, condensing	EMC immunity	GB/T 24338.4-2009
Output signal		Health certification	FDA, AAA
Type of output	NPN PNP	Explosion proof certification	Ex ia IIC T4 Ga Ex tD A20 IP67 T100 °C
Output logic (NPN, PNP type)	NO (normally open) NC (normally closed)	Output short circuit protection	Yes
Output voltage drop (typical value)	PNP: $1.5 \pm 0.5V$, Rload=10k NPN: $1.5 \pm 0.5V$, Rload=10k	Output current	20mA maximum
Leakage current	<100uA		

Operating conditions

Process connection	ID	Operating temperature (long term) Ambient temperature < 40 °C	Working pressure (long term)	Maximum operating temperature (within 1 hour) Ambient temperature < 40 °C	Working pressure (maximum temperature within 1 hour)
Standard probe	0	-40~115°C	-0.1~10MPa	140°C	-0.1~10MPa

Length: 60mm					
Extended probe Length: 100 mm	1	-40~175°C	-0.1~10MPa	175°C	-0.1~10MPa
Extended probe Length 250mm	2	-40~200°C	-0.1~10MPa	200°C	-0.1~10MPa

Dimension drawing

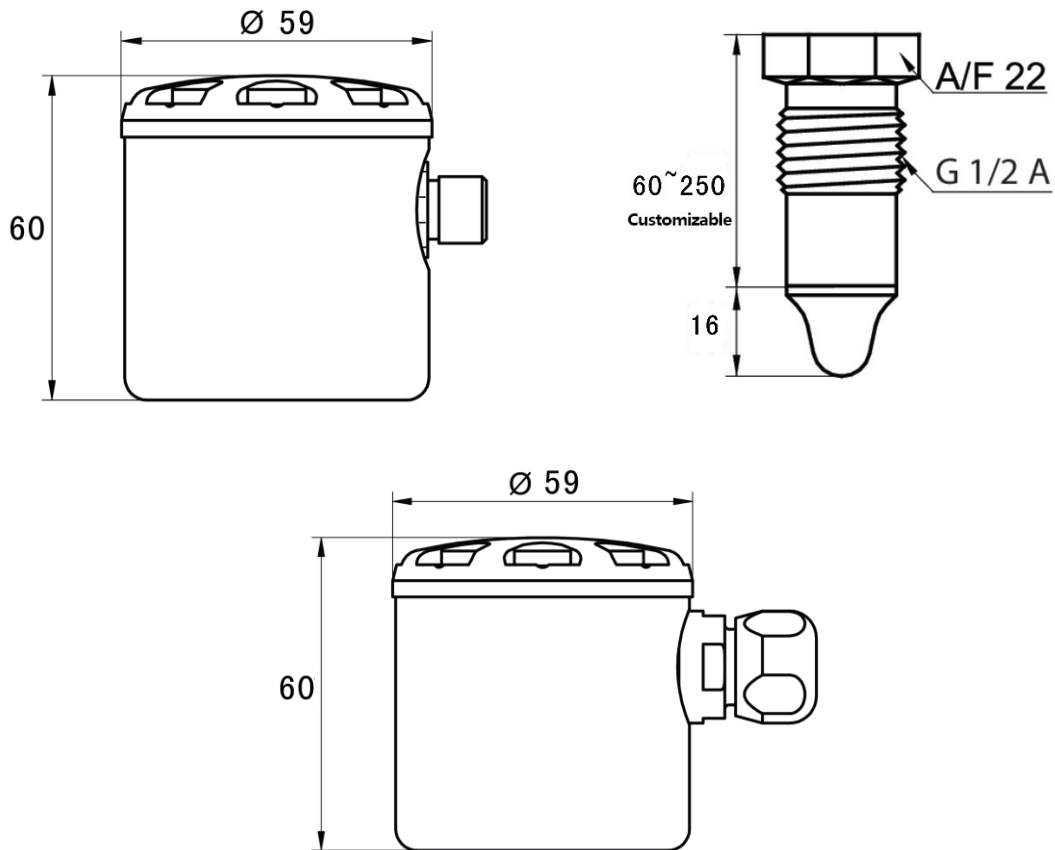


Fig.1 dimension drawing

Internal wiring

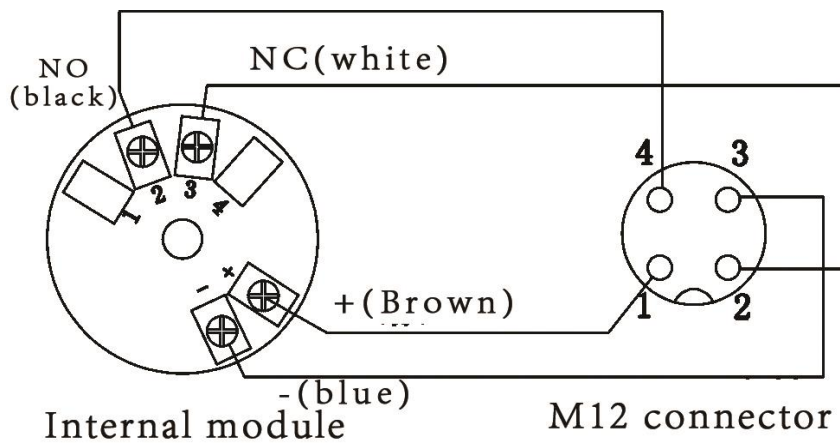


Fig.2 Internal wiring

Equivalent circuit (M12 connector, internal terminal)															
Type of output	Electrical connection	Equivalent circuit diagram	Function /M12 pin/ internal terminal												
NPN			<table border="1"> <tr> <td>VDC+</td> <td>1</td> <td>+</td> </tr> <tr> <td>SW1 (NO)</td> <td>4</td> <td>NO</td> </tr> <tr> <td>SW1 (NC)</td> <td>2</td> <td>NC</td> </tr> <tr> <td>GND (0V)</td> <td>3</td> <td>-</td> </tr> </table>	VDC+	1	+	SW1 (NO)	4	NO	SW1 (NC)	2	NC	GND (0V)	3	-
