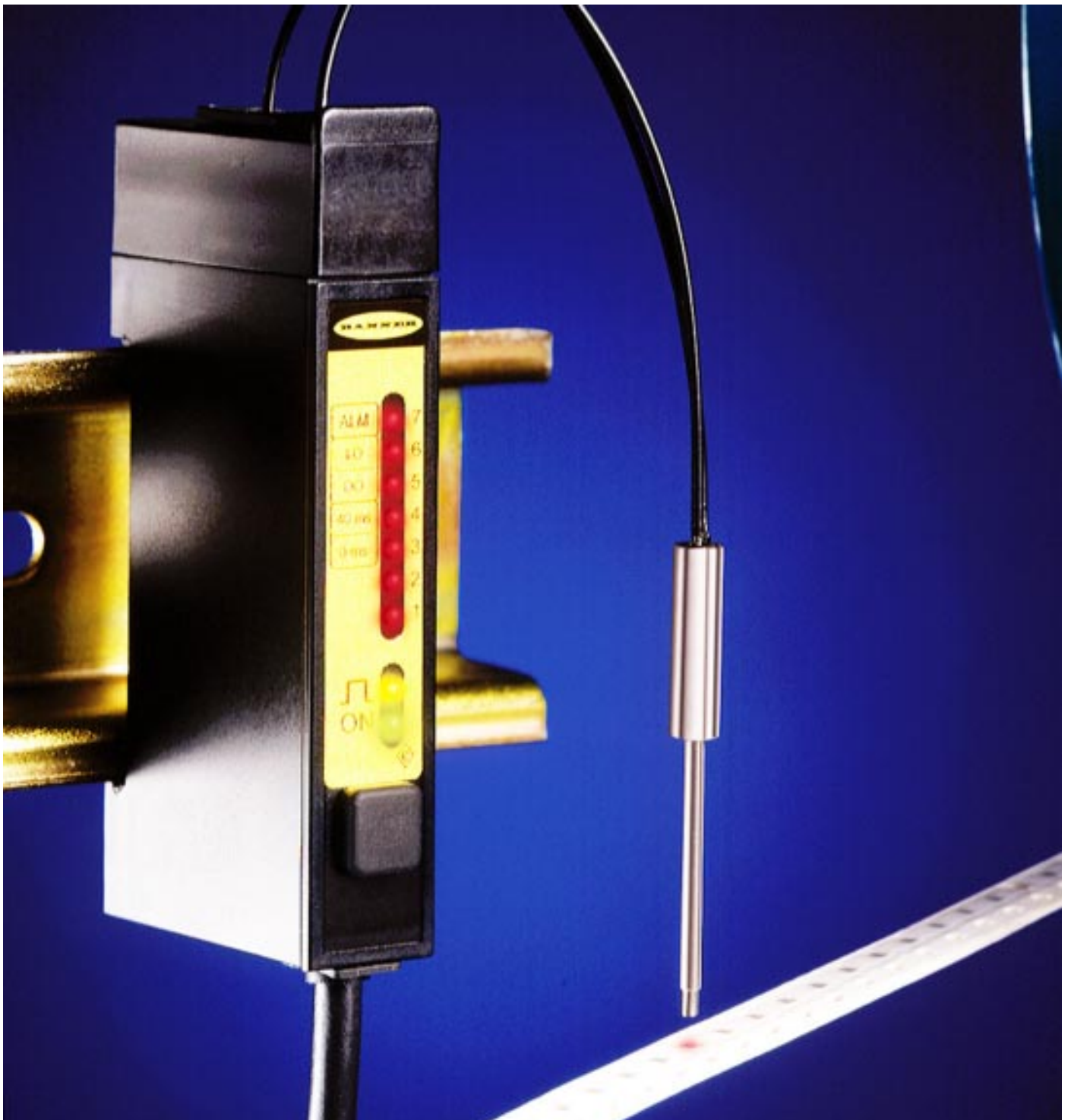




**Series D12 Expert
with automatic
sensitivity adjustment**



Series D12 Expert with automatic sensitivity adjustment

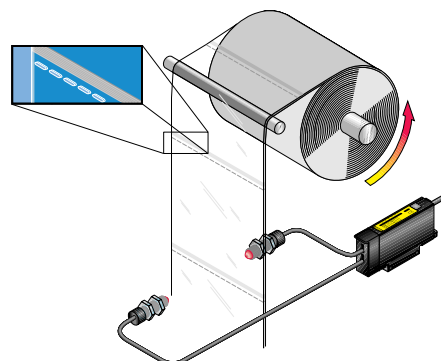
- **Sensor for glass- or plastic fibre-optics**
- **Automatic sensitivity adjustment with external switch or PLC**
- **Extremely high excess gain, but also reliable detection of low sensing contrast**
- **Switching frequency 2500 Hz**
- **Visible red light**
- **Switchable off-delay and light-/dark operation**
- **7-segment LED bargraph display for excess gain and sensing contrast indication**
- **Alarm output indicating low excess gain**
- **DIN-rail mounting**

By the simple push of a button, the D12 Expert adapts itself to each specific sensing application. A microprocessor is used in the programming of the switch point and hysteresis. This makes the D12 Expert the ideal sensor for low contrast applications and applications that require extremely high excess gain.

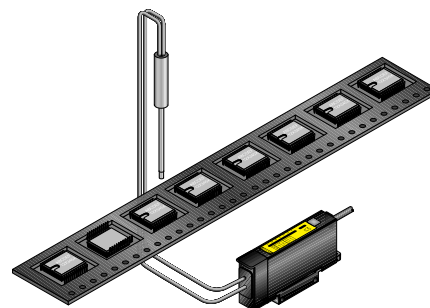
The programming of the D12 Expert is very simple yet secure. The user accesses the program mode by a sequence of holding and clicking the push-button. The user then presents the two detection conditions. In each condition, the button is pressed once and the sensor then automatically finds the optimum switching point and contrast. Immediately after programming, the sensing contrast is displayed by the flashing three times of between one to seven LED's. This allows the user to assess during installation how reliable the sensor will be during actual operation. Three or