



传 通 世 界 感 知 未 来



光 纤 传 感 器

Optical Fiber Sensor

上海兰宝传感科技股份有限公司
Shanghai Lanbao Sensing Technology Co., Ltd.

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上海兰宝传感科技股份有限公司

上海兰宝传感科技股份有限公司创立于1998年，是国内领先的工业自动化产品供应商。我们为客户提供逾4000种规格的产品，涵盖电感式传感器、电容式传感器、光电式传感器、霍尔传感器、磁感应传感器、光幕/光栅、继电器及工业自动化综合解决方案。兰宝严格遵守国际标准，产品通过ISO9001：2015质量认证、CCC认证、CE认证和UL认证，且实施欧盟RoHS环保指令。

我们的产品可实现限位保护、定位检测、信号传送、自动计数、测速等功能，广泛应用于纺织、烟草、包装、电梯、电子、机床、物流、工程机械等行业。丰富的产品选择，快速灵活的交货周期，独特的定制化方案，专业的团队和一流的服务，兰宝致力于为客户提供安全、可靠、更具竞争力的工业测控解决方案。

Shanghai Lanbao Sensing Technology Co.,Ltd.

Shanghai Lanbao Sensing Technology Co., Ltd., established in 1998, is a leading supplier of industrial automation products. We provide more than 4000 kinds of products to our customers, including inductive sensors, capacitive sensors, photoelectric sensors, hall sensors, magnetic sensors, light curtains, relays and industrial automation solutions. Lanbao complies with international standards strictly and implement the EU RoHS environmental directives, whose products have passed ISO 9001: 2008 quality certification, CCC certification, CE certification and UL certification.

Our products can achieve limit protection, positioning detection, signal transmission, automatic counting, speed measurement, etc., which can be widely used in textile, tobacco, packaging, elevators, electronics, machine tools, logistics, construction machinery and so on. With rich products, fast and flexible lead time, unique customized solutions, professional team and first-class service, Lanbao is committed to providing customers with safe, reliable and competitive industrial measurement and control solutions.



LANBAO SENSOR

兰宝提供多种规格的光纤传感器，能够为用户提供最佳的自动化解决方案，塑料光纤具有最小的弯曲半径、最大的柔性、能够截短等诸多优点，配合兰宝的放大器使用可实现狭小空间内的物体检测。

Lanbao provides various optical fiber sensors, which can provide the best automatic solution for users. The plastic optical fiber has the advantages of the minimum bending radius, the maximum flexibility and the ability to cut short, etc. With the use of the amplifiers of lanbao, it can realize object detection in small space.

光纤放大器命名规则 Fiber amplifier naming rules

F D1-N □ 11 R-□□□□

7
6
5
4
3
2
1

① 分类 Type code

F: 光纤传感器
Optical fiber Sensor

② 传感器类型 Sensor type

D1: 非数显放大器
Non digital amplifier
D2: 单数显放大器
Single digital amplifier
D3: 双数显放大器
Dual digital amplifier

③ 输出逻辑 Output logic

N: NPN
P: PNP
M: 模拟量
Analog

④ 输出状态 Output status

B: 常开/常闭可选
NO/NC optional
P: PNP
I: 电流型输出
Current
U: 电压型输出
Voltage
IU: 电压+电流输出
Voltage+current

⑤ 开关模式 Switch mode

10: 无线扩展单元
Wireless extension unit
11: 基本单元
Basic unit

⑥ 光源 Light source

N/A: 红外线
Infrared
R: 红光
Red light

⑦ 特殊功能 Special requirement

用四位数字表示
In 4 digits

光纤头命名规则 Fiber head naming rules

P □□ □-□ □□□-□-□

7
6
5
4
3
2
1

① □□

FR: 漫反射光纤
Diffuse
FT: 对射光纤
Through beam
GR: 玻璃漫反射光纤
Glass diffuse
GT: 玻璃对射光纤
Glass through beam

② □□

N/A: 1.0mm/φ2.2
B: 0.25mm/φ1.3
C: 0.25mm x 16/φ2.2
0.25mm x 9/φ1.3
D: 0.5mm/φ1.25
S: 0.5mm/φ1.0
S2: 0.5mm/φ2.2
J: 0.75mm/φ1.25
X: 1.5mm/φ2.2
C4: 0.25mm x 4/φ1.0
C42: 0.25mm x 4/φ2.2
C10: 0.25mm x 10/φ1.3
C16: 0.265mm x 16/φ2.2
C32: 0.265mm x 32/φ2.8

