



Photoelectric sensors  
V180-2, Photoelectric retro-reflective sensor,  
Standard optics

VL180-2N41131



**Model Name** > [VL180-2N41131](#)  
**Part No.** > [6041816](#)



*Illustration may differ*

**At a glance**

- Lowest-cost M18 housing sensor on the market
- Sensing distance up to 7 m
- Polarizing filter ensures reliable detection of highly-reflective objects
- Bright power and signal LEDs with 360° visibility
- Includes reflector
- High switching frequencies up to 1000 Hz
- Available in a metal housing for applications in harsh environments
- Optical axis selectively axial or radial (90°)

**Your benefits**

- Lowest-cost M18 cylindrical sensor on the market reduces installation costs
- Bright red sender LED simplifies alignment and saves installation time
- Bright power and signal LEDs with 360° visibility offer quick and simple troubleshooting, reducing maintenance time and costs
- The flat and smooth lens reduces the collection of dust and dirt, ensuring safe operation with less maintenance and fewer costs
- Polarizing filter prevents false readings on reflective surfaces, reducing downtime



**Features**

Sensor/detection principle:	Photoelectric retro-reflective sensor, Standard optics
Housing design (light emission):	Cylindrical, straight
Housing length:	62.9 mm
Thread diameter (housing):	M18 x 1
Optical axis:	axial
Sensing range max.:	0.05 m ... 7 m <sup>1)</sup>
Sensing range:	0.05 m ... 6 m <sup>2)</sup>
Type of light:	Visible red light
Light source:	LED <sup>3)</sup>
Wave length:	645 nm
Angle of dispersion:	Ca. 4.5 °
Adjustment:	Potentiometer, 270 °
Light spot size (distance):	Ø 400 mm (6 m)

<sup>1) 2)</sup> PL80A <sup>3)</sup> Average service life of 100,000 h at T<sub>A</sub> = +25 °C

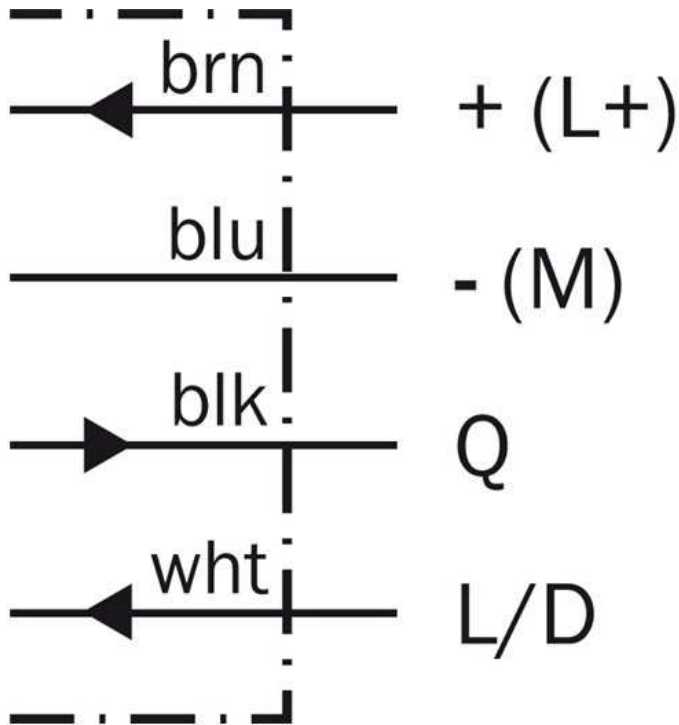
## Mechanics/electronics

Supply voltage:	10 V DC ... 30 V DC <sup>1)</sup>
Residual ripple:	$\pm 10\%$ <sup>2)</sup>
Power consumption:	30 <sup>3)</sup>
Output type:	NPN, open collector <sup>4)</sup>
Switching mode:	Light/dark switching <sup>5)</sup>
Switching mode selector:	Selectable via L/D control wire
Output current I <sub>max.</sub> :	$\leq 100$ mA
Response time:	$\leq 0.5$ ms <sup>6)</sup>
Switching frequency:	1,000 Hz <sup>7)</sup>
Electrical connection:	Cable, 4-wire, 2 m <sup>8)</sup>
Cable material:	PVC
Conductor cross-section:	0.18 mm <sup>2</sup>
Cable diameter:	$\varnothing 3.8$ mm
Circuit protection:::	A, B, D <sup>9)</sup> <sup>10)</sup> <sup>11)</sup>
Protection class:	III
Weight:	95 g
Polarisation filter:	✓
Housing material:	Nickel-plated brass and PC, Metal
Optics material:	PMMA
Enclosure rating:	IP 67
Items supplied:	Fastening nuts (2 x), Reflector P250
Ambient temperature operation:	-25 °C ... +55 °C
Ambient storage temperature:	-40 °C ... +70 °C
Signal voltage NPN HIGH/LOW:	Approx. $V_S / < 1.8$ V