more LED's flashing (moderate contrast) is recommended for harsh industrial environments. However, low sensing contrast can often be improved by changing the distance between the sensor and the object or by repositioning the sensor. Sensing contrast should be high (6+ LED's) under very harsh environmental or changing conditions (i.e., sensor to object distance). The sensor retains its programming even with power removed until reprogrammed.

During operation a 7-segment LED bargraph provides an accurate display of the excess gain. Immediately after programming, the excess gain should be high enough to compensate for signal loss due to the gradual contamination of the lens that is likely to occur in any application. During operation, the 7-segment bargraph continuously provides an indication of the gradual decrease in excess gain. An alarm indicator LED and an alarm output give warning of a marginal sensing condition before the sensor actually fails.

D12 Expert applications



Sensing of the perforations in a continuous web of clear plastic bags.



Determination if a surface mount IC is improperly placed in a plastic pocket.

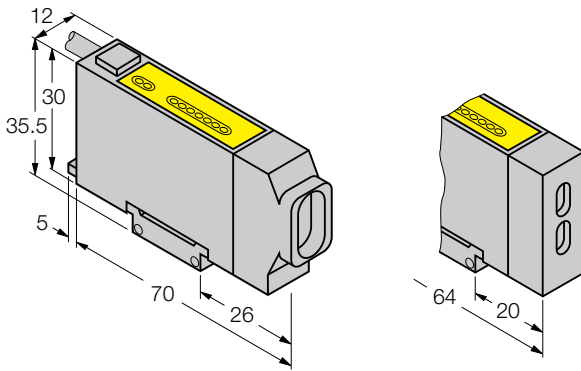
A remote programming wire allows programming with an external switch or PLC. This allows a PLC to adapt the sensor automatically to the actual sensing conditions such as changing the sensing object.

As well as adjustment of the switching point, the programming button of the D12 Expert also allows you to toggle between either "no delay" or a 40 millisecond pulse stretcher and between light and dark operate.





