Panasonic

放大器内置型激光传感器 EX-L200系列

使用说明书

执行标准号: Q/320500 SUNX 25 MCE-EXL200 No.0096-20V 非常感谢您购买Panasonic产品。 使用前请仔细阅读本使用说明书,以正确、适当的方法 讲行使用

此外,请妥善保管本使用说明书。

▲ 警告

- 请勿将本产品用作保护人身安全的检测设备。
- 如要进行以保护人身安全为目的的检测,请使用符 合OSHA、ANSI以及IEC等各国保护人身安全的相 关法律以及规格的产品。
- ▶本产品基于IEC规格, EN规格, JIS规格, GB规 格,KS规格以及FDA规则,符合1类激光产品。
- 请勿在黑暗环境中观察光束。
- 请勿使用望远镜等光学设备观察光束
- 切勿对本产品进行分解、修理、改造等。 • 采用本施工说明书和单独的用户手册规定以外的步
- 骤进行控制或调整,可能会暴露危险的激光辐射。

1 激光的安全使用

- 为了防止激光产品对使用者造成伤害,依据IEC(国 际电工委员会)颁布的GB(中国人民共和国国家标准) 制定有GB 7247.1-2012《激光产品的安全》。GB 7247.1-2012根据激光的危险程度划分激光产品的分 类,并规定了每个分类应该采取的安全预防措施。 根据GB 7247.1-2012危害类别的规定,本产品相当 干"1类激光产品"。
- 本产品遵照FDA(美国食品药品管理局)的CDRH(医疗 器械和放射健康中心)所发行的激光通知No.56(2019 年5月8日),符合21 CFR 1040. 10以及1040.11。 有关详情,请参阅激光通知No.56。
- 危害类别的说明 根据GB 7247.1-2012附录C

类别	危害类别的说明
1类	在正常操作情况下,不会产生对人有伤害的光辐射。

•本产品基于IEC(EN)规格,JIS规格,GB规格,KS规 格以及FDA规则,下述标签粘贴在电缆上。





● 标签位置



2 各部名称



3 安装

 安装本产品时,请按下图所示,使用金属板支架 MS-EXL2-□(附件) ● 请使用M3螺丝,紧固扭矩为0.5№m以下。

EX-L21 EX-L29 /EX-L22 /EX-L26 金属板支架 全属板支架 MS-EXL2-3 MS-EXL2-2 (附件) (附件) POR. Ca t0.8mn t0.8mm 8.2mm 8.2mm M3螺丝 (请另行准备。

• 如果在安装本产品时使用专用的传感器安装支架(另 售),则根据传感器安装支架的安装方向,需要金属 板支架MS-EXL2-□(附件)。请按下图所示进行安 装

EX-L21 <需要金属板支架> < 无需金属板支架 > ⋒ 附带于传感器安装支架上 金属板支架 MS-EXL2-2(附件) (Va ÌQ G 0 传感器安装支架(另售) M3(长度14mm)带垫圈的螺丝 (附带于传感器安装支架上)







● 在不使用金属板支架MS-EXL2-□(附件)的情况下安 装本产品时,请按下图所示加工安装孔。

<M3插孔加工时> < 贯穿孔加工时 > M3插孔加工 2-φ3.05±0.05mm









4 配线

- 连接到中继连接器型的带连接器电缆,请务必使用 CN-24A□-C□(另售)。
- •请务必用手牢牢紧固带连接器电缆的固定环。 (紧固扭矩・0.2N•m)
- 用钳子等紧固固定环时,可能会导致连接器破损。
- 紧固扭矩不充分时,无法保持保护构造IP67。此外, 振动等可能会导致固定环松动。

连接方法

• 将带连接器电缆插入中继连接器型的连接器部,旋转 带连接器电缆的固定环进行固定。



拆卸方法

• 拧松固定环后, 手拉固定环将其拔出。



(注1): 拆卸时,请务必确认固定环已经完全松动后,再将其拔出。在紧固固 定环的状态下大力(15N以上)拉伸时,可能会导致破损

5 输入输出电路图

● NPN输出型



● PNP输出型

光点反射型

限定反射型



透过型投光器的不装备输出(黑色)以及输出动作切换输入(粉红色)。 如下表所示,通过将输出动作切换输入(粉红色)连接到0V或+V上,可 选择入光时的ON/遮光时的ON。 (注1): (注2):

