

# Print Mark Reader

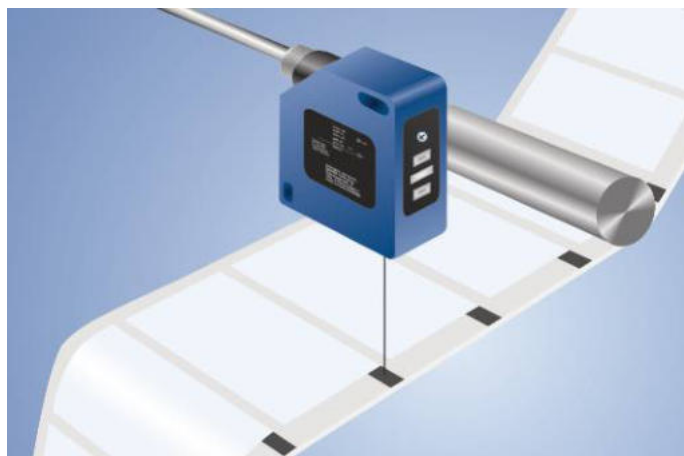
## WP02PAT80

Part Number



- Digital read-out of gray-scale values via the RS-232 interface
- Teach-in, dynamic teach-in, external teach-in, RS-232 interface
- Very high contrast resolution
- Very small light spot: 0,7 × 2 mm

These sensors have been specially designed to recognize print marks. They have a very small spot and use a white light LED with long service life. Only one sensor is required for the recognition of all color combinations, as well as the difference in brightness between print marks and the background.



### Technical Data

#### Optical Data

Working Range	12...16 mm
Working Distance	14 mm
Resolution	100 Gray Scale
Switching Hysteresis	< 1 %
Light Source	White Light
Wavelength	400...700 nm
Service Life (T = +25 °C)	100000 h
Max. Ambient Light	10000 Lux
Light Spot Diameter	0,7 × 2 mm

#### Electrical Data

Supply Voltage	10...30 V DC
Current Consumption (U <sub>b</sub> = 24 V)	< 50 mA
Switching Frequency	25 kHz
Response Time	20 μs
On-/Off-Delay	0...100 ms
Temperature Drift	< 1 %
Temperature Range	-25...60 °C
Number of Switching Outputs	2
Switching Output Voltage Drop	1,5 V
Switching Output/Switching Current	200 mA
Short Circuit Protection	yes
Reverse Polarity Protection	yes
Lockable	yes
Teach Mode	ZT, DT, TP
Interface	RS-232
Baud Rate	38400 Bd
Number of Digital Inputs	2
Protection Class	III

#### Mechanical Data

Setting Method	Teach-In
Housing Material	Plastic
Degree of Protection	IP67
Connection	M12 × 1; 8-pin

#### Safety-relevant Data

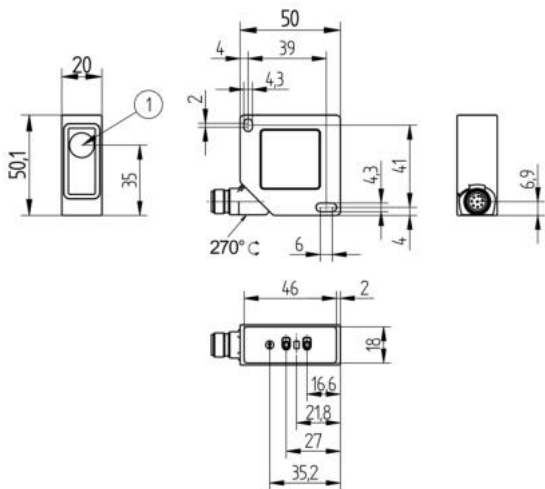
MTTFd (EN ISO 13849-1)	1094,91 a
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PNP NO/NC antivalent	●
RS-232 Interface	●

Connection Diagram No.	157
Control Panel No.	P6
Suitable Connection Equipment No.	80
Suitable Mounting Technology No.	380

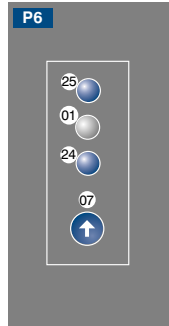
### Complementary Products

Fieldbus Gateway	ZAGxxxN01, EPGG001
Interface Cable	S232W3
Protective Housing	ZSV-0x-01
Set Protective Housing	ZSP-NN-02
Software	



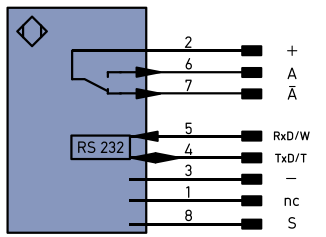
1 = optical axle  
Screw M4 = 0,5 Nm  
All dimensions in mm (1 mm = 0.03937 Inch)

## Ctrl. Panel



01 = Switching Status Indicator  
07 = Selector Switch  
24 = Plus Button  
25 = Minus Button

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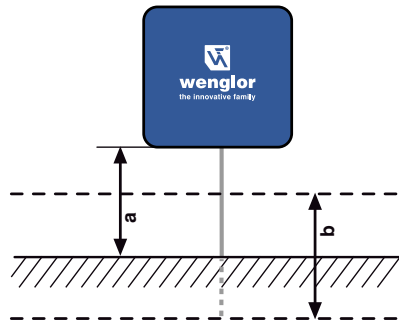
## Legend

+	Supply Voltage +
-	Supply Voltage 0 V
~	Supply Voltage (AC Voltage)
A	Switching Output (NO)
Ā	Switching Output (NC)
V	Contamination/Error Output (NO)
Ṽ	Contamination/Error Output (NC)
E	Input (analog or digital)
T	Teach Input
Z	Time Delay (activation)
S	Shielding
RxD	Interface Receive Path
TxD	Interface Send Path
RDY	Ready
GND	Ground
CL	Clock
E/A	Output/Input programmable
	IO-Link
PoE	Power over Ethernet
IN	Safety Input
OSSD	Safety Output
Signal	Signal Output
BL_D+/-	Ethernet Gigabit bidirect. data line (A-D)
EN0 RS422	Encoder 0-pulse 0-0 (TTL)

PT	Platinum measuring resistor
nc	not connected
U	Test Input
Ū	Test Input inverted
W	Trigger Input
W-	Ground for the Trigger Input
O	Analog Output
O-	Ground for the Analog Output
BZ	Block Discharge
AWV	Valve Output
a	Valve Control Output +
b	Valve Control Output 0 V
SY	Synchronization
SY-	Ground for the Synchronization
E+	Receiver-Line
S+	Emitter-Line
±	Grounding
SnR	Switching Distance Reduction
Rx+/-	Ethernet Receive Path
Tx+/-	Ethernet Send Path
Bus	Interfaces-Bus A(+)/B(-)
La	Emitted Light disengageable
Mag	Magnet activation
RES	Input confirmation
EDM	Contactur Monitoring

EN0 RS422	Encoder A/Ā (TTL)
EN0 RS422	Encoder B/B̄ (TTL)
ENa	Encoder A
ENb	Encoder B
AMIN	Digital output MIN
AMAX	Digital output MAX
AOK	Digital output OK
SY In	Synchronization In
SY OUT	Synchronization OUT
OLt	Brightness output
M	Maintenance
rsv	reserved
Wire Colors according to DIN IEC 757	
BK	Black
BN	Brown
RD	Red
OG	Orange
YE	Yellow
GN	Green
BU	Blue
VT	Violet
GY	Grey
WH	White
PK	Pink
GNYE	Green/Yellow

## Ideal Working Distance



a = Working Distance  
b = Working Range