Dimensions [mm]



Wave length

Red 680 nm

Adjustment (with push-button or external)

light/dark operate sensitivity (automatic)
40 ms off-delay

Supply

Supply voltage 10...30 VDC
Ripple V_{pp} 10 %
No load current \leq 45 mA

Protection

short-circuit (pulsed)
reverse polarity

Output

Continuous load current \leq 150 mA
Switching frequency 2500 Hz

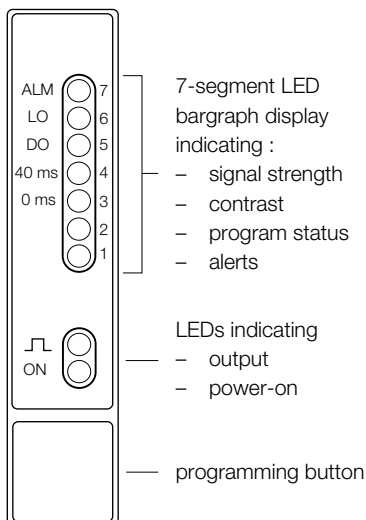
Material

Housing ABS
Cover acrylic
Protection class (DIN 40050) IP 66
Temperature range -20...+70 °C
Cable 2 m, PVC 5 x 0.34 mm²

Indicator LEDs

Green power-on
Green flashing programming mode
Yellow output load status
7-segment red bargraph display signal strength, programming LEDs

Front view with indicator LEDs

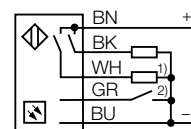


Accessories

Brackets

SMBD12 through-hole mounting (included)

Wiring



1) Alarm
2) External programming cable

Photoelectric sensors Series D12 Expert with automatic sensitivity adjustment

		Max. range	Light source	Output	Connection	Type	Ident number
Detection mode with typical fibre-optic¹⁾						for glass fibre-optics	
Opposed	with IT13S	442 mm	red	pnp	cable	D12-EP6-FV	30 419 68
Diffuse	with IT23S	930 mm					
	with BT13S	68 mm					
	with BT23S	178 mm					
						for plastic fibre-optics	
Opposed	with PIT26U	84 mm	red	pnp	cable	D12-EP6-FP	30 419 65
Diffuse	with PIT46U	315 mm					
	with PBT26U	25 mm					
	with PBT46U	95 mm					

Programming of the D12 Expert

From the **RUN mode** the D12 Expert has three programming modes :

The **TEACH** mode optimizes the sensitivity adjustment of the sensor. After this adjustment the sensor automatically goes into the RUN mode.

The **OUTPUT CONFIGURATION DISPLAY (OCD)** indicates the actual output programming : light- and dark operate (LED „LO“ or LED „DO“) and off-delay (LED “0 ms“ or “40 ms“).

The sensor leaves the OCD mode automatically after 10 seconds, when no adjustments have been made during this period.

The **OUTPUT CONFIGURATION PROGRAM (OCP)** allows you to toggle between either light-operate and dark- operate and to program the off-delay to 0 ms or 40 ms.

The sensor leaves the OCP mode automatically after 90 seconds, when no adjustments have been made during this period.

Contrast indication

Flashing LEDs	Contrast
1	unacceptable
1...2	low
1...3	moderate
1...4	good
1...5	very good
1...6	high
1...7	very high

¹⁾ A wide range of glass- and plastic fibre-optics can be found in the Photoelectric Catalogue.

Programming of the output

Push-button	Mode/function	Indicator LEDs
holding down button (2 s)	from RUN to OCD	„LO“/„DO“ and „40 ms“/„0 ms“ active
triple-click	goes into OCP	„0 ms“/„40 ms“ flashes
single-click	off-delay on/off	toggles between „0 ms“ and „40 ms“
double-click	OCP	„LO“/„DO“ flashes
single-click	changes into light-/dark operate	toggles between „LO“ and „DO“
double-click	goes to RUN	bargraph (red LEDs) indicates light strength

Automatic sensitivity adjustments

Push-button	Mode/function	Indicator LEDs
holding down button (2 s)	from RUN to OCD	„LO“/„DO“ and „40 ms“/„0 ms“ active
double-click	goes to TEACH	green LED flashes
single-click	TEACH condition 1 detection of the first sensing condition	bargraph (red LEDs) run through 1x, green LED flashes twice
single-click	TEACH condition 2 detection of the second sensing condition	bargraph (red LEDs) run through 1x, bargraph (red LEDs) indicates the obtained contrast (see table)

Subject to changes without notice • Edition 11.98/1 P/N ED009K8A



IMPORTANT SAFETY WARNING ! These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can result in either an energised or de-energised output condition. These products should not be used as sensing devices for personnel safety.