连接到0V

	入光时ON	遮光时ON
透过型 回归反射型	连接到0V	连接到 + V或开路

连接到 + V或开路

<中继连接器型的端子排列图>



(注1): 透过型投光器的不装备输出以及输出动作切换输入

6 灵敏度调整

- 1. 按逆时针方向旋转灵敏度调 节器,调至最小灵敏度位置 (MIN)
- 2. 在"入光"状态下, 按顺时针 方向慢慢旋转灵敏度调节器, 确认入光时的动作位置A点。
- 3 在 "非 λ 光" 状态下 按顺时 针方向旋转灵敏度调节器, -旦变为入光动作后,将按逆 时针方向返回,并确认"非入 时的动作位置B点。 在按顺时针方向旋转的状态 ,未变为入光时的动作时, 旋转位置将变为B点。



(注1): 请使用一字头螺丝刀(请另行准备), 慢慢旋转灵敏度调节器。请注意, 过度用力旋转时可能会导致破损。

7 自动防干扰功能

• 在回归反射型以及光点反射 型、限定反射型中,装备自动 防干扰功能,可紧密安装2台 传感器。(透过型投光器的不 装备。)

可紧密安装2台 (注1): 相对安装光点反射型时,避免检测对面的透镜表面及对面的光直接入



8 偏光滤光器PF-EXL2-1(另售 (仅限回归反射型EX-L291口)

- 通过将偏光滤光器PF-EXL2-1(另售)安装到回归反射
- 型EX-L291□中,可检测镜面体或光泽物体。 请在设置EX-L291□前,安装偏光滤光器。

安装方法 **1.** 将偏光滤光器前面的较大 镜头部作为上侧。

2. 从检测面滑动,进行按压 直到发出"咔嚓"声。

挂钩 i de la come de la com 1. 使用一字头螺丝刀等打开 **温**动 偏光滤光器侧面(带有挂 钩的面)的同时,将其推 稍微打开。 出后即可拆卸。 (注1): 拆卸偏光滤光器时,如果过于打开偏光滤光器侧面,则形状将无法还 原, 月无法再次使用 原,且无法再次使用。 (注2): 拆卸偏光滤光器时,请避免用手指打开偏光滤光器的侧面,否则可能 全导致受伤 云号款xx05。 请注意、安装偏光滤光器时不要沾上水等。 请勿在偏光滤光器时附着指纹或脏污等。 安装偏光滤光器时,请将本产品和反射镜**RF-330**(附件)之间的距离保 (注3)。 (注4): (注5): (注6): 短检测距离安装反射镜时,角度特性将变得狭窄。 请微调本产品或反射镜的角度 • 安装偏光滤光器时,如下所示,需要注意反射镜(另 售)的安装方向。





● 对于**EX-L291**□,请勿倾斜反射镜。

(注9): (注10)

(注1);



中继连接器 0.15mm² 4芯(透过型投光器为2芯)带连接器橡皮绝缘 电缆,长0.2m 本产品标理上所记载的型导中,带着符号TE的机型为较光器,带有符号TD的机型为荧光器。 较光器。EX4211E、荧光器:EX4211D 型导中寄有"PPI使型力APPI會出起为"EX4211P。 型导中寄有"CST 的表型力中增长和显现。 (例) EX4211的PPI增长的显动于EX4211P。 型导中寄有"CST 的表型力中增长的显动"EX4211-P-C5"。 制品中在来了VPI等用关于和L+PI和 型号中带有"-Y"的类型为无反射镜型。 (例)EX-L291-P的无反射镜型为"EX-L291-P-Y"。

最大输出:

- 是以YPD/DATHC/DATHC/DATHCF/TABLE_UPA/LBU/AWLBD/##327L-90/LBU/JAUFHW/o 检测距离为3mm(影光点广对35h17×11mm(高不支)目积多考面)。 请注意,在本产温和检测物长之间,可能会检测到反射率较高的物体。 请必要表在支押上进行检测物认识,再进行使用, 光点反射型以及限定反射型的检测距离及应差,为相对于白色无光泽纸(100×100mm)的 值。 以中心光强度的1/e²(13.5%)定义的值。 用于中继连接器型的电缆,请务必使用下述带连接器电缆(另售);
- <直电缆>CN-24A-C2(电缆长2m), CN-24A-C5(电缆长5m) <夸头电缆>CN-24AL-C2(电缆长2m), CN-24AL-C5(电缆长5m)



9 规格

(注1)

[>] Max

🖄 min

🖓 max

🎽 min

MIN

á min

• 个别规格

会测距离

投光点尺

(代表示例)

应 差(代表示例)

自动防干扰功能

(注1) (注2)

检测距

投 光 点 尺 (代表示例)

检测物 休

最 小 检 测 物 体 (代表示例)(注7

消耗电流

应 差(代表示例

自动防干扰功能

重量

• 通用规格

电源电压

环境周围温度

环境周围湿度

设 光 元

2 m 电 缆

连接器

型 号 2 m 电缆 EX-L211(-P)

(注1) (注2) 中继连接器 EX-L211(-P)-J

检测物体 ↓ ♥ 20000000

最小检测物体 (代表示例)(注7) 离为1m)

消 耗 电 流 投光器: 10mA以下,

 重量
 2 m 电缆
 投光器:约40g, 3

 中继连接器
 投光器:约10g, 3

米

中继连接器 EX-L221(-P)-J

型 号 2 m 电缆 EX-L221(-P)

1m

约6×4mm(高×宽)

(注4)

φ2mm以上的

MS-EXL2-2(金属

光点反射型

5mm ~ 300m

(注8)

あ1mm以

(检测距离为300mi

(注6)(注9)

ტ.0.01mm

(检测距离为1m







投光侧





拆卸方法

透过		回归反射型			
长检测距离					
1(-P) EX-L212(-P)		EX-L291(-P)			
l(-P)-J	EX-L212(-P)-J	EX-L291(-P)-J			
ı	3m	4m[使用反射镜 RF-330(附件) 时](注3)			
(高×宽) 『为1m) 4)	约8×5.5mm(高×宽) (检测距离为1m) (注4)(注5)	约6×4mm(高×宽) (检测距离为1m) (注6)			
し上的	φ3mm以上的 不透明体	φ 25mm以上的不 透明体、半透明体			
m的不 检测距	—	—			
DmA以下,	受光器: 10mA以下	15mA以下			
-	_	动作距离的20% (注8)			
-	-	装备 (可紧密安装2台)			
约40g,	受光器:约40g	约45g			
	受光器:约10g	约10g			
L2-2(金	属板支架):2个	RF-330(反射 镜): 1个 MS-EXL2-3(金 属板支架): 1个			
	限定反	5射型			
射型	10.25	线性光点			
:1(-P)	EX-L261(-P)	EX-L262(-P)			
I(-P)-J	EX-L261(-P)-J	EX-L262(-P)-J			
300mm 3)	20mm~50mm (中心22mm)(注8)	20mm~70mm (中心22mm)(注8)			
i以下 300mm) 注9)	φ 1mm以下 (检测距离为50mm) (注6)(注9)	约5×1mm(高×宽) (检测距离为50mm) (注6)			
不透明体、半透明体、透明体					
ф0.01m	—				
15mA以下					
动作距离的20%(注8)					
装备(可紧密安装2台) 约45g					
约10g					
MS-EXL2-3(金属板支架): 1个					

12V~24V DC±10% 脉动P-P10%以下

NPN输出刑、

< NPN期出型> NPN开路集电极晶体管 ・最大流入电流:50mA ・外加电压:26.4V DC以下(输出-0V之间) 新会も正式のがいていたいためにの。) 剩余电压: 2V以下(流入电流为50mA)
 1V以下(流入电流为16mA)

<PNP输出型> PNP开路集电极晶体管

• 最大流出电流: 50mA • 外加电压: 26.4V DC以下(输出-+V之间)

剩余电压: 2V以下(流出电流为50mA)
 1V以下(流出电流为16mA)