③ □□

N/A: 金属螺纹
Metal thread
Q: 无螺纹
no thread

④ □

6: 外径6mm
O.D. 6mm
4: 外径4mm
O.D. 4mm
3: 外径3mm
O.D. 3mm
2: 外径2mm
O.D. 2mm
1.5: 外径1.5mm
O.D. 1.5mm
1: 外径1mm
O.D. 1mm

⑤ □□

30: 光纤长度为300cm
Optic fiber length 300cm
20: 光纤长度为200cm
Optic fiber length 200cm
10: 光纤长度为100cm
Optic fiber length 100cm
05: 光纤长度为50cm
Optic fiber length 50cm

⑥ □

N/A: 无凸管
no convex tube
I: 凸管10mm
Convex tube 10mm
S: 凸管20mm
Convex tube 20mm
M: 凸管40mm
Convex tube 40mm
L: 凸管90mm
Convex tube 90mm

⑦ □

V: 90°直角式
90°
JC: 集成支架
Integrated bracket

数显光纤传感器-FD2系列

Digital display optical fiber Sensors



- 行业领先的双监控模式
- 内置高速数字化处理芯片
- 自动与手动校正功能可选
- 领先同类产品的高精度检测
- 超越常规光纤的检测距离
- 安装及维护简便的接线系统
- Leading dual monitor mode.
- Build-in high-speed digital processing chip.
- Automatic and manual correction and calibration optional.
- High-precision detection.
- Super long sensing distance.
- Reasonable design wiring system, easy to install and maintain.

双监控模式 Dual monitor mode

FD2系列同时配备数显LED和线型LED。数显LED具有显示接收光强度、调校光轴和在安装时显示工作状态的功能，并可锁定移动目标物的光强值以便控制。线型LED采用7段显示光纤传感器的检测稳定性，并直观反映异常情况，便于检修。

FD2 series provide both digital display LED and line LED type. Digital display LED is able to display the light intensity received, calibrate optic axis and illustrate operation status while mounting. Meanwhile, light intensity value of the moving target could be locked onto. Line LED will display detection stability by 7-segment which directly shows abnormal situation, easy to maintain.



高速数字化处理芯片 High-speed digital processing chip

FD2系列内置高速带DSP的微处理芯片搭配12位A/D转换器，大大缩短处理数字信号时间，提高工作效率，增强检测的准确性和稳定性。

Build-in DSP high-speed micro-processor chip and 12 bit A/D converter; greatly shorter digit signals process time, improve working efficiency, accuracy and stability.



自动与手动校正功能 Automatic and manual correction

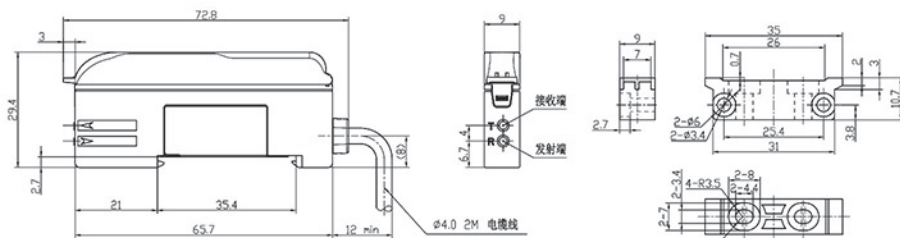
FD2系列不但拥有自动调整按钮，还配有一个手动调整按钮，可根据实际工况进行精确微调。使用者可在快速自动设置调校后，对检测灵敏度手动微调，或直接采取自动调整或手动调整方式获得准确检测，简单易用。

With both automatic and manual calibration button, FD2 could be easily adjusted according to different situation. Operator can adjust detection sensitivity by manual after quick automatic calibration or choose either way directly.