VDC+	1	+													
SW1 (NO)	4	NO													
SW1 (NC)	2	NC													
GND (0V)	3	-													
PNP			<table border="1"> <tr> <td>VDC+</td> <td>1</td> <td>+</td> </tr> <tr> <td>SW1 (NO)</td> <td>4</td> <td>NO</td> </tr> <tr> <td>SW1 (NC)</td> <td>2</td> <td>NC</td> </tr> <tr> <td>GND (0V)</td> <td>3</td> <td>-</td> </tr> </table>	VDC+	1	+	SW1 (NO)	4	NO	SW1 (NC)	2	NC	GND (0V)	3	-
VDC+	1	+													
SW1 (NO)	4	NO													
SW1 (NC)	2	NC													
GND (0V)	3	-													

Ordering Information

Order Code	XR06	-x	-0	-xx	-x	-x	-x	-x	-x	-x
Product Code:	XR06									
Output type:										
NPN		N								
PNP		P								
Relay		R								
Working mode:										
Single alarm			0							
Housing material										
304 stainless steel				04						
316L stainless steel				6L						
Electrical connection:										
4 Pin M12 connector						M				
M16x1.5 waterproof gland						W				
Probe and process connection:										
G1/2" 60mm							0			
G1/2" 100mm							1			
G1/2" 250mm							2			
G1/2" specified length							3			
User specific							4			
Sealing ring										
None								0		
FKM								1		

EPDM	2	
NBR	3	
User specific	4	
Explosion proof certification:		
None		0
Ex ia IIC T4 Ga		1
Ex ta IIIC T100 °C		2
User specific		3
Hygienic certification:		
None		0
FDA		1
3A		2
User specific		3
Factory settings:		
Setting for low DC media		0
Setting for water based media		1
Setting for conductive slurries		2
User specified		3