入光时ON/遮光时ON 在输出动作切换输入的处理中进行选择

装备	
0.5ms以下	
IP67(IEC)	

- 10°C~+55°C(不可结露和结冰) 存储时, -30°C~+70°C 35%~85%RH,存储时:35%~85%RH 色半导体激光 1类(IEC/EN/JIS/GB/KS/FDA)

投光波峰波长: 655nm K+mild: EX-L21□为1mW, EX-L291□为0.5mW

EX-L221□为2mW, EX-L261□为1mW EX-L262□为1.3mW 外壳·PBT,前面镜头部和受光透镜,丙烯

投光诱镜,玻璃,指示灯部,聚烯丙基 2 m 电 缆 0.15mm² 4芯(透过型投光器为2芯)橡皮绝缘电缆,长2m

(例) CARCENTED, 2003 % 至为 CACEEDITH。 请将本产品和反射键RF-330(附什之间的距离保持在200mm以上。 即使在投光点的范围外,投光器的光有时也会进入到受光器中。同时使用多台本产品时 建议将投光器和受光器相互排列设置。使用其他方法设置时,请务必在实机上进行动作确认

10 注意事项

- •本产品是以用于工业环境为目的所开发、制造的产
- 请条必在切断电源的状态下进行配线作业。
- 请注意,施加超过额定范围的电压或直接连接交流电 源时,可能会导致破损或烧坏。
- •请注意,负荷的短路或错误配线,可能会导致破损或
- 请勿与高压线或电源线并行配线,或将它们装入同一 根配线管中使用。否则可能因电磁感应导致机器误动
- 请确认电源变动,确保电源输入不超出额定值。
- 电源中使用市面销售的开关调节器时,请务必将电源 的机架接地(F.G.)端子接地
- 在本产品的安装处周边使用易产生噪音的设备(开关) 调节器、转换发动机等)时,请务必将设备的机架接 地(F.G.)端子接地
- 请避免在电源接通时的过度状态(约50ms)下使用。
- •本产品和负荷连接到其他电源时,请务必事先接通本 产品侧的电源
- 使用导体截面积为0.3mm²以上的电缆时,延长电缆 的全长最大可为100m(透过型为各投光/受光器)。但 是,为避免产生噪音,请尽量缩短配线。
- 请勿对电缆的引出部施加压力,诸如强行弯曲或拉伸
- 处于低温状态时,如果对电缆施加过度的压力,则可 能会导致破损。
- 请注意,因种类不同,快速启动式或高频亮起式的荧 光灯以及太阳光等的光,可能会影响检测,因此请勿 **直接照射**
- 安装限定反射型时,因材质不同,在检测物体的背景 中如果存在反射物(传动带等),则会影响检测。检测 反射物时,请调整传感器的角度后进行安装,或充分 远离反射物后进行安装。 请勿在室外使用
- •请保持本产品的投光面和受光面清洁,不要附着水、 油、指纹等令光折射的物质或灰尘和垃圾等阻断光的 物质。附着时, 请用无尘软布或诱镜专用清洁纸讲行 擦拭。请勿在蒸汽、灰尘等较多的场所或腐蚀性气体 等的环境下使用
- 请注意,不要使稀释剂等有机溶剂或强酸、碱、水、 油、油脂直接接触。
- 清洁本产品的投光镜头/受光镜头时,请务必在切断电 源的状态下进行
- 由于本产品采用定向性出色的激光,通过本产品的设 置状态或外壳的歪斜等,可能会导致光轴偏移。开始 作业前,请务必调整光轴。
- 由于受振动、冲击或周围温度等的影响,请进行留有 余地的设置和调整,确认后再进行使用。

11 产品中有害物质的名称及含量

20.00	有害物质					
部件 名称	铅(Pb)	汞(Hg)	镉(Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
实装基板	×	0	0	0	0	0
外装部件 (※)	×	0	0	0	0	0
包装配件	0	0	0	0	0	0
本表格依据SUT 11364的规定策制。 ○:表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定 的限量要求以下。 ×:表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。						
 (※):外装部件包括外廓壳体、标牌类、光学系零件、电缆、连接器、配线用螺丝、端子、安装支架等零件。 <批号含义> 						