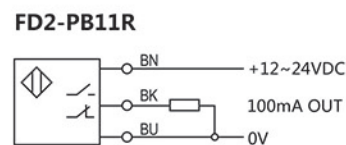
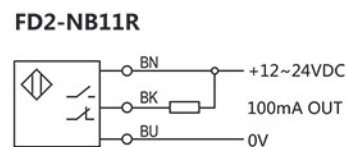
参数 Specification

产品型号 Item Code	NPN NO/NC PNP NO/NC	FD2-NB11R FD2-PB11R
电源电压 Power supply		12~24VDC
消耗电流 Current consumption		< 60mA
压 降 Voltage drop		< 1V
负载电流 Load current		< 100mA
响应时间 Response time		<200us(FINE)、<400us(TURBO) <800us(SUPER)
检测精度 Detection accuracy		> 0.01mm (和光纤相关) > 0.01mm (Depends on specific)
光 源 Light source		660nm红色可见光 660nm red visible light
抗环境光 Ambient light		白炽灯3000lux、日光10000lux Incandescent lamp 3000lux, sunlight 10000lux
保护回路 Circuit protection		浪涌、逆极性、过载保护 Surge, reverse polarity and overload protection
输出指示 Output indicate		4位LED数字显示、LED柱状条显示、动作指示 4 LED digital display、LED bar display
功 能 Function		发射功率FINE/TURBO/SUPER可选、输出延时0ms/10ms/40ms可选 Emitter power optional, output time delay optional
环境温度 Ambient temperature		-10°C~+50°C (不结冰) -10°C~+50°C (Does not freeze)
耐 高 压 High voltage resistance		1000V/AC 50/60Hz 60s
绝缘阻抗 Insulation resistance		≥50MΩ(500VDC)
耐 振 动 Anti-vibration		振幅0.5mm 频率10...50Hz Amplitude 0.5mm, frequency 10~50Hz
耐 冲 击 Anti-shock		500m/s ² (50G)X,Y,Z各3次 500m/s ² (50G)for 3 times of X,Y,Z direction
防护等级 Protection degree		IP54
外壳材料 Housing material		PC+ABS
接线方式 Connection		2m PVC 电缆 2m PVC cable

尺寸图 Dimensions



电气接线图 Wiring diagram



光纤传感器-FD1系列

Optical fiber Sensors

PC透明外壳美观防尘

PC transparent housing, good-looking and dustproof

绿色LED(Power)电源指示、信号稳定状态指示

Red LED(Out)用于输出指示, 短路指示

Green LED(Power): Power indicator, signal stability indicator

Red LED(Out): Output indicator, short-circuit indicator

延时设置

NORM: 输出无延时

OFF DLY100ms: 输出关断延时100ms

Time-delay setting

NORM: Output is without delay

OFF DLY100ms: Off delay 100ms

亮通/暗通选择

LON: 有光信号时输出接通NPN+PNP

D.ON: 无光信号时输出接通NPN+PNP

Light on/ Dark on optional

LON: Output is on when there is light signal NPN+PNP

D.ON: Output is on when there is no light signal NPN+PNP

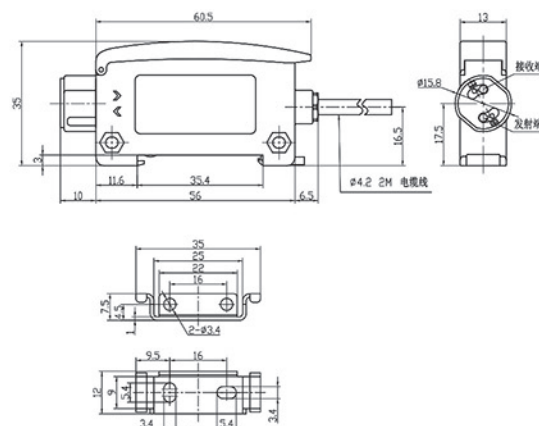
按键功能设定检测距离

Sensing distance can be set by key

参数 Specification

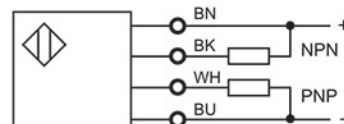
产品型号 Item Code	FD1-NPR
电源电压 Power supply	10~30VDC
消耗电流 Current consumption	<40mA
负载电流 Load current	< 100mA
响应时间 Response time	<1ms
检测精度 Detection accuracy	取决于光纤类型 Depend on fiber type
光源 Light source	红光 Red LED
抗环境光 Ambient light	白炽灯3000lux、日光10000lux Incandescent lamp 3000lux, sunlight 10000lux
保护回路 Circuit protection	过载保护、短路保护 Overload protection and short-circuit protection
输出指示 Output indicate	电源: 绿色LED; 输出: 红色LED Power: green LED; Output: red LED
环境温度 Ambient temperature	0°C ~ +50°C
冲击耐压 Impulse voltage withstand	1000V/AC 50/60Hz 60s
绝缘阻抗 Insulation resistance	≥50MΩ(500VDC)
耐振动 Anti-vibration	振幅: 1mm; 频率: 10~55Hz; 扫频周期: 5min Amplitude: 1mm; Frequency: 10~55Hz; Sweep frequency cycle: 5min
耐冲击 Anti-shock	冲击(脉冲)波形: 半正弦; 峰值速度: 30g; 脉冲持续时间: 11ms Shock(Impulse) wave shape: Half sine; Peak speed: 30g; Pulse duration: 11ms
防护等级 Protection degree	IP54
外壳材料 Housing material	PC+ABS
接线方式 Connection	2m PVC 电缆 2m PVC cable