XR07 dual output microwave level switch

Technical features

- **Wide application** Solids, liquids and slurries
- **Two independent alarm outputs** Different layers in layered media can be detected
- **Anti coating technique** Suitable for detection of conductive slurries
- **Compact structure** Suitable for installation in tight spaces
- **Material of wetted part: PEEK, stainless steel** Suitable for hygienic and industrial applications
- **Easy to use** Alarm threshold can be set with hand-held communicator.
- **Data upload** Serial data upload on 24V data line
- **PWM output** PWM output of process variable



Technical parameters

Performance

Measurement Sweep frequency

principle:

Measurement error $\pm 1\text{mm}$

Dielectric constant $DC \geq 1.5$

Response time 0.2 s (adjustable)

Damping time 0 ~ 5s (settable)

Repeatability $\pm 1\text{mm}$

Process conditions

Process temperature $-40 \sim 115^\circ\text{C}$

(standard process connection)

Process pressure $-0.1 \sim 10\text{MPa}$

(standard process connection)

Other connections See table of operating

Process conditions conditions

Housing

Size: See dimension drawing

Material stainless steel

Electrical connection

Connection type 4x0.5mm² shielded cable outlet

M12 4-core connector

Power supply

Voltage range 12~33VDC

Supply current (no load) 12mA (typical), 40mA (maximum)

Start time <1s

Reverse polarity protection Yes

Dielectric strength 1000VAC

Technical parameters			
Process connection type		Default factory settings	
Type	See dimension drawing	Protection function	Parameters cannot be modified before being unlocked
Installation position:	Top, bottom, side	Working mode:	0: single alarm (default) 1: Dual alarm output (NO+NC) 2: Dual alarm output (NO+NO) 3: data upload 4: PWM output
Material of wetted part	PEEK 316L	SW1 (first switch) mode=0	NO (normally open)
Roughness of wetted surface	Ra<0.8μm	SW2 (second switch) mode=0	NC (normally closed)
Environment condition			
Ambient temperature	Cable outlet type: -25 ~ 70 °C M12 connector type: -40 ~ 85 °C	Alarm thresholds	AL1=350, AL2=750
Storage temperature	Cable outlet type: -25 ~ 70 °C M12 connector type: -40 ~ 85 °C	Alarm hysteresis	25
Protection level	IP67	Damping time	0s
Humidity	< 98% RH, condensing	Alarm delay	0s
Output signal		Certification	
Type of output	Digital (push pull) NPN PNP	EMI radiation	GB/T 24338.4-2009
Output logic (digital)	● Active high ● Active low	EMC immunity	GB/T 24338.4-2009
Output logic (NPN, PNP type)	● NO (normally open) ● NC (normally closed)	Explosion proof certification	Ex ia IIC T4 Ga Ex ta IIIC T100 °C
Output voltage drop (typical value)	NPN: (+0.4 V) ± 0.2 V, Rload ≥ 10 kΩ PNP: (+Vs -0.5 V) ± 0.2 V, Rload ≥ 10 kΩ	Hygienic certification	FDA, AAA
Max output current	100mA	Railway certification	GBT25119
PNP leakage current (maximum)	<100uA		
NPN leakage current	50~600uA		
Output short circuit protection	Yes		

Operating conditions					
Process connection	ID	Operating temperature (long term) Ambient temperature < 50 °C	Working pressure (long term)	Maximum operating temperature (within 1 hour) Ambient temperature < 50 °C	Working pressure (maximum temperature within 1 hour)
G 1 / 2 + A0 probe	0	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa
G1 / 2 + A1 probe	1	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa
G1 / 2 + A2 probe	2	-40~115°C	-0.1~10MPa	135°C	-0.1~10MPa

Dimension drawing:

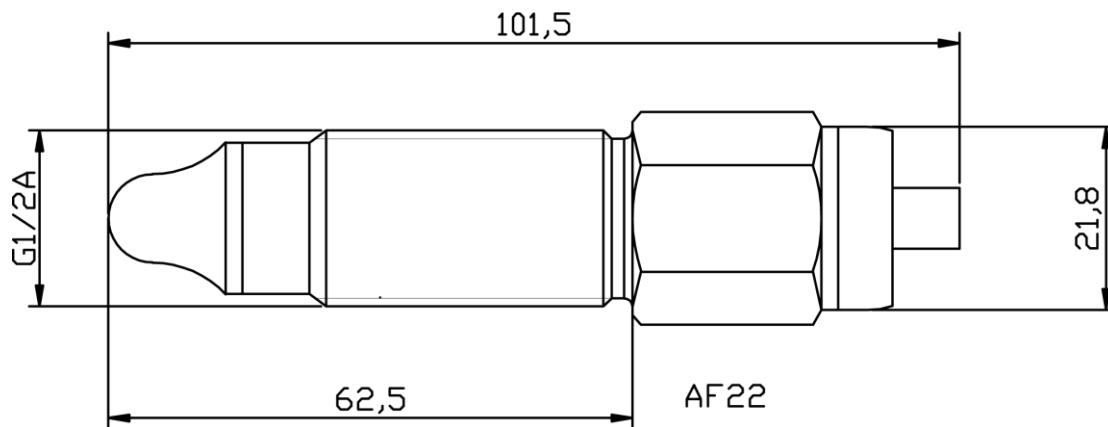


Fig.1 A0 standard probe

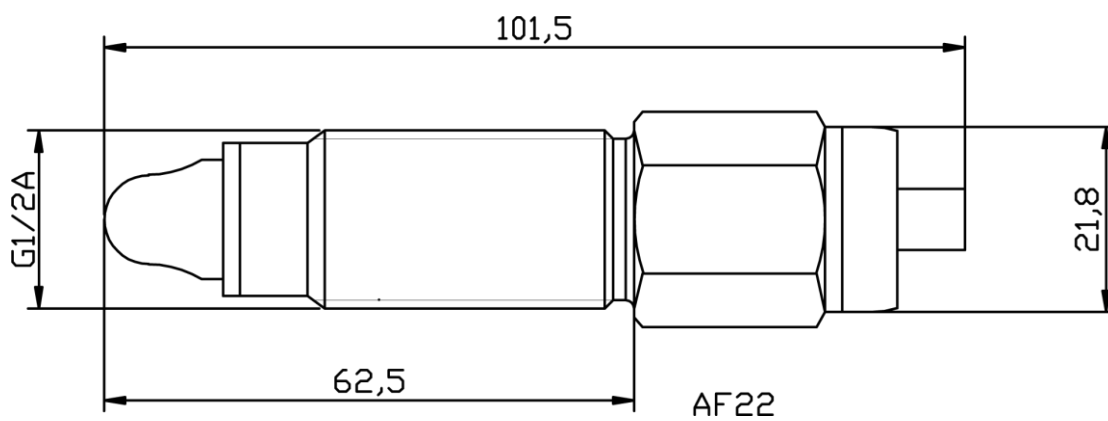


Fig.2 A1 reinforced anti-coating probe

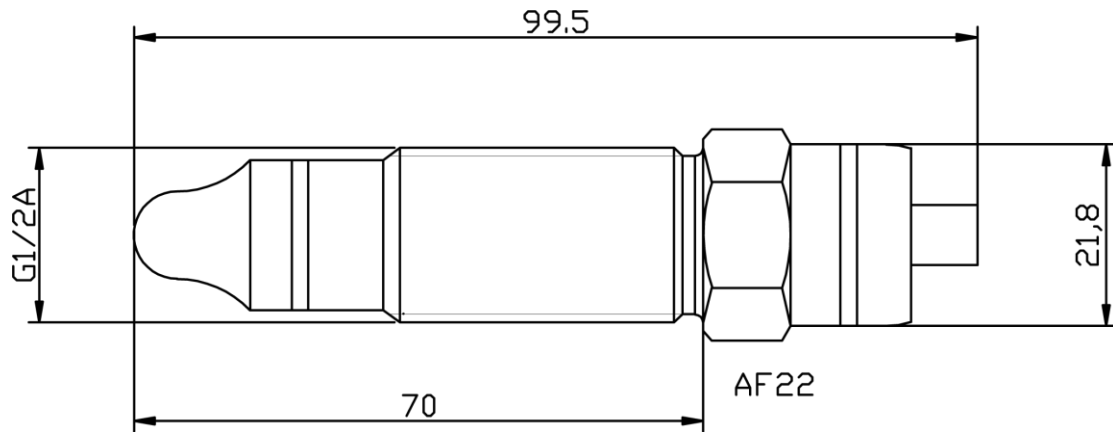
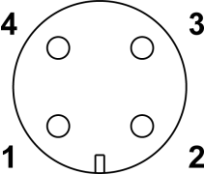
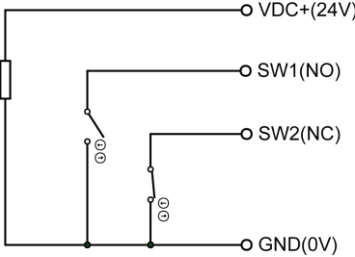
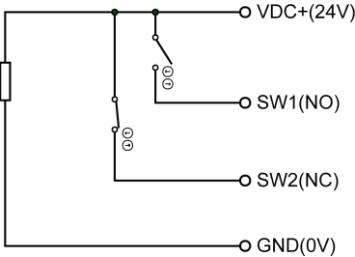
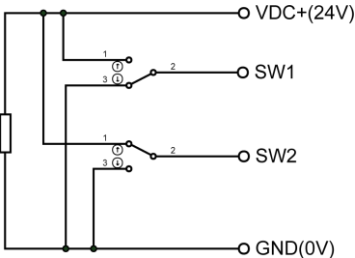