DK1N(2013年11月生产)

□ 月A(1月)、B(2月)、C(3月)……L(12月)] □ 西历[A('10年)、B('11年)、C('12年)……J('19年)] [0('20年)、1('21年)、2('22年)·……9('29年)]



] 每10年英文] 和数字更换

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Panasonic Industry Co., Ltd. 2024 2024年4月发行



Amplifier Built-in Type Laser sensor **EX-L200 Series**

Thank you very much for purchasing Panasonic products. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick

- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personne protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.
- This product is classified as a "Class 1 laser product" by IEC, EN, JIS, GB, KS standards and FDA regulations
- Avoid observing beams in a dark surrounding envi-
- Do not look at beams using an optical device such as an optical telephoto system.
- Never disassemble, repair or modify the product. In case of control or adjustment using procedures other than those specified in this instruction manual, hazardous laser radiation exposure can result.

1 FOR SAFE USE OF A LASER PRODUCT

• In order to prevent user injury caused by a laser product, the following standards have been established in the IEC, EN, JIS, GB, KS standards and FDA regulations.

This product are classified as "Class 1 laser products" according to The following standards

IEC: IEC 60825-1:2014 EN: 60825-1:2014/A11:2021 JIS: JIS C 6802:2014 GB⁻ GB 7247 1-2012

- KS : KS C IEC 60825-1:2014 • This product complies with 21 CFR 1040.10 and
- 1040.11 based on Laser Notice No. 56, dated May 8, 2019, issued by CDRH (Center for Devices and Radiological Health) under FDA (Food and Drug Administration).

For details, refer to the Laser Notice No. 56.

Laser hazardous class

Classification according to IEC 60825-1:2014 (EN 60825-1:2014/A11:2021)

Classification	Description	
	A laser that is safe when operated under operating con- ditions that can be reasonably foreseen.	

Label

 Following labels are affixed on this product based on the IEC(EN), JIS, GB, KS standards and FDA requlations



FDA certificate / identification label Explanation labe



2 PART DESCRIPTION



Notes: 1) Not incorporated on the emitter of thru-beam type. It is the power indicator (Green: lights up when the power is ON) for the emitter of thru-beam type.
 It is not incorporated in emitter of EX-L211. It is not incorporated in EX-L212.

3 MOUNTING

. In case mounting this device, use a metal plate MS-EXL2-D (accessory). Without using the metal plate,beam misalignment may occur.Also,install the metal plate in between the sensor and the mounting surface.

• The tightening torque should be 0.5N·m or less with M3 screws



• In case using the dedicated sensor mounting bracket (optional) when mounting this device, the metal plate MS-EXL2
(accessory) is required depending on the mounting direction. Mount as the diagram below indicates

EX-L21



Sensor mounting M3 (length: 14mm) screw with washer bracket (Optional) sory of the sensor mounting bracket

EX-L29 / EX-L22 / EX-L26



M3 (length: 14mm) screw with washer ccessory of the sensor mounting bracket)

• In case not using the metal plate MS-EXL2
(accessory) when mounting this product, work on the mounting hole as the diagram below indicates

Vorking on Tapping for M3 screw through-hole Tapping for M3 screw 2-ø3.05 ±0.05mm

€

-



Not Good Not Good



• After mounting the thru-beam type, be sure to adjust light axis of the emission spot to hit the center of the



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Emission spot

4 WIRING

- · Make sure to use the cable with connector, CN-24A -- C (optional), when connecting to the pigtailed type.
- Tighten the fixing ring of the cable with connector completely by hand when mounting. (The tightening torque: 0.2N·m) . If the fixing ring is tightened by a tool such as pliers,
- it may cause connector damage
- . If the tightening is not enough, the fixing ring may loosen due to vibration, etc.

Connecting method

· Insert the cable with connector into a connecting area of this product, and twist the fixing ring of the cable with connector to be fixed.



- connecting method
- · Loosen the fixing ring and pull to separate the connector by holding the fixing ring.