尺寸图 Dimensions



电气接线图 Wiring diagram

NPN+PNP LON/D.ON

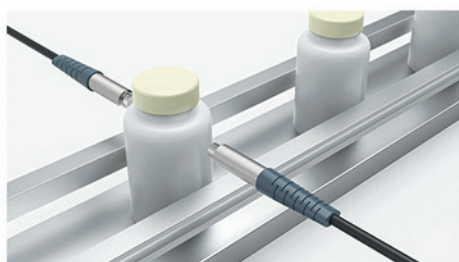


电缆颜色(符合DIN IEC 60757)

Cable color (Meet DIN IEC 60757)

BN....棕 BK.....黑

BU....蓝 WH.....白



瓶计数

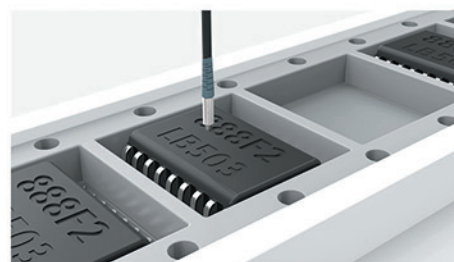
PFT-610

Bottle counting

饮料罐装线上的瓶子计数检测，使用对射光纤。
适用于狭小空间内的检测，检测精度高

Through beam optic fiber sensors are used for counting bottles on the beverage production line.

Suitable for small space detection, high accuracy.



检测产品是否缺件

PFRC-610

Check if any parts missing

元器件包装线的缺料检测，使用漫反射光纤。
适用于检测细小物体

Diffuse optic fiber sensors are used for checking if any parts missing on the components packing line.

Suitable for tiny object detection.



电容引脚检测

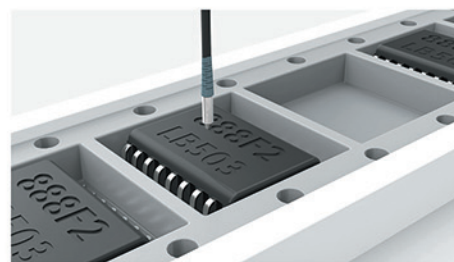
PFT-410

Capacitor pin detection

元器件检测线上引脚缺失检测，使用对射光纤。
适用于检测细小物体

Through beam optic fiber sensors are used for detecting if any component pin missing.

Suitable for tiny object detection.



产品标签缺失检测

PFRC-410

Product label detecting

产品包装线上标签有无检测，使用漫反射光纤。
适用于狭小空间内的检测，检测精度高

Diffuse optic fiber sensors are used for checking whether the label on the bottle or not.

Suitable for small space detection, high accuracy.

参数 Specification

产品型号 Item Code	类型 Item Code		外观 Item Code	最小弯曲半径 Item Code	检出距离 Item Code		最小检出物 Item Code
	形状 Shape	尺寸 Size			FD1	FD2	
PFR-610	螺纹 Shape	M6		R25	100	FINE:110 TURBO:190 SUPER:290	φ 0.2
PFRC-610				R25	90	FINE:80 TURBO:170 SUPER:280	φ 0.1
PFRD-410		M4		R15	60	FINE:40 TURBO:90 SUPER:240	φ 0.1
PFRC-410				R15	40	FINE:40 TURBO:70 SUPER:160	φ 0.05
PFRD-310		M3		R15	40	FINE:40 TURBO:70 SUPER:120	φ 0.1
PFRC-310				R15	40	FINE:40 TURBO:80 SUPER:120	φ 0.05
PFT-610		M6		R25	280	FINE:300 TURBO:500 SUPER:800	φ 0.5
PFT-410		M4		R25	250	FINE:300 TURBO:500 SUPER:800	φ 0.5
PFT-310		M3		R25	200	FINE:200 TURBO:400 SUPER:700	φ 0.5