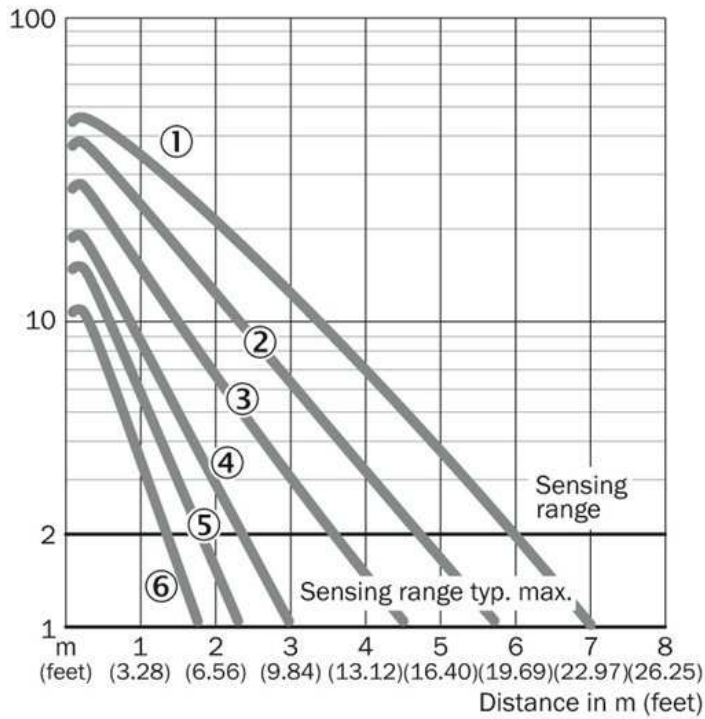
<sup>1)</sup> Limit values, operation in short-circuit protected network max. 8 A <sup>2)</sup> May not exceed or fall short of  $V_S$  tolerances <sup>3)</sup> Without load <sup>4) 5)</sup> Control wire open: light-switching L.ON <sup>6)</sup> Signal transit time with resistive load <sup>7)</sup> With light/dark ratio 1:1 <sup>8)</sup> Do not bend below 0 °C <sup>9)</sup>  $A = V_S$  connections reverse-polarity protected <sup>10)</sup> B = inputs and output reverse-polarity protected <sup>11)</sup> D = outputs overcurrent and short-circuit protected



Connection diagram

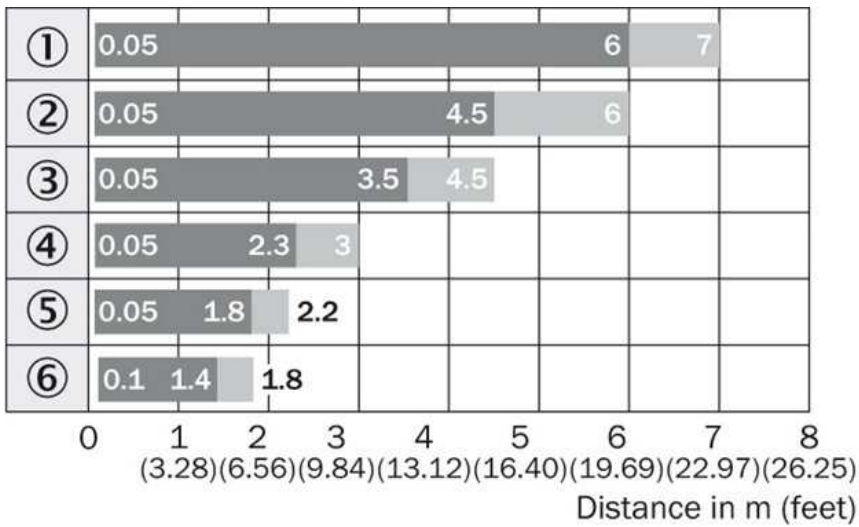


Characteristic curve



- |1| PL80A
- |2| P250, PL40A, PL50A, C110A
- |3| PL30A, PL31A
- |4| PL20A
- |5| P45
- |6| Reflective tape Diamond Grade

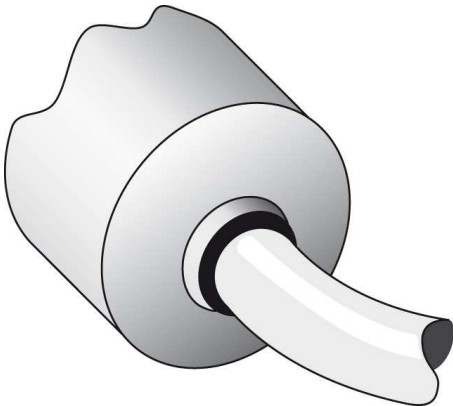
## Sensing range diagram



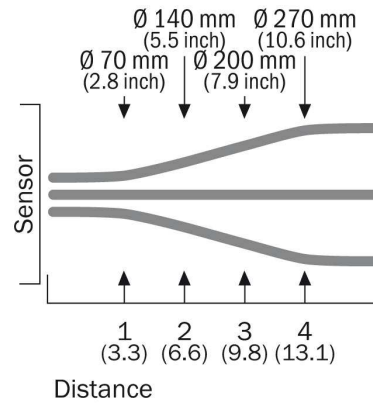
- |1| PL80A
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- |3| PL30A, PL31A
- |4| PL20A
- |5| P45
- |6| Reflective tape Diamond Grade

■ Sensing range      ■ Sensing range max.

## Connection type



## Light spot size



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