Note: Before disconnecting, be sure that the fixing ring is completely loos ened. If the cable is pulled by excessive force (15N or more) when th fixing ring is tightened, the cable may break. ve force (15N or more) when the

5 I/O CIRCUIT DIAGRAMS

NPN output type



• PNP output type



Notes: 1) The emitter of thru-beam type dose not incorporate output (black) and output operation switching input (pink). 2) Be able to select either Light-ON or Dark-ON by wiring the output operation switching input (pink) as a following tab

	51 (1)	5
	Light-ON	Dark-ON
Thru-beam type Mirror reflective type	Wire to 0V	Wire to +V or Open
Spot reflective type Fixed-focus reflective Type	Wire to +V or Open	Wire to 0V

<Terminal arrangement>



Note: The emitter of thru-beam type dose not incorporate output and output operation switching input

6 SENSITIVITY ADJUSTMENT

- 1. Turn the sensitivity adjuster fully counter-clockwise to the minimum sensitivity position (MIN).
- 2. In the light received condition, turn sensitivity adjuster slowly clockwise and confirm the point A where the sensor enters the "Light" state operation.
- 3. In the dark condition, turn sensitivity adjuster further clockwise until the sensor enters the "Light" state operation and then bring it back to confirm point B where the sensor just returns to the "Dark" state operation. / If the sensor does not enter the "Light" state operation even when the sensitivity adjuster is turned fully clockwise, this



MAX

[>] Max

> MIN

MAX

MIN

🖓 MAX

MIN



- The position at the middle of point A and B is the optimum sensing position.
- Note: Use the flathead screwdriver (please arrange separately) to turn the adjust er slowly. Turning with excessive strength will cause damage to adjuste

7 AUTOMATIC INTERFERENCE PREVENTION FUNCTION

 Retororeflective type Spot reflective type and convergent type sensor incorporate this function. Up to two sets of sensor can be mounted closely. (Thrubeam type sensor does not 2 sensor heads can be

have this function.)

mounted adjacently Note: If two spot reflective type sensor are mounted facing each other, they should be angle



8 POLARIZING FILTER PF-EXL2-1 (Optional) (Only for mirror reflective type EX-L291)

- By installing the polarizing filter PF-EXL2-1 (optional) to the mirror reflective type EX-L291, mirror surface object and glossy object are not detected.
- Install the polarizing filter to EX-L291 before mounting EX-L291 ...

Receiving section

Slide

Slide

Not Good

i Co

Emitting section

Receiving

sectior

Emitting

tab

Sliahtly

open

section

nting method

- 1. Face up a large window of front side of the polarizing filter 2. Slide from sensing side
- and push until it clicks.

Removing method

- 1 Open the side (tabs on the side) of the polarizing filter with flat-blade screwdriver and push the polarizing filter
- Notes: 1) When removing the polarizing filter, opening widely makes the filter lose original form and it cannot be use again 2) Be sure not open the polarizing filter by finger, it may lead injury. 3) Be sure not contacting with water etc. when the polarizing filter is mo
 - 4) Do not contaminate with fingerprints or skin oil on the polarizing filte De not contaminate with higgerprints or skin oil on the polarizing filter 5) In case mounting polarizing filter, make sure leave 400mm or more between this product and the reflective mirror RF-330 (optional.)
 In case installing the reflective mirror at close distance, the angular characteristic becomes narrow. Conduct fine adjustment of angle for this product or the reflective mirror.
- · When using the polarizing filter (optional), need attention to mount reflective mirror shown below.

<Correct mounting method>

 Mount the reflective mirror horizontally or vertically toward EX-L291 ...