Fig.3 A2 reinforced anti-coating probe

Equivalent circuit (cable outlet type) when working mode=0 or 1			
Type of output	Electrical connection	Equivalent circuit diagram	Function (wire color or wire label)
NPN			<p>VDC + White 1</p> <p>SW1 Yellow 4</p> <p>SW2 (Data) Brown 2</p> <p>GND (0V) Green 3</p>
PNP			<p>VDC + White 1</p> <p>SW1 Yellow 4</p> <p>SW2 (Data) Brown 2</p> <p>GND (0V) Green 3</p>
Digital push pull output			<p>VDC + White 1</p> <p>SW1 Yellow 4</p> <p>SW2 (Data) Brown 2</p> <p>GND (0V) Green 3</p>

Equivalent circuit (M12 connector) when working mode=0 or 1			
Type of output	Electrical connection	Equivalent circuit diagram	Function (pin number)

<p>NPN</p>			<p>VDC + _____ <u>1</u> SW1 _____ <u>4</u> SW2 (Data) _____ <u>2</u> GND(0V) _____ <u>3</u></p>
<p>PNP</p>			<p>VDC + _____ <u>1</u> SW1 _____ <u>4</u> SW2 (Data) _____ <u>2</u> GND(0V) _____ <u>3</u></p>
<p>Digital push pull output</p>			<p>VDC + _____ <u>1</u> SW1 _____ <u>4</u> SW2 (Data) _____ <u>2</u> GND(0V) _____ <u>3</u></p>

Ordering Information

Order Code	XR07	-X	-X	-XX	-X	-X	-X	-X	-X	-X
Product Code:	XR07									
Output type:										
NPN		N								
PNP		P								
Digital (push pull output)		D								
Relay (external module)		R								
Working mode:										
Single alarm			0							
Dual alarm output (NC+NO)			1							
Dual alarm output (NO+NO)			2							
Data upload			3							
PWM output			4							
Housing material										
304 stainless steel				04						
316L stainless steel				6L						
Electrical connection:										
4-Core cable						W				
4-Pin M12 connector						M				
Probe and process connection:										

G1 / 2 thread + standard probe	0	
G1 / 2 thread + A1 probe	1	
G1 / 2 thread + A2 probe	2	
User specific	3	
Sealing ring		
None	0	
FKM	1	
EPDM	2	
NBR	3	
User specific	4	
Explosion proof certification:		
None		0
Ex ia IIC T4 Ga		1
Ex ta IIIC T100 °C		2
User specific		3
Hygienic certification:		
None		0
FDA		1
3A		2
User specific		3
Factory settings:		
Setting for low DC media		0
Setting for water based media		1
Setting for conductive slurries		2
Setting for layered oil and water		3
Setting for layered foam and liquid		4
User specific		5

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