<Correct mounting method>

The reflective mirror must not be tilt toward the EX-L291

oprox. 6 × 4mr Emission spot size (vertical × horizor tal) (at 1m sensin typical) range) (Note 4) ø2mm or mo sing object f opaque obje ø0.3mm of opag ing range) Current consumption Emitter: less than 10mA, F Hysteresis (typical nterference preventi 2m cable Emitter: Approx. 40g, Re Veight Pigtailed Emitter Approx. 10g, Re MS-EXL2-2 (Met Spot reflective type Type EX-L221(-P) Model No 2m cable (Note 1, 2) Pigtailed EX-L221(-P)-J 45 to 300mm (Note) Sensing range Less than ø1m Emission spot size (at 300mm sen typical) ing range) (Note 6) (Note 9) Sensing object Opaque, trar Minimum sensing obje (typical) (Note 7) ø0.01mm o urrent consump Hysteresis (typical) 20% of op Interference preve tion function (2 heads are Weight 2m cable Pigtailed Accessor MS-EX Common Specification 12 to 24V DC ±10% Ripple P-P 10% or less Supply voltage <NPN output type> NPN open-collector transistor

9 SPECIFICATIONS

Individual Specification

(Note 1, 2) Pigtailed EX-L211(-P)-J

Model No 2m cable

ensing range

EX-I 211(-P)

Output			 Applied voltage: 20.4 Residual voltage: PNP output type> PNP open-collector 1 Maximum source Applied voltage: 26.4 Residual voltage: 21
	Outpu	t operation	Ligh Select by the out
	Short-ci	rcuit protection	1
Response time		e time	0
Protection		n	
Ambient temperature		temperature	-10 to +55°C (No dew Storage: -30 to +70°
Ambient humidity		humidity	35 to 85% RH
Emitting element		element	Red semiconductor I (IEC/EN/JIS/GB/KS// Peak emission wave output: 1mW for EX-L 2mW for EX-L 1.3mW for EX
Material			Enclosure: PBT, Front Light-emitting lens: C
~	able	2m cable	0.15mm ² 4-core (emit
Capie		Pigtailed	0.15mm ² 4-core (emitte

nirror RF-330 (accessory.)

Sh Resp

Prote

Ambi

Mate

Cabl

m type		
Long distance	Retroreflective type	
EX-L212(-P)	EX-L291(-P)	
EX-L212(-P)-J	EX-L291(-P)-J	
	4m [with reflective	
3m	mirror RF-330 (ac-	
	cessory)] (Note 3)	
Approx. 8 × 5.5mm	Approx. 6 × 4mm	
(vertical × horizon-	(vertical × horizon-	
tal) (at 1m sensing	tal) (at 1m sensing	
range) (Note 4, 5)	range) (Note 6)	
ø3mm or more	ø25mm or more of opaque or	
of opaque object	translucent object	
	translaterit object	
-	-	
eceiver: less than 10mA	15mA or less	
	20% of operation	
	distance (Note 8)	
	Incorporated (2	
	heads are possible	
	to mount adjacently)	
eceiver: Approx. 40g	Approx. 45g	
eceiver: Approx. 10g	Approx. 10g	
	RF-330	
al plate): 2 pcs.	(Reflector): 1 pc. MS-EXL2-3	
	(Metal plate): 1 pc	
Converg	ent type	
	Line spot	
EX-L261(-P)	EX-L262(-P)	
EX-L261(-P)-J	EX-L262(-P)-J	
20 to 50mm	20 to 70mm	
(Center 22mm)	(Center 22mm)	
(Note 8)	(Note 8)	
Less than ø1mm	Approx. 5 × 1mm	
(at 50mm sensing	(vertical × horizon-	
range) (Note 6)	tal) (at 50mm sens-	
Note 9) ing range) (Note 6)		
slucent or transparent object		
gold wire	-	
15mA or less		
peration distance (Note 8)		
Incorporated possible to mount adjacently)		
Approx. 45g		
Approx. 10g		
2-3 (Metal plate)): 1 pc.	

mum sink cu ant: 50m/

e: 26.4V DC or less (between output and 0V) Itage: 2V or less (at 50mA sink current) 1V or less (at 16mA sink current)

r transistor

current: 50mA

4V DC or less (between output and +V) 2V or less (at 50mA source current) 1V or less (at 16mA source current)

ht-ON / Dark-ON tput operation switching input

ncorporated 0.5ms or less

IP67(IEC)

ondensation or no icing con

H, Storage: 35 to 85% RH

laser class 1 /FDA)

elength: 655nm. Maximum

K-L262 cover / Light-receiving lens: Acyli Glass, Indicator: Polyarylate itter: 2-core) cabtyre cable, 2m long

ter: 2-core) cabtyre cable, 0.2m long Notes: 1) The model No. with suffix "E" shown on the label affixed is the emitter. "D" shown on the label is the receiver. Emitter: EX-L211E, Receiver: EX-L211D

Emitter: EX-L211E, Receiver: EX-L211D The model No. with suffix "-P" is PNP output model. <Example> PNP output model of EX-L211 is "EX-L211-P." The model No. with suffix "-C5" is 5m cable model. <Example> 5m cable model of EX-L211-P is "EX-L211-P-C5." The model No. with suffix "-Y" is no reflector type. <Example> No reflector type of EX-L219-P is "EX-L291-P-Y." 3) Make sure leave 200mm or more between this product and the reflective

4) The beam of emitter may enter receiver even if it is out of the range of the The beam of emitter may enter receiver even if it is out of the range of the emission spot. In case using this devices as cascaded, we recommend to mount emitters and receivers alternately. In case mounting this devices in another method, be sure to check the operation with this device.
 In case the sensing distance is 3m, the emission spot size is 17 × 11mm (vertical × horizontal) (visual reference value.)
 in case high reflective object is existing between this product and the sension object this product may detect it.

sensing object, this product may detect it. Make sure to confirm detection with an actual sensor before use

b) The sensing distance and the hysteresis of spot refractive type and fixed-focus reflective type is value for non-gloss white paper (100 × 100mm). The value is defined based on 1/e² (13.5%) of the center light intensity 0) Make sure to use the flowing cables when connecting the pigtailed type

Straight Cable>
CN-24A-C2 (Cable length : 2m), CN-24A-C5 (Cable length : 5m)

CN-24AL-C2 (Cable length : 2m), CN-24AL-C5 (Cable length : 5m)

10 CAUTIONS

- This product has been developed / produced for industrial use only.
- Make sure to carry out wiring in the power supply OFF condition.
- Take care that if a voltage exceeding the rated range is applied, or if an AC power supply is directly connected, the product may get burnt or damaged
- Take care that short circuit of the load or wrong wiring may burn or damage the product. Do not run the wires together with high-voltage lines
- or power lines, or put them in the same raceway. This can cause malfunction due to induction.
- · Verify that the supply voltage variation is within the rating.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual around.
- In case equipment generating noise (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- · Do not use during the initial transient time (approx 50ms) after the power supply is switched ON.
- . In case the load and this sensor are connected to different power supplies, be sure to turn ON the power from the sensor.
- Extension up to total 100m or less, is possible with more than 0.3mm² of electric conductor cross-sectional area cable. However, in order to reduce noise, make the wiring as short as possible
- Make sure that stress by forcible bend or pulling is not applied to the sensor cable joint.
- The cable may break by applying excess stress in low temperature.
- Take care that the sensor is not directly exposed to fluorescent lamp from a rapid-starter lamp, a high frequency lighting device or sunlight etc., as it may affect the sensing performance.
- . In case of mounting the fixed-focus reflective type, the sensing may be influenced from reflective object in the back ground of the sensing object such as conveyor. In case of sensing the reflective object, mount the senor with some angles or keep distance from the reflective object when mounting the sensor.
- This product is suitable for indoor use only.
- Do not allow any water, oil fingerprints, etc., which may refract light, or dust, dirt, etc., which may block light, to stick to the emitting / receiving surfaces of the sensor head. In case they are present, wipe them with a clean soft cloth or lens paper
- Do not use this sensor in places having excessive vapor, dust, etc., or where it may come in contact with corrosive gas, etc.
- Take care that the sensor does not come in contact with oil, grease, organic solvents such as thinner, etc., strong acid, or alkaline.
- · Make sure that the power is OFF while cleaning the emitting / receiving windows of the sensor head.
- This device is using a laser which has high directional quality. Therefore the beam possibly be out of alignment by the mounting condition of this device or distortion of housing etc. Make sure to adjust the beam axe alignment before use.
- Since vibration, impact and ambient temperature affect the sensitivity, the insulation and the sensitivity adjustment must have some margins.

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Please visit our website for inquiries and about our sales network. Panasonic Industry Co., Ltd. 2024

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